17th Annual Meeting of the Society of Urologic Oncology

Extraordinary Opportunities for Discovery

November 30 – December 2, 2016

Grand Hyatt San Antonio
San Antonio, Texas

Society of Urologic Oncology, Inc.

PROGRAM BOOK & ABSTRACTS
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Directors 2015 – 2016</td>
<td>2</td>
</tr>
<tr>
<td>Committees</td>
<td>2</td>
</tr>
<tr>
<td>2016 Faculty Listing</td>
<td>4</td>
</tr>
<tr>
<td>Promotional Partners and Contributors</td>
<td>6</td>
</tr>
<tr>
<td>Exhibitors</td>
<td>7</td>
</tr>
<tr>
<td>General Meeting Information</td>
<td>8</td>
</tr>
<tr>
<td>Educational Needs and Objectives</td>
<td>9</td>
</tr>
<tr>
<td>Accreditation Information</td>
<td>12</td>
</tr>
<tr>
<td>Industry Satellite Symposia</td>
<td>13</td>
</tr>
<tr>
<td>SUO General Scientific Program</td>
<td>15</td>
</tr>
<tr>
<td>Faculty Disclosure Report</td>
<td>24</td>
</tr>
<tr>
<td>Young Urologic Oncologists Podium Session – Full Abstracts</td>
<td>34</td>
</tr>
<tr>
<td>Oral Abstract Session – Full Abstracts</td>
<td>37</td>
</tr>
<tr>
<td>Poster Session I – Summary</td>
<td>43</td>
</tr>
<tr>
<td>Poster Session I – Full Abstracts</td>
<td>67</td>
</tr>
<tr>
<td>Poster Session II – Summary</td>
<td>195</td>
</tr>
<tr>
<td>Poster Session II – Full Abstracts</td>
<td>219</td>
</tr>
<tr>
<td>Alphabetical Index of Presenting Authors</td>
<td>348</td>
</tr>
<tr>
<td>SUO Fellowship Programs</td>
<td>355</td>
</tr>
<tr>
<td>2018 Urologic Oncology Fellowship Matching Program Schedule</td>
<td>361</td>
</tr>
<tr>
<td>Mark Your Calendars</td>
<td>362</td>
</tr>
</tbody>
</table>
2015 – 2016 Board of Directors

OFFICERS

President
Leonard G. Gomella, MD, FACS

Past President
J. Brantley Thrasher, MD, FACS

President-Elect
Christopher P. Evans, MD, FACS

Secretary
Jeffrey M. Holzbeierlein, MD, FACS

Treasurer
Michael S. Cookson, MD, MMHC

MEMBERS AT LARGE
David F. Jarrard, MD
Wade J. Sexton, MD
Edouard J. Trabulsi, MD, FACS

STANDING COMMITTEE CHAIRS

AJCC Representative
Stephen A. Boorjian, MD

AUA Representative
J. Brantley Thrasher, MD, FACS

Awards Committee Chair
J. Brantley Thrasher, MD, FACS

Bylaws Committee Chair
Sia Daneshmand, MD

Clinical Trials Committee
Robert G. Uzzo, MD

Fellowship Committee Chair
Peter E. Clark, MD

Large Urology Group Practice Representative
Neal D. Shore, MD

Membership Committee Chair
S. Bruce Malkowicz, MD

NCI Liaison
W. Marston Linehan, MD

Nominating Committee Chair
J. Brantley Thrasher, MD, FACS

OKAT Representative
Sam S. Chang, MD, MBA

Publications Committee Chair
Michael J. Droller, MD

Rapid Response Committee Chair
Edward M. Messing, MD

Spring Scientific Program Co-Chairs
Scott E. Eggener, MD
James M. McKiernan, MD

Winter Scientific Program Co-Chairs
Gerald L. Andriole Jr., MD
Brett S. Carver, MD

WUOF Liaison
Laurence H. Klotz, MD

Young Urologic Oncologists Representative
Todd M. Morgan, MD

HEADQUARTER OFFICE
1100 E. Woodfield Road, Suite 350
Schaumburg, Illinois 60173
(847) 264-5901

Executive Office, General Manager
Wendy J. Weiser

Executive Director
Pam Murphy

COMMITTEES

ASCO GU SYMPOSIUM REPRESENTATIVES
Stephen A. Boorjian, MD
(Program Committee Member)
Daniel Wei Lin, MD
(Steering Committee Member)
Yair Lotan, MD
(Immediate Past Chair)
Jeffrey M. Holzbeierlein, MD, FACS
(Chair-Elect)

AWARDS COMMITTEE
J. Brantley Thrasher, MD, FACS
Committee Chair
Leonard G. Gomella, MD, FACS (President)
Stephen A. Boorjian, MD
(Member-at-Large)
Jeffrey M. Holzbeierlein, MD, FACS
(Secretary)

BYLAWS COMMITTEE
Sia Daneshmand, MD (Committee Chair)

CLINICAL TRIALS COMMITTEE
Robert G. Uzzo, MD (President)
Colin P. N. Dinney, MD
(Member-at-Large)
Neal D. Shore, MD (Secretary/Treasurer)

FELLOWSHIP COMMITTEE
Peter E. Clark, MD (Committee Chair)
Stephen A. Boorjian, MD
Sia Daneshmand, MD
Scott E. Eggener, MD
David F. Jarrard, MD
Maxwell V. Meng, MD
Christian P. Pavlovich, MD
Wade J. Sexton, MD
Andrew J. Stephenson, MD
**FINANCE COMMITTEE**  
Michael S. Cookson, MD, MMHC  
(Committee Chair)  
Sam S. Chang, MD  
Leonard G. Gomella, MD, FACS  
Badrinath R. Konety, MD, MBA  
Todd M. Morgan, MD

**MEMBERSHIP COMMITTEE**  
S. Bruce Malkowicz, MD  
(Committee Chair)  
John W. Davis, MD, FACS  
Alexander Kutikov, MD, FACS  
Douglas S. Scherr, MD

**NOMINATING COMMITTEE**  
J. Brantley Thrasher, MD, FACS  
(Committee Chair)  
James A. Brown, MD  
Sam S. Chang, MD  
Christopher P. Evans, MD, FACS  
Peter A. Pinto, MD

**OKAT REPRESENTATIVE**  
Sam S. Chang, MD (Committee Chair)  
Jeffrey M. Holzbeierlein, MD, FACS  
Christopher J. Kane, MD  
James M. McKiernan, MD  
Steven C. Campbell, MD, PhD  
(Consultant)  
Michael S. Cookson, MD, MMHC  
(Consultant)

**OUTREACH PROGRAM COMMITTEE**  
Cheryl Taylore Lee, MD  
(Committee Chair)

**PUBLICATIONS COMMITTEE**  
Michael J. Droller, MD  
(Committee Chair)

**RAPID RESPONSE COMMITTEE**  
Edward M. Messing, MD  
(Committee Chair)  
Christopher L. Amling, MD  
Steven C. Campbell, MD, PhD  
Judd W. Moul, MD, FACS  
Joel B. Nelson, MD

**STRATEGIC PLANNING COMMITTEE**  
Ian M. Thompson Jr., MD  
(Committee Chair)  
Peter E. Clark, MD  
Leonard G. Gomella, MD, FACS  
Badrinath R. Konety, MD, MBA  
J. Brantley Thrasher, MD, FACS

**STRATEGIC PLANNING COMMITTEE**  
Ian M. Thompson Jr., MD  
(Committee Chair)  
Peter E. Clark, MD  
Leonard G. Gomella, MD, FACS  
Badrinath R. Konety, MD, MBA  
J. Brantley Thrasher, MD, FACS

**YOUNG UROLOGIC ONCOLOGISTS COMMITTEE**  
Todd M. Morgan, MD (President)  
Alexander Kutikov, MD, FACS  
(President-Elect)  
Daniel A. Barocas, MD, MPH, FACS  
(Past President)  
E. Jason Abel, MD  
John L. Gore, MD, MS  
William T. Lowrance, MD, MPH  
Matthew J. Resnick, MD, MPH  
Angela B. Smith, MD, MS

**WINTER SCIENTIFIC PROGRAM COMMITTEE**

**SUO PROGRAM CO-CHAIRS**  
Gerald L. Andriele Jr., MD  
Brett S. Carver, MD

**BLADDER CANCER**  
Jonathan Rosenberg, MD (Chair)  
Cory Abate-Shen, PhD  
Andrea Apolo, MD  
Joaquim Bellmunt, MD, PhD  
Peter C. Black, MD  
Gopa Iyer, MD  
Cheryl Taylore Lee, MD  
Seth P. Lerner, MD  
Eila C. Skinner, MD  
Seth A. Strope, MD, MPH

**FOCAL THERAPY FOR PROSTATE CANCER**  
Jonathan A. Coleman, MD (Chair)  
Scott E. Eggener, MD  
Behfar Ehdai, MD MPH  
Badrinath R. Konety, MD, MBA  
Peter Anthony Pinto, MD

**GERMLINE GENETICS AND RISK**  
Ryan P. Kopp, MD (Chair)  
Robert J. Hamilton, MD, MPH  
Andrew K. Kader, MD, PhD

**HEALTH SERVICES**  
Ted A. Skolarus, MD, MPH (Chair)  
Matthew R. Cooperberg, MD, MPH  
Philipp Dahm, MD, MHSc, FACS  
Behfar Ehdai, MD, MPH  
John L. Gore, MD, MS  
Angela B. Smith, MD, MS  
Seth A. Strope, MD, MPH

**KIDNEY CANCER**  
Jonathan A. Coleman, MD (Chair)  
E. Jason Abel, MD  
Robert Grubb III, MD  
Anil Kapoor, MD  
Surena F. Matin, MD  
David F. McDermott, MD  
Allan J. Pantuck, MD  
W. Kimryn Rathmell, MD, PhD

**PROSTATE CANCER**  
Sumanta K. Pal, MD (Chair)  
Vivek K. Arora, MD, PhD  
Brett S. Carver, MD  
Marc A. Dall’Era, MD  
Isla Garraway, MD, PhD  
Martin E. Gleave, MD, FRCSC, FACS  
Elahe Mostaghel, MD, PhD  
John A. Petros, MD  
Edward M. Schaeffer, MD, PhD

**TESTICULAR CANCER**  
Darren R. Feldman, MD (Chair)  
Bradley C. Leibovich, MD  
Timothy A. Masterson, MD  
Joel Sheinfeld, MD  
Andrew J. Stephenson, MD
A list of 2016 SUO speaker bios can be found on the SUO website at: suonet.org/2016Speakers

Wassim Abida, MD, PhD
Memorial Sloan Kettering Cancer Center
New York, NY

Neeraj Agarwal, MD
University of Utah
Salt Lake City, UT

Piyush K. Agarwal, MD
National Cancer Institute
Bethesda, MD

Vivek K. Arora, MD, PhD
Washington University, St. Louis
Saint Louis, MO

Aditya Bagrodia, MD
UT Southwestern Medical Center
Dallas, TX

Joaquim Bellmunt, MD, PhD
Dana-Farber Cancer Institute
Boston, MA

Himisha Beltran, MD
Weill Cornell Medical Center
New York, NY

Peter Colin Black, MD
University of British Columbia
Vancouver, BC

Stephen Anthony Boorjian, MD
Mayo Clinic
Rochester, MN

Gennady Bratslavsky, MD
SUNY Upstate Medical University
Syracuse, NY

Herbert Ballentine Carter, MD
Johns Hopkins Hospital
Baltimore, MD

Brian F. Chapin, MD
The University of Texas MD Anderson Cancer Center
Houston, TX

Ying-Bei Chen, MD, PhD
Memorial Sloan Kettering Cancer Center
New York, New York

Toni Choueiri, MD, MS
Dana-Farber Cancer Institute
Boston, MA

Jonathan Andrew Coleman, MD
Memorial Sloan Kettering Cancer Center
New York, NY

Marc Arnaldo Dall’Era, MD
UC Davis
Sacramento, CA

Mihir M. Desai, MD
Keck School of Medicine of USC
Los Angeles, CA

Tanya B. Dorff, MD
Keck School of Medicine of USC
Los Angeles, CA

Scott E. Eggener, MD
University of Chicago Medical Center
Chicago, IL

Behfar Ehdaei, MD MPH
Memorial Sloan Kettering Cancer Center
New York, NY

Darren R. Feldman, MD
Memorial Sloan Kettering Cancer Center
New York, NY

Antonio Finelli, MD
Princess Margaret Hospital
Toronto, ON

Terence Friedlander, MD
University of California San Francisco
San Francisco, CA

Isla Garraway, MD, PhD
UCLA
Los Angeles, CA

Martin E. Gleave, MD, FRCSC, FACS
Vancouver Prostate Center
Vancouver, BC

Abraham Ari Hakimi, MD
Memorial Sloan Kettering Cancer Center
New Rochelle, NY

Lauren C. Harshman, MD
Dana-Farber Cancer Institute
Boston, MA

William C. Huang, MD
New York University School of Medicine
New York, NY

Gopa Iyer, MD
Memorial Sloan Kettering Cancer Center
New York City, NY

Eric Jonasch, MD
The University of Texas MD Anderson Cancer Center
Houston, TX

Andrew K. Kader, MD, PhD
UCSD Moores Cancer Center
La Jolla, CA

William Kim, MD
University of North Carolina Lineberger Comprehensive Cancer Center
Chapel Hill, NC

Badrinath R. Konety, MD, MBA
University of Minnesota
Minneapolis, MN

Ryan P. Kopp, MD
VA Portland Healthcare System
Portland, OR
<table>
<thead>
<tr>
<th>Tracey Lynn Krupski, MD MPH</th>
<th>Chong-Xiang Pan, MD, PhD</th>
<th>Michael M. Shen, PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Virginia</td>
<td>UC Davis</td>
<td>Columbia University Medical Center</td>
</tr>
<tr>
<td>Charlottesville, VA</td>
<td>Sacramento, CA</td>
<td>New York, NY</td>
</tr>
<tr>
<td>Bradley C. Leibovich, MD</td>
<td>Allan Jonathan Pantuck, MD</td>
<td>Ted A. Skolarus, MD, MPH</td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td>UCLA Medical Center</td>
<td>University of Michigan</td>
</tr>
<tr>
<td>Rochester, MN</td>
<td>Los Angeles, CA</td>
<td>Ann Arbor, MI</td>
</tr>
<tr>
<td>Vitaly Margulis, MD</td>
<td>Dipen J. Parekh, MD</td>
<td>Andrew James Stephenson, MD</td>
</tr>
<tr>
<td>UT Southwestern Medical Center</td>
<td>University of Miami School of Medicine</td>
<td>Cleveland Clinic Foundation</td>
</tr>
<tr>
<td>Dallas, TX</td>
<td>Miami, FL</td>
<td>Cleveland, OH</td>
</tr>
<tr>
<td>Timothy A. Masterson, MD</td>
<td>Rosaleen B. Parsons, MD, FACR, FSAR</td>
<td>Robert Scott Svatek, MD, MSCI</td>
</tr>
<tr>
<td>Indiana University Medical Center</td>
<td>Fox Chase Cancer Center</td>
<td>UT Health Science Center San Antonio</td>
</tr>
<tr>
<td>Indianapolis, IN</td>
<td>Philadelphia, PA</td>
<td>San Antonio, TX</td>
</tr>
<tr>
<td>Surena F. Matin, MD</td>
<td>Peter Anthony Pinto, MD</td>
<td>R. Houston Thompson, MD</td>
</tr>
<tr>
<td>MD Anderson Cancer Center</td>
<td>National Cancer Institute</td>
<td>Mayo Clinic</td>
</tr>
<tr>
<td>Houston, TX</td>
<td>Bethesda, MD</td>
<td>Rochester, MN</td>
</tr>
<tr>
<td>Joshua J. Meeks, MD, PhD</td>
<td>Nicholas Power, MD</td>
<td>Lois B. Travis, MD, ScD</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>University of Western Ontario</td>
<td>Indiana University Melvin &amp; Bren Simon Cancer Center</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>London, ON</td>
<td>Indianapolis, IN</td>
</tr>
<tr>
<td>Adam R. Metwalli, MD</td>
<td>Ardeshir Rastinehad, DO</td>
<td>Przemyslaw W. Twardowski, MD</td>
</tr>
<tr>
<td>National Cancer Institute</td>
<td>The Smith Institute For Urology</td>
<td>City of Hope</td>
</tr>
<tr>
<td>Bethesda, MD</td>
<td>New Hyde Park, NY</td>
<td>Duarte, CA</td>
</tr>
<tr>
<td>Kent W. Mouw, MD, PhD</td>
<td>Scott Regenbogen, MD, MPH</td>
<td>Christopher G. Wood, MD, FACS</td>
</tr>
<tr>
<td>Dana-Farber Cancer Institute</td>
<td>University of Michigan</td>
<td>MD Anderson Cancer Center</td>
</tr>
<tr>
<td>Boston, MA</td>
<td>Ann Arbor, MI</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>Peter Nelson, MD</td>
<td>Victor Reuter, MD</td>
<td>Jianfeng Xu, MD, PhD</td>
</tr>
<tr>
<td>University of Washington</td>
<td>Memorial Sloan Kettering Cancer Center</td>
<td>NorthShore University HealthSystem</td>
</tr>
<tr>
<td>Seattle, WA</td>
<td>New York, NY</td>
<td>Evanston, IL</td>
</tr>
<tr>
<td>Matthew E Nielsen, MD, MS</td>
<td>Jonathan Rosenberg, MD</td>
<td>Evan Ya-Wen Yu, MD</td>
</tr>
<tr>
<td>UNC Chapel Hill</td>
<td>Memorial Sloan Kettering Cancer Center</td>
<td>University of Washington Medical Center</td>
</tr>
<tr>
<td>Chapel Hill, NC</td>
<td>New York, NY</td>
<td>Seattle, WA</td>
</tr>
<tr>
<td>Anobel Y. Odisho, MD, MPH</td>
<td>Peter T. Scardino, MD</td>
<td>Edward M. Schaeffer, MD</td>
</tr>
<tr>
<td>University of Washington</td>
<td>Memorial Sloan Kettering Cancer Center</td>
<td>Northwestern University Feinberg School of Medicine</td>
</tr>
<tr>
<td>Seattle, WA</td>
<td>New York, NY</td>
<td>Chicago, IL</td>
</tr>
<tr>
<td>Sumanta Kumar Pal, MD</td>
<td>Edward M. Schaeffer, MD, PhD</td>
<td>National Cancer Institute</td>
</tr>
<tr>
<td>City of Hope Comprehensive Cancer Center</td>
<td></td>
<td>Bethesda, MD</td>
</tr>
<tr>
<td>Duarte, CA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Thank You to Our 2016 Promotional Partners

(As of 11/21/2016)

**Gold Level**
Genentech

**Silver Level**
AstraZeneca
Genomic Health
Janssen Biotech, Inc.
Medivation/Astellas
Myriad Genetic Laboratories, Inc.

Thank You to Our 2016 Contributors

(As of 11/21/2016)

AstraZeneca
Bladder Cancer Advocacy Network
Genentech
Janssen Biotech, Inc.
Janssen Research and Development
Medivation/Astellas
RMEI Medical Education LLC
UroGen Pharma
Thank You to Our 2016 Exhibitors

(As of 11/21/2016)

AstraZeneca
Augmenix
Bayer HealthCare
Blue Earth Diagnostics, Inc
Cook Medical
Dendreon Corporation
EDAP Technomed, Inc.
Exelixis Inc.
Ferring Pharmaceuticals
Genentech
GenomeDx Biosciences Inc.
Genomic Health
Janssen Biotech, Inc.
MDxHealth
Meditation/Astellas
Merck & Co., Inc.
Myriad Genetic Laboratories, Inc.
NeoGenomics Laboratories
Pacific Edge Diagnostics USA Ltd.
Photocure
Prometheus Laboratories Inc.
Sanofi Genzyme
SonaCare Medical
TOLMAR Pharmaceuticals
UroGen Pharma
The 17th Annual Scientific Meeting in Urologic Oncology will be held November 30 – December 2, 2016, at the Grand Hyatt San Antonio. The Society of Urologic Oncology will sponsor this highly interactive meeting where attendees participate in the discussions led by internationally renowned urologic oncologists, medical oncologists and scientists. State-of-the-art translational topics on prostate, kidney and bladder cancer, as well as strategies in urologic oncology will be discussed. This year’s meeting will also feature a special program on Wednesday to start the meeting that will be on “Focal Therapy for Prostate Cancer and Germline Genetics and Risk.” More information on the course and registration can be found below.

Who Should Attend?
- Urological Surgeons
- Medical Oncologists
- Radiation Oncologists
- Research Scientists
- Residents/Fellows-in-Training

Attendee Participation
This meeting is designed to be a discussion of issues among members of the urologic oncology community. All attendees participate in the discussions and are encouraged to interact with program faculty.

Registration/Information Desk
Location: Texas Foyer
- Wednesday, November 30, 2016 10:00 a.m. – 6:00 p.m.
- Thursday, December 1, 2016 6:30 a.m. – 6:00 p.m.
- Friday, December 2, 2016 7:00 a.m. – 3:15 p.m.

Exhibit Hall
Location: Texas Foyer
- Wednesday, November 30, 2016 2:00 p.m. – 6:00 p.m.
- Thursday, December 1, 2016 7:45 a.m. – 8:00 p.m.
- Friday, December 2, 2016 7:00 a.m. – 10:00 a.m.

Young Urologic Oncologists (Y.U.O.) Dinner*
*Y.U.O. Members only. Membership is limited to the first seven and a half years after completion of residency.
Date: Wednesday, November 30, 2016
Time: 6:00 p.m. – 9:00 p.m.
Location: Texas B/C
Cost: One ticket is included in the registration fee. Please RSVP to this event on your registration form.
Attire: Business casual
Membership in the Y.U.O. Section of the Society of Urologic Oncology consists of fellows, scientists and board certified or eligible physicians who are members of the SUO and have some post-residency training in urologic oncology. Membership is limited to the first seven and a half years after completion of residency.

SUO Reception
Date: Thursday, December 1, 2016
Time: 6:30 p.m. – 8:00 p.m.*
Location: Texas A & Foyer
Cost: One ticket is included in the registration fee.
Attire: Business casual
The Society of Urologic Oncology welcomes its members to the 17th Annual Meeting. Members can visit with exhibitors and connect with fellow members, all while enjoying delicious drinks and hors d’oeuvres.

*Time subject to change.

SUO Board of Directors Meeting
Date: Wednesday, November 30, 2016
Time: 6:00 p.m. – 9:00 p.m.
Location: Republic A/B

SUO-CTC Board Meeting
Date: Wednesday, November 30, 2016
Time: 4:30 p.m. – 6:00 p.m.
Location: Crockett C/D

SUO Fellowship Committee Meeting
Date: Thursday, December 1, 2016
Time: 7:00 a.m. – 8:00 a.m.
Location: Crockett C/D

SUO Fellowship Program Directors Meeting
Date: Thursday, December 1, 2016
Time: 12:15 p.m. – 1:15 p.m.
Location: Republic A/B

SUO Annual Business Meeting
Date: Friday, December 2, 2016
Time: 7:30 a.m. – 8:00 a.m.
Location: Texas DEF
EDUCATIONAL NEEDS & OBJECTIVES

EDUCATIONAL NEEDS

Germline Genetics Session in Urologic Malignancies
The field of germline genetics in urologic cancer risk is rapidly expanding, and now extends beyond the rare patients with heritable kidney cancer syndromes. Cancer researchers and clinicians need to be familiar with the methods by which germline genetic risk factors are identified, the current and future clinical implications for cancer prevention, screening, diagnosis, and treatment. There is an unmet need to improve integration of clinical genetics into multidisciplinary cancer programs, and for improved understanding of incidental germline genetic findings. Clinicians should understand that germline single nucleotide polymorphisms (SNPs) are associated with cancer risk either alone or through drug or environmental interactions. Germline SNPs may also identify patients at greatest risk for side effects from cancer therapies. An increasing number of germline mutations have been identified among patients with aggressive prostate cancer. As more germline mutations affecting urologic cancer risk are uncovered, the cancer community will need to understand who and when to test, and how these mutations may affect prognosis and treatment.

Partial Gland Ablation for Prostate Cancer
Partial gland ablation, including focal therapy, is a developing field of treatment for prostate cancer that is designed to address the contemporary shift in identification of smaller, localized early cancers resulting from widespread prostate cancer screening practices. This approach is intended to offer effective means of cancer management with fewer side effects than more established therapies. Published preliminary results are accumulating that reflect on the developing experience in this field and the influence this form of treatment may have on the future of prostate cancer care in selected individuals. Careful interpretation of the factors that play a role in the selection, management and follow up after partial gland ablation is needed to understand the context in which these treatments may be applied. Many technologies are being investigated for focal therapy and urologists need to be aware of these technologies, the limitations and how to best utilize each. The status of current and developing imaging technologies that assist in localizing tumors for focal treatment is also of critical importance for the practicing urologist to be aware of.

Kidney Cancer
There have been a number of recent, significant developments in the field of kidney cancer management that are of interest and clinical utility to the practicing urologist. Thoughtful critique, discussion and debate on these topics go hand-in-hand with the process of dissemination and implementation in the clinical care of patients with various forms of this challenging disease. Notably, an expanding armamentarium of molecular therapeutics for treatment of advanced and metastatic disease has sparked interest in the development of neoadjuvant and adjuvant applications being tested in clinical trials with recently reported results becoming available. Practicing urologists and medical oncologists need to be familiar with the genomic drivers for various forms of kidney cancers, the approach toward personalized medicine in this field, the novel pathways, mechanisms, safety profile and efficacy of available agents. Further, this understanding will support rational trial design and execution for the advancement of our patient care mission. Urologists and medical oncologists should understand the role of checkpoint inhibition in promoting tumor killing by the innate immune system and be familiar with results of promising combination trials in renal cancer. In the management of localized disease the accepted standards of surveillance and the role of percutaneous biopsy in clinical management, as well as limitations with this approach, warrants detailed overview. The growing significance of medical renal disease and renal dysfunction in the pathobiology of kidney cancer and as an adjunctive facet of kidney cancer care should be understood.

Prostate Cancer
Multiple advances have been made in the management of advanced prostate cancer. However, advanced disease remains incurable and patients who experience biochemical recurrence have a reasonable likelihood of metastatic progression. Major advances have been made in prostate cancer imaging; novel techniques such as NaF- and DHT-PET imaging are more highly sensitive and may elucidate small volume disease that is undetectable by previous parameters. This could potentially facilitate early treatment in appropriate cases. There is also growing interest in aggressive management of limited metastatic disease. One approach with mounting enthusiasm is surgery for oligometastatic disease. Finally, chemotherapy appears to be taking on a role in earlier and earlier settings; in the context of metastatic disease, there appears to be a role in early hormone sensitive metastatic disease. There have also been emerging studies in the high-risk localized disease space as well.

For patients with more advanced disease, novel strategies are emerging. There is preliminary evidence to support the use of DNA-repair pathway inhibitors (e.g., PARP inhibitors), and also data supporting immunotherapy approaches such as PD-1 and CTLA-4 inhibitors. Novel genomic techniques are being applied to rare subsets of prostate cancer such as neuroendocrine disease to better understand relevant treatment pathways.
EDUCATIONAL NEEDS & OBJECTIVES

Bladder Cancer
This year’s bladder cancer sessions will address major knowledge gaps in bladder cancer including a development of new therapies and their translation into clinical practice, new approaches to high risk stage 1 bladder cancer, and review of ongoing biomarker development. The session will also provide multidisciplinary perspectives on developing new treatments and applying existing treatments and new ways.

Testicular Cancer
Given the rarity and high curability of testicular cancer compared to other genitourinary malignancies, this disease is frequently overlooked at genitourinary oncology conferences. The multidisciplinary forum of urologists, medical oncologists, pathologists, and radiation oncologists attending the SUO meeting provides a prime opportunity to disseminate information critical to the optimal management of these patients. The most frequently encountered pathologic, urologic, and oncologic pitfalls in testicular cancer management observed by experts in the disease will be reviewed. In addition, the optimal management of residual masses following chemotherapy for seminoma will be reviewed including potential indications for retroperitoneal lymph node dissection as well as alternative approaches. Finally, recent advances in knowledge of retroperitoneal anatomy and how this may impact retroperitoneal lymph node dissection will be reviewed.

Health Services
Overuse in Urologic Oncology Care
As described by the Dartmouth Atlas of Healthcare, there is unwarranted variation in medical practice and medical resource use. One source of variation is attributed to overuse of supply-sensitive care. That is, more medical care is likely to be delivered in settings where there is greater capacity for care, especially in the current payment system. However, more care does not always equal better care or improve outcomes for patients. In fact, the American Board of Internal Medicine Foundation’s Choosing Wisely® campaign is based on this concept and seeks to reduce unnecessary medical care and its associated risks. Given the current delivery system landscape, the focus of this session is to raise awareness of opportunities and implications of decreasing potential overuse in urologic oncology practice.

EDUCATIONAL OBJECTIVES
At the conclusion of the SUO 2016 Annual Meeting, attendees should be able to:

Germline Genetics Session in Urologic Malignancies
- Describe germline alterations associated with urologic cancer risk.
- Recognize the implications of incidental germline findings.
- Explain the potential role of germline analysis for prevention and screening.
- Realize that germline alterations may have a role in gene-environment interactions that affect prognosis.
- Describe the relationship between germline mutations and aggressive prostate cancer, and implications for treatment.
- Identify a potential role for germline alterations in selection of cancer therapies to improve response and limit adverse effects.

Partial Gland Ablation for Prostate Cancer
- Review the consensus statements that have been developed in the field of partial gland ablation as a treatment for prostate cancer.
- Identify the distinctions between treatments in primary and salvage settings.
- Utilize the consensus statements to guide clinical trial development, regulatory processes and standardizing management.
- Explain the available data from clinical trials in PGA therapies covering forefront technologies (Cryo, HIFU, IRE and VTP), indicating clinical status and ongoing studies.
- Describe the current data on imaging for prostate cancer, accuracy in the untreated patient, post radiation, and after focal therapies.
- Identify limitations with existing techniques for incorporating imaging from MRI in the setting of treatment application and for monitoring patients after treatment.
- Describe developing technologies for PGA therapies such as coated nanoparticles, embolization, retroviral and steam technologies.
Educational Needs & Objectives

Kidney Cancer
- Describe the impact of adjuvant systemic therapy on disease progression and survival following resection of localized renal cell carcinoma.
- Explain the rationale for neoadjuvant vs adjuvant therapy using novel target and immune modulating agents.
- Identify the obstacles to trial accrual for localized renal cell carcinoma.
- Explain the importance of PD-1 in renal cancer and the clinical impact of combined checkpoint inhibition.
- Explain risk-stratified strategies for surveillance of incidental renal masses and risks and benefits of percutaneous biopsy of the small renal masses.
- Identify the key genomic drivers of non-clear renal cell carcinoma and developing strategies to adjunctively manage these tumors following surgery.
- Explain the significance of renal dysfunction in the kidney cancer population, the impact of kidney surgery on perioperative renal function, and appropriate perioperative management with indications for nephrologic evaluation.
- Describe the value of surgical intervention for advanced disease including the role for lymph node dissection.

Prostate Cancer
- Explain the role and potential of novel imaging modalities in detecting small volume metastatic prostate cancer.
- Describe the role of docetaxel in mHSPC based on recent data from the CHAARTED, GETUG-15 and STAMPEDE trials.
- Identify emerging data related to use of docetaxel as an adjuvant strategy.
- Describe the current data and trials related to surgical intervention for oligometastatic prostate cancer.
- Explain the role of DNA repair pathway inhibitors in advanced prostate cancer.
- Explain the emerging data associated with novel immunotherapies such as CTLA4 inhibitors and PD-1 inhibitors in mCPRC.
- Describe how novel genomic tools can be applied to rare histologic subtypes, such as neuroendocrine prostate cancer.
- Define mechanisms of resistance to novel AR pathway inhibitors.

Bladder Cancer
- Describe ongoing and future novel approaches to high risk non-muscle invasive bladder cancer.
- Explain the new developments in tumor biology and their relevance to predictive biomarkers for bladder cancer.
- Review current management strategies for high-risk T1 bladder cancer.

Testicular Cancer
- Identify common pathologic pitfalls in the diagnostic workup of testicular cancer and assessment of surgically resected masses following chemotherapy.
- Identify common urologic and medical oncologic pitfalls in diagnosis, treatment, and assessment of response to treatment of testicular cancer.
- Describe the different factors to consider in the post-chemotherapy management of seminoma versus nonseminoma.
- Explain the utility of PET scan in testis cancer management and the care needed in interpreting PET results for patients with seminoma and residual masses after chemotherapy.
- List the management options for a large residual retroperitoneal mass after chemotherapy for seminoma and the indications for retroperitoneal lymph node dissection.
- Describe the recent advances in anatomic understanding of the retroperitoneum and how these may impact surgical management.

Health Services
- Describe the competing trade-offs for kidney cancer surveillance strategies.
- Explain risk-adapted approaches to the evaluation of micro-hematuria.
- Describe a systematic approach to discussing active surveillance with prostate cancer patients.
- Explain how the evidence and challenges facing colon cancer surveillance applies to urologic cancers and the broader oncology community.
CONTINUING MEDICAL EDUCATION ACCREDITATION INFORMATION

Accreditation
This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and the Society of Urologic Oncology. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA Category 1 Credits™
The American College of Surgeons designates this live activity for a maximum of 14.75 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Nurses and other healthcare professionals will receive a Certificate of Attendance. For information on the applicability and acceptance of Certificates of Attendance for educational activities certified for AMA PRA Category 1 Credit™ from organizations accredited by the ACCME, please consult your professional licensing board.

General Disclaimer
The statements and opinions contained in this program are solely those of the individual authors and contributors and not of the Society of Urologic Oncology. The appearance of the advertisements is not a warranty, endorsement, or approval of the products or services advertised or of their effectiveness, quality, or safety. The content of this publication may contain discussion of off-label uses of some of the agents mentioned. Please consult the prescribing information for full disclosure of approved uses. The Society of Urologic Oncology disclaims responsibility for any injury to persons or property resulting from any ideas or products referred to in the abstracts or advertisements.

Special Assistance
We encourage participation by all individuals. If you have a disability, advance notification of any special needs will help us better serve you. Call (847) 264-5901 if you require special assistance to fully participate in the meeting.
### Wednesday, November 30, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Presenter 1</th>
<th>Presenter 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 p.m. – 1:00 p.m.</td>
<td><strong>Industry Satellite Symposium Luncheon</strong></td>
<td>Texas B</td>
<td><strong>Elizabeth R. Plimack, MD, MS</strong> Fox Chase Cancer Center, Temple Health Philadelphia, PA</td>
<td><strong>Alexander Kutikov, MD, FACS</strong> Fox Chase Cancer Center, Temple Health Philadelphia, PA</td>
</tr>
<tr>
<td></td>
<td><strong>“Clinical Convergence: New Management Approaches in Bladder Cancer from Collaborative Care to Immunotherapy”</strong></td>
<td></td>
<td>------------------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

### Thursday, December 1, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Presenter 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:45 a.m. – 7:45 a.m.</td>
<td><strong>Industry Satellite Symposium Breakfast</strong></td>
<td>Texas B</td>
<td><strong>Nicholas J. Vogelzang, MD</strong> Comprehensive Cancer Centers of Nevada Las Vegas, NV</td>
</tr>
<tr>
<td></td>
<td><strong>“Introducing TECENTRIQ (atezolizumab) for Previously Treated Locally Advanced or Metastatic Urothelial Carcinoma: The First and Only FDA-Approved Anti-PDL1 Cancer Immunotherapy”</strong></td>
<td></td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>12:10 p.m. – 1:25 p.m.</td>
<td><strong>Industry Satellite Symposium Luncheon</strong></td>
<td>Texas B</td>
<td><strong>David Quinn, MBBS, PhD, FRACP, FACP</strong> Norris Comprehensive Cancer Center, University of Southern California Los Angeles, CA</td>
</tr>
<tr>
<td></td>
<td><strong>“New Understandings in Bladder Cancer and the Role of the Immune System”</strong></td>
<td></td>
<td>------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
### Thursday, December 1, 2016 cont’d

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| 12:10 p.m. – 1:25 p.m. | **Industry Satellite Symposium Luncheon**                              | Texas C  | Larry Karsh, MD  
KThe Urology Center of Colorado  
Denver, CO  
R. Jonathan Henderson, MD  
Regional Urology, LLC  
Shreveport, LA  
Christopher Evans, MD  
UC Davis  
Sacramento, CA |

### Friday, December 2, 2016

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
<th>Presenters</th>
</tr>
</thead>
</table>
| 11:50 a.m. – 1:00 p.m. | **Industry Satellite Symposium Luncheon**                              | Texas B  | Daniel Saltzstein, MD  
Urology San Antonio Research  
San Antonio, TX |
17th Annual Meeting of the Society of Urologic Oncology
Extraordinary Opportunities for Discovery
November 30 – December 2, 2016
Grand Hyatt San Antonio
San Antonio, Texas

General Scientific Program

Speakers and times are subject to change.
All sessions located in Texas DEF unless otherwise noted.
WEDNESDAY, NOVEMBER 30, 2016

OVERVIEW

10:00 a.m. - 6:00 p.m.  Registration/Information Desk Open
  Location: Texas Foyer

10:00 a.m. - 6:00 p.m.  Speaker Ready
  Location: Crockett A

2:00 p.m. - 6:00 p.m.  Exhibit Hall
  Location: Texas Foyer

4:30 p.m. - 6:00 p.m.  SUO CTC Board of Directors Meeting
  Location: Crockett C/D

6:00 p.m. - 9:00 p.m.  SUO Board of Directors Meeting
  Location: Republic A/B

6:00 p.m. - 9:00 p.m.  Young Urologic Oncologists (Y.U.O. Dinner)
  Location: Texas B/C

GENERAL SESSION

12:00 p.m. - 1:00 p.m.  Industry Satellite Symposium Luncheon
  Location: Texas B

1:00 p.m. - 2:45 p.m.  Germline Genetics Session in Urologic Malignancies
  Session Chair: Ryan P. Kopp, MD

  1:00 p.m. - 1:15 p.m.  Germline Implications of Somatic Profiling
    Speaker: Mark E. Robson, MD

  1:15 p.m. - 1:30 p.m.  Prostate SNPS; Clinical Applicability for Screening and Chemoprevention
    Speaker: Andrew K. Kader, MD, PhD

  1:30 p.m. - 1:45 p.m.  Inherited DNA-Repair Gene Mutations in Men with Metastatic Prostate Cancer
    Speaker: Peter Nelson, MD

  1:45 p.m. - 2:00 p.m.  Clinical Implications for Prostate Cancer Screening and Treatment of Men with Germline Mutations in BRCA and Other DNA Repair Genes
    Speaker: Heather H. Cheng, MD, PhD

  2:00 p.m. - 2:15 p.m.  Germline Susceptibility for Bladder Cancer
    Speaker: Jianfeng Xu, MD, PhD

  2:15 p.m. - 2:30 p.m.  The Platinum Study: Clinical Translational Research in Testicular Cancer Survivors
    Speaker: Lois B. Travis, MD, ScD

  2:30 p.m. - 2:45 p.m.  Q&A

  2:45 p.m. - 3:15 p.m.  Break/Visit Exhibits
    Location: Texas Foyer

  3:15 p.m. - 4:45 p.m.  Partial Gland Ablation for Prostate Cancer
    Moderators: Ardeshr R. Rastinehad, DO FACOS
                Sven Wenske, MD
    Session Chair: Jonathan A. Coleman, MD

  3:15 p.m. - 3:18 p.m.  Introductory Remarks
    Speaker: Ardeshr R. Rastinehad, DO FACOS

Speakers and times are subject to change.
All sessions located in Texas DEF unless otherwise noted.
3:18 p.m. - 3:30 p.m.  Partial Gland Ablation and Focal Therapies: Current Consensus and the SUO  
Speaker: Scott E. Eggener, MD  

3:30 p.m. - 3:40 p.m.  Results of Clinical Trials in PGA Therapies  
Speaker: Jonathan A. Coleman, MD  

3:40 p.m. - 3:52 p.m.  Clinical Trial Development in PGA Therapies – What Will it Take?  
Speaker: Jonathan A. Coleman, MD  

3:52 p.m. - 4:03 p.m.  Imaging and Focal Therapy: Reliable Enough?  
Speaker: Peter A. Pinto, MD  

4:03 p.m. - 4:14 p.m.  Addressing Patient Expectations  
Speaker: Behfar Ehdai, MD MPH  

4:14 p.m. - 4:25 p.m.  In Pipeline Developments for Partial Gland Treatment  
Speaker: Badrinath R. Konety, MD, MBA  

4:25 p.m. - 4:45 p.m.  Panel Q&A Led by Moderators  
Moderator: Ardeshir R. Rastinehad, DO FACOS  
Panelists: Jonathan A. Coleman, MD  
Scott E. Eggener, MD  
Behfar Ehdai, MD MPH  
Badrinath R. Konety, MD, MBA  
Peter A. Pinto, MD  

4:30 p.m. - 6:15 p.m.  *Poster Session I and Reception  
*Location: Texas A & Foyer  
*Not CME Accredited  

6:00 p.m. – 9:00 p.m.  *Young Urologic Oncologists (Y.U.O.) Dinner  
*Location: Texas B/C  
*Not CME Accredited  
Y.U.O. Members only. Membership is limited to the first seven and a half years after completion of residency.  

6:00 p.m. - 7:00 p.m.  Cocktail Hour  

7:00 p.m. - 7:10 p.m.  Welcome and Introduction  
Speaker: Todd M. Morgan, MD  

7:10 p.m. - 7:20 p.m.  Annual Business Meeting  

7:20 p.m. - 7:30 p.m.  Paper of the Year Presentation  

7:30 p.m. - 7:50 p.m.  From Idea to Clinical Trial: The Histotripsy Story  
Speaker: William W. Roberts, III, MD  

7:50 p.m. - 8:10 p.m.  Models of Translational Research to Support Drug Discovery and Development in Academia  
Speaker: Martin E. Gleave, MD, FRCSC, FACS  

8:10 p.m. - 8:30 p.m.  The Business of Cancer Diagnostics: Physician’s Guide to Working with Industry  
Speaker: Ryan Dittamore  

8:30 p.m. - 9:00 p.m.  Moderated Discussion
THURSDAY, DECEMBER 01, 2016

OVERVIEW

6:30 a.m. - 6:00 p.m.  Registration/Information Desk Open  
Location: Texas Foyer

6:30 a.m. - 6:00 p.m.  Speaker Ready  
Location: Crockett A

7:45 a.m. - 8:00 p.m.  Exhibit Hall  
Location: Texas Foyer

6:30 p.m. - 8:00 p.m.  SUO Reception and Awards  
Location: Texas Foyer

GENERAL SESSION

6:45 a.m. - 7:45 a.m.  Industry Satellite Symposium Breakfast  
Location: Texas B

8:00 a.m. - 9:00 a.m.  Kidney Cancer Session I: Localized  
Session Chair: Jonathan A. Coleman, MD

8:00 a.m. - 8:20 a.m.  Percutaneous Biopsy of Renal Masses and the Role in Kidney Cancer Management  
Moderator: William C. Huang, MD  
Panelists: Ying-Bei Chen, MD, PhD  
Todd M. Morgan, MD  
Rosaleen B. Parsons, MD, FACR, FSAR  
R. Houston Thompson, MD  
Christopher G. Wood, MD, FACS

Kidney Cancer and Physiology  
Moderators: Gennady Bratslavsky, MD  
A. Ari Hakimi, MD

8:20 a.m. - 8:35 a.m.  Genomic Classification of Non-Clear Cell Kidney Cancer and Implications for Clinical Management  
Speaker: Sumanta K. Pal, MD

8:35 a.m. - 8:50 a.m.  Renal Dysfunction and the Kidney Cancer Patient  
Speaker: Dipen J. Parekh, MD

8:50 a.m. - 9:00 a.m.  Q&A

Moderators: Gennady Bratslavsky, MD  
A. Ari Hakimi, MD

9:00 a.m. - 9:30 a.m.  State-of-the-Art Lecture 1: Genomic Profiling and Clinical Implications of Atypical Intermediate Prostate Cancer Phenotype  
Speaker: Martin E. Gleave, MD, FRCSC, FACS

9:30 a.m. - 10:30 a.m.  Prostate Cancer Session I  
Session Chair: Neeraj Agarwal, MD

Management of Castration Sensitive (CS) M0 and Oligometastatic M1 Disease

9:30 a.m. - 9:38 a.m.  Imaging Modalities to Detect Metastatic Disease  
Speaker: Przemyslaw W. Twardowski, MD

9:38 a.m. - 9:46 a.m.  Role of Salvage Therapy in M0 CSPC  
Speaker: Marc A. Dall’Era, MD

9:46 a.m. - 9:54 a.m.  Role of Definitive Therapy in Oligometastatic Disease  
Speaker: Brian F. Chapin, MD
9:54 a.m. - 10:02 a.m.  Role of Chemotherapy in Oligometastatic Disease  
Speaker: Tanya B. Dorff, MD

10:02 a.m. - 10:17 a.m.  Challenging Cases  
Moderator: Edward M. Schaeffer, MD, PhD  
Discussants: Neeraj Agarwal, MD  
Marc A. Dall’Era, MD  
Tanya B. Dorff, MD  
Isla Garraway, MD, PhD  
Martin E. Gleave, MD, FRCSC, FACS

10:17 a.m. - 10:30 a.m.  Q&A

10:30 a.m. - 11:00 a.m.  Break/Visit Exhibits  
Location: Texas Foyer

11:00 a.m. - 12:10 p.m.  Bladder Cancer Session I  
Session Chair: Jonathan Rosenberg, MD

11:00 a.m. - 11:15 a.m.  Targeted Approaches for T1 Bladder Cancer  
Speaker: Joaquim Bellmunt, MD, PhD

11:15 a.m. - 11:30 a.m.  Novel Immune Approaches to Muscle Invasive Bladder Cancer  
Speaker: Terence Friedlander, MD

11:30 a.m. - 11:45 a.m.  Novel Immune Approaches for High Risk Non-Muscle Invasive Bladder Cancer  
Speaker: Peter C. Black, MD

11:45 a.m. - 12:10 p.m.  Panel Discussion: Novel Approaches to High Grade Invasive Bladder Cancer  
Panelists: Piyush K. Agarwal, MD  
Joaquim Bellmunt, MD, PhD  
Joshua J. Meeks, MD, PhD  
Robert S. Svatek, MD, MSCI

12:10 p.m. - 1:25 p.m.  Industry Satellite Symposium Luncheon  
Location: Texas B

12:10 p.m. - 1:25 p.m.  Industry Satellite Symposium Luncheon  
Location: Texas C

1:25 p.m. - 1:55 p.m.  *SUO-CTC Session: Adjuvant Treatment of Kidney Cancer in 2016  
Speakers:  
David Y. Chen, MD  
Brian R. Lane, MD PhD FACS  
Viraj A. Master, MD, PhD, FACS  
Sumanta K. Pal, MD  
Robert G. Uzzo, MD  
Christopher G. Wood, MD, FACS  
*Not CME Accredited

1:55 p.m. - 2:25 p.m.  Huggins Lecture: Defining Prostate Cancer Subsets to Inform Targeted Management

1:55 p.m. - 2:05 p.m.  *Huggins Medal Presentation  
Speaker: Leonard G. Gomella, MD, FACS  
*Not CME Accredited

2:05 p.m. - 2:25 p.m.  Huggins Medal Lecture  
Speaker: H. Ballentine Carter, MD

2:25 p.m. - 3:25 p.m.  Testis Session  
Session Chair: Darren R. Feldman, MD

2:25 p.m. - 2:26 p.m.  Introduction  
Speaker: Bradley C. Leibovich, MD
Speakers and times are subject to change.
All sessions located in Texas DEF unless otherwise noted.

2:26 p.m. - 2:55 p.m.  Pitfalls in GCT Management
2:26 p.m. - 2:35 p.m.  Urology
Speaker: Timothy A. Masterson, MD

2:35 p.m. - 2:44 p.m.  Medical Oncology
Speaker: Darren R. Feldman, MD

2:44 p.m. - 2:53 p.m.  Pathology
Speaker: Victor Reuter, MD

2:53 p.m. - 2:55 p.m.  Q&A
Moderator: Bradley C. Leibovich, MD

2:55 p.m. - 3:10 p.m.  Optimal Management of Residual Seminoma after Chemotherapy
2:55 p.m. - 3:07 p.m.  Management of Residual Retroperitoneal Masses after Chemotherapy for Advanced Seminoma
Speaker: Andrew J. Stephenson, MD

3:07 p.m. - 3:10 p.m.  Q&A
Moderator: Bradley C. Leibovich, MD

3:10 p.m. - 3:25 p.m.  Novel Insights into Retroperitoneal Anatomy
3:10 p.m. - 3:22 p.m.  Anatomic Considerations for Nerve-Sparing in RPLND
Speaker: Nicholas Power, MD

3:22 p.m. - 3:25 p.m.  Q&A

3:25 p.m. - 3:55 p.m.  Break/Visit Exhibits
Location: Texas Foyer

3:55 p.m. - 4:55 p.m.  Health Services Session
Session Chair: Ted A. Skolarus, MD, MPH
3:55 p.m. - 4:00 p.m.  Avoiding Overuse in Urologic Cancer Management
Speaker: Ted A. Skolarus, MD, MPH

4:00 p.m. - 4:10 p.m.  Limiting Overuse in Asymptomatic Micro-Hematuria Evaluation, Is There a Safe Way Forward?
Speaker: Matthew E. Nielsen, MD, MS

4:10 p.m. - 4:20 p.m.  A Systematic Approach to Discussing Active Surveillance to Patients with Low-Risk Prostate Cancer
Speaker: Behfar Ehdaie, MD MPH

4:20 p.m. - 4:30 p.m.  Competing Trade-Offs for Kidney Cancer Surveillance
Speaker: Tracey L. Krupski, MD MPH

4:30 p.m. - 4:40 p.m.  Evidence for Colon Cancer Surveillance after Resection and Implications for Urologic Oncology
Speaker: Scott Regenbogen, MD, MPH

4:40 p.m. - 4:55 p.m.  Panel Discussion

4:55 p.m. - 6:25 p.m.  *Poster Session II and Reception
Location: Texas A & Foyer
*Not CME Accredited

6:30 p.m. - 8:00 p.m.  SUO Reception and Awards
Location: Texas Foyer
FRIDAY, DECEMBER 02, 2016

OVERVIEW

7:00 a.m. - 3:15 p.m. Registration/Information Desk Open  
**Location:** Texas Foyer

7:00 a.m. - 10:00 a.m. Exhibit Hall  
**Location:** Texas Foyer

7:00 a.m. - 8:30 a.m. Breakfast in Exhibit Hall  
**Location:** Texas Foyer

7:00 a.m. - 3:00 p.m. Speaker Ready  
**Location:** Crockett A

7:30 a.m. - 8:00 a.m. SUO Annual Business Meeting  
**Location:** Texas DEF

GENERAL SESSION

7:30 a.m. - 8:00 a.m. SUO Annual Business Meeting  
**Location:** Texas DEF

8:00 a.m. - 8:30 a.m. Young Urologic Oncologists (Y.U.O.) Program

8:00 a.m. #1 CHARACTERIZING RECURRENT AND LETHAL SMALL RENAL MASSES IN CLEAR CELL RENAL CELL CARCINOMA USING RECURRENT SOMATIC MUTATIONS  
(Presented By: Brandon Manley, MD)

8:08 a.m. #2 PROSPECTIVE MULTICENTER COMPARISON OF OPEN AND ROBOTIC RADICAL PROSTATECTOMY: THE PROST-QA/RP2 CONSORTIUM  
(Presented By: Peter Chang, MD, MPH)

8:16 a.m. #3 PREVALENCE AND PROGNOSTIC SIGNIFICANCE OF CIRCULATING TUMOR CELLS (CTC) IN CLINICALLY LOCALIZED PROSTATE CANCER  
(Presented By: Simpa Samuel Salami, MD, MPH)

8:30 a.m. - 9:30 a.m. Bladder Cancer Session II: New Directions in Bladder Cancer Research  
**Session Chair:** Jonathan Rosenberg, MD

8:30 a.m. - 8:41 a.m. Novel Predictive Biomarkers for Benefit of Immune Checkpoint Blockade  
**Speaker:** William Y. Kim, MD

8:41 a.m. - 8:52 a.m. Novel Predictive Biomarkers for Benefit of Chemotherapy Focusing on ERCC2 and Other Platinum Sensitivity Biomarkers  
**Speaker:** Gopa Iyer, MD

8:52 a.m. - 9:03 a.m. Novel Predictive Biomarkers for Radiotherapy  
**Speaker:** Kent W. Mouw, MD, PhD

9:03 a.m. - 9:21 a.m. Novel Bladder Cancer Models – Patient-Derived Xenografts, Organoids  
**Organoids**  
**Speaker:** Michael M. Shen, Ph.D.

**Patient-Derived Xenografts**  
**Speaker:** Chong-Xiang Pan, MD, PhD

9:21 a.m. - 9:30 a.m. Q&A  
**Panelists:** Gopa Iyer, MD  
William Y. Kim, MD  
Kent W. Mouw, MD, PhD  
Chong-Xiang Pan, MD, PhD  
Michael M. Shen, Ph.D.
Speakers and times are subject to change.  
All sessions located in Texas DEF unless otherwise noted.

9:30 a.m. - 10:00 a.m.  Break/Visit Exhibits  
Location: Texas Foyer

10:00 a.m. - 11:00 a.m.  Kidney Cancer Session II: Advanced Disease  
Session Chair: Jonathan A. Coleman, MD

10:00 a.m. - 10:10 a.m.  Therapeutic Drug Trials in Kidney Cancer in the Immune-Oncology Era: Update on Current Status and Rationale for Combination Trials  
Speaker: Eric Jonasch, MD

10:10 a.m. - 10:20 a.m.  Targeted Therapies and Personalized Medicine in Kidney Cancer  
Speaker: Toni Choueiri, MD, MS

10:20 a.m. - 10:35 a.m.  Panel Discussion/Q&A  
Moderator: Allan J. Pantuck, MD  
Panelists: Toni Choueiri, MD, MS  
Surena F. Matin, MD  
Adam R. Metwalli, MD

10:35 a.m. - 11:00 a.m.  Panel on Surgical Management for Advanced Kidney Cancer: Controversies in Case Management  
Moderator: Stephen A. Boorjian, MD  
Panelists: Mihir M. Desai, MD  
Eric Jonasch, MD  
Bradley C. Leibovich, MD  
Vitaly Margulis, MD

11:00 a.m. - 11:20 a.m.  EAU Lecture: ProtecT Trial  
Speaker: James Catto, MB, ChB, PhD, FRCS

11:20 a.m. - 11:50 a.m.  State-of-the-Art Lecture: Advances in the Management of Metastatic RCC  
Speaker: Toni Choueiri, MD, MS

11:50 a.m. - 1:00 p.m.  Industry Satellite Symposium Luncheon  
Location: Texas B

1:00 p.m. - 2:00 p.m.  Prostate Cancer Session II  
Session Chair: Sumanta K. Pal, MD

Advances in Prostate Cancer Biology and Therapeutic Implications

1:00 p.m. - 1:10 p.m.  Mechanisms of Resistance to AR: AR Variants and GR  
Speaker: Vivek K. Arora, MD, PhD

1:10 p.m. - 1:20 p.m.  Targeting DNA Repair Pathways in Prostate Cancer  
Speaker: Wassim Abida, MD, PhD

1:20 p.m. - 1:30 p.m.  SLCO2B1: Biology & Therapeutic Implications  
Speaker: Lauren C. Harshman, MD

1:30 p.m. - 1:40 p.m.  Potential Therapeutic Approaches to Neuroendocrine Prostate Cancer  
Speaker: Himisha Beltran, MD

1:40 p.m. - 1:50 p.m.  Immunotherapy for Prostate Cancer: What is the Way Forward?  
Speaker: Evan Y. Yu, MD

1:50 p.m. - 2:00 p.m.  Q&A

2:00 p.m. - 2:45 p.m.  Oral Abstract Session  
Moderator: Behfar Ehdaie, MD MPH

2:00 p.m. #4  COMPREHENSIVE GENOMIC PROFILING OF NON-MUSCLE INVASIVE BLADDER CANCER WITH NEXT GENERATION SEQUENCING  
(Presented By: Eugene J. Pietzak III, MD)
Speakers and times are subject to change.
All sessions located in Texas DEF unless otherwise noted.

2:07 p.m.      #5  LYMPH NODE YIELD AS A PREDICTOR OF OVERALL SURVIVAL FOLLOWING REGIONAL LYMPHADENECTOMY FOR PENILE CANCER  
(Presented By: Chad R. Ritch, MD, MBA)

2:14 p.m.      #6  EVALUATION OF THE DECIPHER PROSTATE CANCER CLASSIFIER TO PREDICT METASTASIS AND DISEASE-SPECIFIC MORTALITY FROM GENOMIC ANALYSIS OF DIAGNOSTIC PROSTATE NEEDLE BIOPSY SPECIMENS  
(Presented By: Eric A. Klein, MD)

2:21 p.m.      #7  THE ROLE FOR RESECTION OF POST-CHEMOTHERAPY RESIDUAL LIVER MASSES IN THE MANAGEMENT OF NON-SEMINOMATOUS GERM CELL TUMOR  
(Presented By: Eugene J. Pietzak, III, MD)

2:28 p.m.      #8  UROLOGIST PRACTICE STRUCTURE AND VALUE OF PROSTATE CANCER CARE  
(Presented By: Lindsey Allison Herrel, MD, MS)

2:35 p.m.      #9  PROGNOSTIC VALUE OF PD-1 AND PD-L1 EXPRESSION IN PATIENTS WITH HIGH-GRADE UROTHELIAL CARCINOMA OF THE UPPER URINARY TRACT  
(Presented By: Laura-Maria Krabbe, MD)

2:45 p.m. - 3:15 p.m.  Research Scholars Update

2:45 p.m. - 3:00 p.m.  Research Scholar Update I: The Impact of Clinical and Demographic Factors on Risk-Adjusted Outcomes for Urologic Cancer Surgery  
Speaker: Anobel Y. Odisho, MD, MPH

3:00 p.m. - 3:15 p.m.  Research Scholar Update II: The Prognostic and Therapeutic Value of Genomic Alterations and PI3K/AKT/mTOR Aberrations in Upper Tract Urothelial Carcinoma  
Speaker: Aditya Bagrodia, MD

Disclaimer Statement
Statements, opinions and results of studies contained in the program are those of the presenters/authors and do not reflect the policy or position of the SUO nor does the SUO provide any warranty as to their accuracy or reliability.

Every effort has been made to faithfully reproduce the abstracts as submitted. However, no responsibility is assumed by the SUO for any injury and/or damage to persons or property from any cause including negligence or otherwise, or from any use or operation of any methods, products, instruments or ideas contained in the material herein.
In accordance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. Therefore, it is mandatory that both the program planning committee and speakers complete disclosure forms. Members of the program committee were required to disclose all financial relationships and speakers were required to disclose any financial relationship as it pertains to the content of the presentations. The ACCME defines a ‘commercial interest’ as “any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients”. It does not consider providers of clinical service directly to patients to be commercial interests. The ACCME considers “relevant” financial relationships as financial transactions (in any amount) that may create a conflict of interest and occur within the 12 months preceding the time that the individual is being asked to assume a role controlling content of the educational activity.

ACS is also required, through our joint providership partners, to manage any reported conflict and eliminate the potential for bias during the activity. All program committee members and speakers were contacted and the conflicts listed below have been managed to our satisfaction. However, if you perceive a bias during a session, please report the circumstances on the session evaluation form.

Please note we have advised the speakers that it is their responsibility to disclose at the start of their presentation if they will be describing the use of a device, product, or drug that is not FDA approved or the off-label use of an approved device, product, or drug or unapproved usage.

The requirement for disclosure is not intended to imply any impropriety of such relationships, but simply to identify such relationships through full disclosure and to allow the audience to form its own judgments regarding the presentation.

<table>
<thead>
<tr>
<th>PLANNING COMMITTEE / CME ORGANIZERS</th>
<th>DISCLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>ABATE-SHEN, PhD, Cory</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
</tr>
<tr>
<td>ABEL, MD, E Jason</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
</tr>
<tr>
<td>APOLO, MD, Andrea</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
</tr>
<tr>
<td>ARORA, MD, PhD, Vivek</td>
<td>ORIC Pharmaceuticals</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
</tr>
<tr>
<td>BELLMUNT, MD, PhD, Joaquim</td>
<td>Sanofi, Merck</td>
</tr>
<tr>
<td>CME Organizer</td>
<td>Pfizer</td>
</tr>
<tr>
<td></td>
<td>Genentech</td>
</tr>
<tr>
<td></td>
<td>Novartis</td>
</tr>
<tr>
<td>Faculty Disclosure Report</td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PLANNING COMMITTEE / CME ORGANIZERS</th>
<th>DISCLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>BLACK, MD, Peter</td>
<td>Janssen</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td>Astellas</td>
</tr>
<tr>
<td></td>
<td>Bayer, BioCancell, Lilly, Sitka</td>
</tr>
<tr>
<td></td>
<td>New B Innovation</td>
</tr>
<tr>
<td></td>
<td>AbbVie, AstraZeneca</td>
</tr>
<tr>
<td></td>
<td>Sanofi</td>
</tr>
<tr>
<td></td>
<td>Merck</td>
</tr>
<tr>
<td></td>
<td>Roche/Genentech</td>
</tr>
<tr>
<td>CARVER, MD, Brett</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
</tr>
<tr>
<td>COLEMAN, MD, Jonathan</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer, Speaker, Panelist</td>
<td></td>
</tr>
<tr>
<td>COOPERBERG, MD, MPH, Matthew</td>
<td>Myriad Genetics</td>
</tr>
<tr>
<td>CME Organizer</td>
<td>Astellas, Dendreon</td>
</tr>
<tr>
<td>DAHM, MD, MHSc, FACS, Philipp</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
</tr>
<tr>
<td>DALL'ERA, MD, Marc</td>
<td>Genomic Health, MDxHealth</td>
</tr>
<tr>
<td>CME Organizer, Speaker, Panelist</td>
<td>Bayer, Janssen</td>
</tr>
<tr>
<td></td>
<td>GenomeDx</td>
</tr>
<tr>
<td>EGGENER, MD, Scott</td>
<td>NxThera</td>
</tr>
<tr>
<td>CME Organizer, Speaker, Panelist</td>
<td>Profound Medical</td>
</tr>
<tr>
<td>EHDAIE, MD MPH, Behfar</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
</tr>
<tr>
<td>FELDMAN, MD, Darren</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
</tr>
<tr>
<td>PLANNING COMMITTEE / CME ORGANIZERS</td>
<td>DISCLOSURE</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>GLEAVE, MD, FRCSC, FACS, Martin CME Organizer, Speaker, Moderator, Panelist</td>
<td>OncoGenex Tech</td>
</tr>
<tr>
<td></td>
<td>Janssen, Bayer, Astellas, AstraZeneca</td>
</tr>
<tr>
<td>GORE, MD, MS, John CME Organizer, Abstract Presenter</td>
<td>GenomeDx</td>
</tr>
<tr>
<td>GRUBB, MD, Robert CME Organizer</td>
<td>Argos Therapeutics, Heat Biologics</td>
</tr>
<tr>
<td>HAMILTON, MD, Robert CME Organizer</td>
<td>Abbvie</td>
</tr>
<tr>
<td></td>
<td>Astellas, Janssen</td>
</tr>
<tr>
<td></td>
<td>Bayer</td>
</tr>
<tr>
<td>IYER, MD, Gopa CME Organizer</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>KADER, MD, PhD, Andrew CME Organizer, Speaker</td>
<td>SNP Bio</td>
</tr>
<tr>
<td>KAPOOR, MD, Anil CME Organizer</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>KONETY, MD, MBA, Badrinath CME Organizer</td>
<td>Genomic Health, Photocure, Merck, Spectrum</td>
</tr>
<tr>
<td>KOPP, MD, Ryan CME Organizer</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>LEE, MD, Cheryl CME Organizer</td>
<td>Endo Pharmaceuticals</td>
</tr>
<tr>
<td></td>
<td>MedEdicus</td>
</tr>
<tr>
<td>LEIBOVICH, MD, Bradley CME Organizer, Speaker, Moderator, Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>LERNER, MD, Seth CME Organizer</td>
<td>BioCancell and Vaxxion, UroGen, Telesta</td>
</tr>
<tr>
<td></td>
<td>Sitka, Neucleixx, Taris, Ferring</td>
</tr>
<tr>
<td></td>
<td>ENDO, FKD, Viventia, Roche/Genentech, Genome Dx</td>
</tr>
<tr>
<td></td>
<td>Bladder Cancer Journal</td>
</tr>
<tr>
<td>MASTerson, MD, Timothy CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>PLANNING COMMITTEE / CME ORGANIZERS</td>
<td>DISCLOSURE</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| **MATIN, MD, Surena**  
CME Organizer, Panelist | Toaki Pharmaceuticals  
Consultant  
Advisory Board  
AT&T Foundation  
Grants/Research Support  
PI  
Theracoat Limited  
Consultant  
Consultant |
| **MCDERMOTT, MD, David**  
CME Organizer | BMS, Pfizer, Merck, Novartis, Eisai, Exelixis, Array BioPharm, Genentech BioOncology  
Consultant  
Kidney Cancer Research  
Prometheus  
Grants/Research Support  
Research |
| **MOSTAGHEL, MD, PhD, Elahe**  
CME Organizer | Nothing to disclose |
| **PAL, MD, Sumanta**  
CME Organizer, Speaker, Moderator | Genentech  
Honorarium  
Speaker  
Pfizer, Novartis, Genentech, Exelixis, GSK  
Consultant  
Consulting Fees |
| **PANTUCK, MD, Allan**  
CME Organizer | Nothing to disclose |
| **PATRICK, MD, Allan**  
CME Organizer | Nothing to disclose |
| **PETROS, MD, John**  
CME Organizer | Nothing to disclose |
| **PINTO, MD, Peter**  
CME Organizer | Photocure  
Consultant  
Consulting Fee |
| **RATHMELL, MD, PhD, W. Kimryn**  
CME Organizer | Nothing to disclose |
| **ROSENBERG, MD, Jonathan**  
CME Organizer | AstraZeneca, Roche/Genentech, BMS, Sanofi, Agensys  
Consultant  
Consulting Fee  
Merck  
Consultant  
Consulting Fee; Stock Held  
Ilumina  
Stock Shareholder (directly purchased)  
None  
Eli Lilly  
Consultant  
Consultant |
| **SCHAEFFER, MD, PhD, Edward**  
CME Organizer | Myriad Genetics  
Honorarium  
Advisory Board Member |
| **SHEINFELD, MD, Joel**  
CME Organizer | Nothing to disclose |
| **SKINNER, MD, Eila**  
CME Organizer | Nothing to disclose |
## Faculty Disclosure Report

### Planning Committee / CME Organizers

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Role with Commercial Interest</th>
<th>Nature of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKOLARUS, MD, MPH, Ted</td>
<td>UpToDate</td>
<td>Honorarium</td>
<td>Author</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMITH, MD, MS, Angela</td>
<td>Bracket</td>
<td>Consultant</td>
<td>Consultant</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEPHENSON, MD, Andrew</td>
<td>Photocure</td>
<td>Consultant</td>
<td>Consultant</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STROPE, MD, MPH, Seth</td>
<td>Genomic Health</td>
<td>Consultant</td>
<td>Consulting Fee</td>
</tr>
<tr>
<td>CME Organizer</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Speakers / Moderators / Panelists / Discussants / Co-Authors

<table>
<thead>
<tr>
<th>Name</th>
<th>Company</th>
<th>Role with Commercial Interest</th>
<th>Nature of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABIDA, MD, PhD, Wassim</td>
<td>AstraZeneca,</td>
<td>Grants/Research Support</td>
<td>PI on study</td>
</tr>
<tr>
<td>Speaker</td>
<td>ZenithEpigenetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clovis Oncology</td>
<td>Honorarium</td>
<td>Advisory</td>
</tr>
<tr>
<td>AGARWAL, MD, Neeraj</td>
<td>Pfizer, Exelixis, Argos, Eisai,</td>
<td>Consultant</td>
<td>Ad Board</td>
</tr>
<tr>
<td>Panelist</td>
<td>Medivation, Novartis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGARWAL, MD, Piyush</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panelist</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARORA, MD, PhD, Vivek</td>
<td>ORIC Pharmaceuticals</td>
<td>Consultant</td>
<td>Consultant</td>
</tr>
<tr>
<td>CME Organizer, Speaker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BELTRAN, MD, Himisha</td>
<td>Millenium/Takeda</td>
<td>Grants/Research Support</td>
<td>Research</td>
</tr>
<tr>
<td>Speaker</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| BLACK, MD, Peter            | Janssen                       | Honorarium                     | Advisory Board; Speaker; Clinical Trial; Travel |
| CME Organizer, Speaker     | Astellas                      | Honorarium                     | Advisory Board; Clinical Trial                   |
|                             | Bayer, BioCancell, Lilly, Sitka| Honorarium                     | Advisory Board                                      |
|                             | New B Innovation              | Grants/Research Support        | Researcher                                          |
|                             | AbbVie, AstraZeneca           | Honorarium                     | Advisory Board, Speaker                             |
|                             | Sanofi                        | Honorarium                     | Advisory Board; Travel to EAU 2016                  |
|                             | Merck                         | Honorarium                     | Advisory Board; Author of White Paper              |
|                             | Roche/Genentech               | Grants/Research Support        | Clinical Trial Design                               |</p>
<table>
<thead>
<tr>
<th>SPEAKERS / MODERATORS / PANELISTS / DISCUSSANTS / CO-AUTHORS</th>
<th>DISCLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>BOORJIAN, MD, Stephen Moderator</td>
<td>Astellas</td>
</tr>
<tr>
<td>BRATSLAVSKY, MD, Gennady Moderator</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CARTER, MD, Herbert Speaker</td>
<td>American Board of Urology</td>
</tr>
<tr>
<td>CATTO, MB, ChB, PhD, FRCS, James Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CHANG, MD, MPH, Peter Abstract Presenter</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CHAPIN, MD, Brian Speaker</td>
<td>Blue Earth Diagnostics</td>
</tr>
<tr>
<td>CHEN, MD, PhD, Ying-Bei Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>CHENG, MD, PhD, Heather Speaker</td>
<td>Inovio</td>
</tr>
<tr>
<td>CHOUERI, MD, MS, Toni Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>COLEMAN, MD, Jonathan CME Organizer, Speaker, Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>DALL’ERA, MD, Marc CME Organizer, Speaker, Panelist</td>
<td>Genomic Health, MDxHealth</td>
</tr>
<tr>
<td></td>
<td>Bayer, Janssen</td>
</tr>
<tr>
<td></td>
<td>GenomeDx</td>
</tr>
<tr>
<td>DESAI, MD, Mihir Panelist</td>
<td>Auris Robotics, Procept Biorobotics</td>
</tr>
<tr>
<td>DORFF, MD, Tanya Speaker, Panelist</td>
<td>Astellas, Exelixis</td>
</tr>
<tr>
<td></td>
<td>Bayer</td>
</tr>
<tr>
<td></td>
<td>Dendreon</td>
</tr>
<tr>
<td></td>
<td>Pfizer</td>
</tr>
<tr>
<td>EGGENER, MD, Scott CME Organizer, Speaker, Panelist</td>
<td>NxThera</td>
</tr>
<tr>
<td></td>
<td>Profound Medical</td>
</tr>
<tr>
<td>EHDAIE, MD MPH, Behfar CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>FELDMAN, MD, Darren CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>SPEAKERS / MODERATORS / PANELISTS / DISCUSSANTS / CO-AUTHORS</td>
<td>DISCLOSURE</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>FRIEDLANDER, MD, Terence Speaker</td>
<td>Janssen, Novartis</td>
</tr>
<tr>
<td></td>
<td>Sanofi-Aventis, Dendreon, Astellas</td>
</tr>
<tr>
<td></td>
<td>EMD Serono</td>
</tr>
<tr>
<td></td>
<td>Genentech</td>
</tr>
<tr>
<td>GARRAWAY, MD, PhD, Isla Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>GLEAVE, MD, FRCSC, FACS, Martin CME Organizer, Speaker, Moderator, Panelist</td>
<td>OncoGenex Tech</td>
</tr>
<tr>
<td></td>
<td>Janssen, Bayer, Astellas, AstraZeneca</td>
</tr>
<tr>
<td>GORE, MD, MS, John CME Organizer, Abstract Presenter</td>
<td>GenomeDx</td>
</tr>
<tr>
<td>HAKIMI, MD, Abraham Moderator</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>HARSHMAN, MD, Lauren Speaker</td>
<td>Dendreon</td>
</tr>
<tr>
<td></td>
<td>Medivation/Astellas, Bayer, Sotio, Genentech, Dendreon, Bristol-Myers Squibb, Janssen, Merck</td>
</tr>
<tr>
<td></td>
<td>Pfizer, Kew</td>
</tr>
<tr>
<td></td>
<td>Theragene</td>
</tr>
<tr>
<td>HERREL, MD, MS, Lindsey Abstract Presenter</td>
<td>ArborMetrix</td>
</tr>
<tr>
<td>HUANG, MD, William Moderator</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>JONASCH, MD, Eric Panelist</td>
<td>BMS, Novartis</td>
</tr>
<tr>
<td></td>
<td>Pfizer, Exelixis</td>
</tr>
<tr>
<td>KADER, MD, PhD, Andrew CME Organizer, Speaker</td>
<td>SNP Bio</td>
</tr>
<tr>
<td>KIM, MD, William Speaker, Panelist</td>
<td>Bristol Myers Squibb</td>
</tr>
<tr>
<td>KRABBE, MD, Laura-Maria Abstract Presenter</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>KRUPSKI, MD MPH, Tracey Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>SPEAKERS / MODERATORS / PANELISTS / DISCUSSANTS / CO-AUTHORS</td>
<td>DISCLOSURE</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>LEIBOVICH, MD, Bradley CME Organizer, Speaker, Moderator, Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MANLEY, MD, Brandon Abstract Presenter</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MARGULIS, MD, Vitaly Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MASTERNON, MD, Timothy CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MATIN, MD, Surena CME Organizer, Panelist</td>
<td>Toaki Pharmaceuticals Consultant</td>
</tr>
<tr>
<td>MANLEY, MD, Brandon Abstract Presenter</td>
<td>AT&amp;T Foundation Grants/Research Support PI</td>
</tr>
<tr>
<td>MARGULIS, MD, Vitaly Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MASTERNON, MD, Timothy CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MATIN, MD, Surena CME Organizer, Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MEEKS, MD, PhD, Joshua Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>METWALLI, MD, Adam Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>MORGAN, MD, Todd Panelist</td>
<td>Myriad Genetics Grants/Research Support PI</td>
</tr>
<tr>
<td>MOUW, MD, PhD, Kent Speaker, Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>NELSON, MD, Peter Speaker</td>
<td>Astellas, Janssen Consultant Advisor</td>
</tr>
<tr>
<td>NIELSEN, MD, MS, Matthew Speaker</td>
<td>Grand Rounds Consultant Medical Advisory Board</td>
</tr>
<tr>
<td>ODISHO, MD, MPH, Anobel Speaker, Abstract Presenter</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>PAL, MD, Sumanta CME Organizer, Speaker, Moderator</td>
<td>Genentech Honorarium Speaker</td>
</tr>
<tr>
<td>PAN, MD, PhD, Chong-Xiang Speaker, Panelist</td>
<td>Pfizer, Novartis, Genentech, Exelxis, GSK Consultant Consulting Fees</td>
</tr>
<tr>
<td>PAN, MD, PhD, Chong-Xiang Speaker, Panelist</td>
<td>Pandomedx, Accelerated Medical Diagnostics Other Financial or Material Support Co-Founder and Shareholder</td>
</tr>
<tr>
<td>PAREKH, MD, Dipen Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>PARSONS, MD, FACR, FSAR, Rosaleen Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>POWER, MD, Nicholas Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>SPEAKERS / MODERATORS / PANELISTS / DISCUSSIONANTS / CO-AUTHORS</td>
<td>DISCLOSURE</td>
</tr>
<tr>
<td>-------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>RASTINEHAD, DO FACOS, Ardeshir Speaker, Moderator</td>
<td>AstraZeneca, McKesson</td>
</tr>
<tr>
<td></td>
<td>AstraZeneca</td>
</tr>
<tr>
<td></td>
<td>AstraZeneca</td>
</tr>
<tr>
<td></td>
<td>AbbVie, Biomarin, Medivation</td>
</tr>
<tr>
<td></td>
<td>Myriad</td>
</tr>
<tr>
<td>ROBSON, MD, Mark Speaker</td>
<td>UpToDate</td>
</tr>
<tr>
<td></td>
<td>Bracket</td>
</tr>
<tr>
<td>SHEN, PhD, Michael Speaker, Panelist</td>
<td>Genomic Health</td>
</tr>
<tr>
<td></td>
<td>Rapamycin Holdings, INC</td>
</tr>
<tr>
<td>SKOLARUS, MD, MPH, Ted CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>STEPHENSON, MD, Andrew CME Organizer, Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>SVATEK, MD, MSCI, Robert Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>THOMPSON, MD, R. Houston Panelist</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>TRAVIS, MD, ScD, Lois Speaker</td>
<td>Nothing to disclose</td>
</tr>
<tr>
<td>WENSKE, MD, Sven Moderator</td>
<td>Nothing to disclose</td>
</tr>
</tbody>
</table>

Back to Table of Contents ↑
<table>
<thead>
<tr>
<th>SPEAKERS / MODERATORS / PANELISTS / DISCUSSANTS / CO-AUTHORS</th>
<th>DISCLOSURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Company</td>
</tr>
<tr>
<td>WOOD, MD, FACS, Christopher Panelist</td>
<td>Pfizer, Argos Pharmaceuticals, GlaxoSmithKline, Boehringer Ingelheim, Ono Pharmaceuticals, Novartis</td>
</tr>
<tr>
<td>XU, MD, PhD, Jianfeng Speaker</td>
<td>NorthShore University HealthSystem</td>
</tr>
<tr>
<td>YU, MD, Evan Speaker</td>
<td>Astellas, Bayer, Dendreon</td>
</tr>
<tr>
<td></td>
<td>Bayer, Dendreon, Janssen</td>
</tr>
</tbody>
</table>
Podium #1
CHARACTERIZING RECURRENT AND LETHAL SMALL RENAL MASSES IN CLEAR CELL RENAL CELL CARCINOMA USING RECURRENT SOMATIC MUTATIONS
Brandon Manley, MD¹; Ed Reznik, PhD¹; Maria Becerra, MD¹; Jozefina Casuscilli, MD¹; Daniel Tennenbaum, BS¹; Mazyar Ghanaat, MD¹; Mahyar Kashan, BA¹; Almedina Redzetamovic, BS¹; Yusuke Sato, MD²; Maria Arcila, MD¹; Martin Voss, MD¹; Darren Feldman, MD¹; Robert Motzer, MD¹; Paul Russo, MD¹; Jonathan Coleman, MD¹; James Heish, MD¹ and Ari Hakimi, MD¹
¹Memorial Sloan Kettering Cancer Center, New York, NY; ²Department of Urology, Graduate School of Medicine, University of Tokyo, Tokyo, Japan
(Presented By: Brandon Manley, MD)

Introduction: Management of small renal masses (SRMs) may include active surveillance (AS) in selected patients. Clear cell renal cell carcinoma (ccRCC) is the most common histology among these SRMs. Current AS algorithms largely rely on growth parameters of the masses measured over time. We sought to identify genomic biomarkers that could potentially refine the management of SRMs, especially in those patients being evaluated for AS.

Methods: We identified patients who had SRM’s (less than 4cm) at time of surgery and had sequencing performed on their primary tumor from four databases. This included patients from three publicly available cohorts, The Cancer Genome Atlas (n=110), University of Tokyo (n=38), The International Cancer Genome Consortium (n=32) and from our own institutional prospective database (n=25). We analyzed the frequency of recurrent somatic mutations among the entire cohort. Analyzing mutations that occurred in at least 5% of patients, we compared the frequency of these mutations between patients who had recurrence or death of disease during follow up to those who did not using a Chi squared analysis. Kaplan-Meier survival plots were generated for these frequently mutated genes. Analysis was adjusted for multiple testing.

Results: A total of 205 patients were available for analysis. Median follow up was 45 months among survivors. Mutations in VHL, PBRM1, SETD2, BAP1, KDM5C and MTOR were present in more than 5% of tumors. 25 patients (12.2%) had recurrence or died of their disease. Mutations in KDM5C were found to be significantly more common in those who had recurrence or died of their disease (24% vs. 4%; adjusted p= 0.02). Survival analysis revealed mutations in both KDM5C (adjusted p =<0.01) and SETD2 (adjusted p =0.04) were associated with inferior cancer specific survival (Figure 1).

Conclusion: We identified two mutations, KDM5C and SETD2, which are significantly associated with decreased survival among patients with SRM’s. Use of these potential genomic biomarkers via percutaneous biopsy may improve risk stratification and selection of patients with SRMs for AS and should be evaluated in a prospective fashion.

Funding: Ruth L. Kirschstein National Research Service Award T32CA082088
Introduction: Comparisons of robot-assisted laparoscopic (RALP) and open radical prostatectomy (ORP) are often limited by retrospective approaches, non-patient-reported health-related quality of life (HRQOL) evaluations, or single center/surgeon analyses. Herein we present a prospective, multicenter comparison of RALP and ORP.

Methods: We evaluated men from two prospective, multicenter, longitudinal studies treated from 2003-2012 with a pre-specified analytic goal of comparing RALP (n=549) and ORP (n=545). Subjects completed EPIC-26 HRQOL questionnaires at pre-treatment, 2, 6, 12, and 24 months post-operatively, with follow-up compliance >85%. We used univariate mixed models with cohort as a random effect to assess differences in baseline demographic and cancer characteristics, and the chi-square test to evaluate differences in surgical and peri-operative outcomes between surgical approaches. We evaluated for predictors of HRQOL domain score changes over time using semi-parametric generalized estimated equation modeling with compound symmetrical correlation structure, controlling for nesting within cohort.

Results: We found no significant differences in demographics, cancer characteristics, pathologic T stage, or margin status between surgical approaches. ORP subjects were more likely than RALP subjects to undergo lymphadenectomy (89% vs 47%; p<0.01) and nerve sparing (94% vs 89%; p<0.01). RALP subjects had less mean intraoperative blood loss (192 vs 805 mL; p<0.01), shorter mean hospital stay (1.6 vs 2.1 days; p<0.01), and fewer blood transfusions (1% vs 4%; p<0.01), wound infections (2% vs 4%; p=0.02), other infections (1% vs 4%; p<0.01), deep vein thrombosis (DVT; 0.5% vs 2%; p=0.04), and unplanned catheterizations (3% vs 7%; p<0.01) than ORP subjects. RALP subjects reported less surgical pain (p=0.04), less pain interference with activity (p<0.01) and higher incision satisfaction (p<0.01). Surgical approach was not a significant predictor of HRQOL change over time in any of the five EPIC-26 HRQOL domains.

Conclusion: In this multicenter, prospective evaluation of ORP and RALP, surgical approach was not a significant predictor of post-surgical HRQOL change. RALP subjects had superior incisional/pain outcomes, shorter hospital stays, and fewer post-surgical complications such as blood transfusions, infections, DVTs, and unplanned catheterizations. These results should help guide treatment counseling and be integrated into future cost analyses.
Podium #3
PREVALENCE AND PROGNOSTIC SIGNIFICANCE OF CIRCULATING TUMOR CELLS (CTC) IN CLINICALLY LOCALIZED PROSTATE CANCER
Simpa Salami, MD, MPH¹; Udit Singhal, MD¹; Daniel E. Spratt, MD¹; Ganesh S. Palapattu, MD¹; Brent Hollenbeck, MD¹; Ryon Graf, PhD²; Jessica Louw, BS²; Adam Jendrisak, BS, MBA²; Lyndsey Dugan, BS²; Yipeng Wang, MD, PhD²; Ryan Dittamore, BS, MBA²; Felix Y. Feng, MD¹ and Todd M. Morgan, MD¹
¹University of Michigan, Ann Arbor, MI; ²Epic Sciences, San Diego, CA
(Presented By: Simpa S. Salami, MD, MPH)

Introduction: Previous efforts to measure circulating tumor cells (CTCs) in localized PCa have been unsuccessful due to low clinical sensitivity. The Epic Sciences CTC platform has demonstrated the potential for improved sensitivity compared to other platforms in metastatic castration resistant PCa. We sought to better understand the presence of CTCs in the setting of untreated, high-risk localized disease and to evaluate their prognostic impact.

Methods: 45 blood samples from NCCN high-risk PCa patients were collected prior to therapy between 2013-2015. All patients completed CT and bone scan staging demonstrating no evidence of metastatic disease prior to undergoing local therapy (either radiotherapy [XRT] +/- androgen deprivation therapy [ADT] or radical prostatectomy [RP]) with curative intent. Samples were analyzed with the Epic Sciences platform. Blood samples were characterized for traditional CTCs (CK+, intact nuclei) and CTC subtypes inclusive of CK- CTCs, CTC clusters and apoptotic CTCs (fragmented nuclei). CTC counts were correlated with biochemical recurrence (BCR) using Fisher exact. BCR was defined as PSA of ≥ 0.2 ng/ml and included those patients did not experience a nadir PSA post-RP <0.2 ng/ml.

Results: Of the 45 patients, 26 underwent RP and 19 underwent XRT +/- ADT. The median follow-up was 301 days (range 20-657). A diversity of CTC subtypes were observed pre-therapy: >1 CTC/mL was observed in 62% (28/45) of patients and >3 CTC/mL in 31% of patients. BCR events occurred more frequently in the RP group (14/26 vs 1/19 pts), with most patients in XRT group remaining on ADT. A higher proportion of subsequent metastatic events were observed in the RP group (4/26 vs 1/19 pts). Among RP patients, the presence of >2.5 CTC/mL appeared to be associated with an increase in the risk of BCR (OR=6.88, p=0.058). A BCR prediction classifier was developed based on CTC CK expression, AR expression and nuclear area, with prediction sensitivity 33% and specificity 92%.

Conclusion: CTCs can be identified in the majority of high-risk PCa patients prior to definitive therapy using the Epic Sciences platform. Utilization of CTCs for phenotypic and genomic characterization may provide an additional means of risk stratifying newly diagnosed patients with high risk disease. If confirmed in a larger independent cohort with longer follow-up, CTCs pre-therapy may help predict BCR and potentially identify patients who could require multimodality therapy.
Podium #4
COMPREHENSIVE GENOMIC PROFILING OF NON-MUSCLE INVASIVE BLADDER CANCER WITH NEXT GENERATION SEQUENCING
Eugene Pietzak, MD; Eugene Cha, MD; Aditya Bagrodia, MD; Gopa Iyer, MD; Qiang Li, MD; Priscilla Baez, MS; Michael Berger, PhD; Ahmet Zehir, PhD; Nikolaus Schultz, PhD; Dean Bajorin, MD; Jonathan Rosenberg, MD; Guido Dalbagni, MD; David Solit, MD; Hikmat Al-Ahmadie, MD and Bernard Bochner, MD
Memorial Sloan Kettering Cancer, New York, NY
(Presented By: Eugene J. Pietzak, III, MD)

Introduction: To identify genetic alterations with potential clinical implications in a well annotated pre-treatment non-muscle invasive bladder cancer (NMIBC) cohort using a Next Generation Sequencing assay.

Methods: 105 patients on a prospective IRB approved protocol had their pre-treatment index NMIBC tumor and matched germline DNA undergo sequencing with a 341, or updated 410, cancer-associated gene panel in a CLIA-certified clinical laboratory. A genitourinary pathologist reviewed representative H&E slides to confirm grade, stage, and histology. Restaging TUR was performed in all HGT1 tumors. Data from 40 pre-treatment primary muscle invasive tumor specimens (T2=21; T3=16; T4=3) enrolled onto the same institutional sequencing protocol are also provided for comparison purposes.

Results: To characterize the genomic landscape of NMIBC, we analyzed 105 tumors across the disease spectrum including LGTa (n=23), HG (n=12), HG (n=32) and HGT1 (n=38). The median age of the NMIBC cohort was 70 years (IQR=63, 74), 82% were male, and 84% had a smoking history. Recurrence occurred in 43% of NMIBC patients at a median follow-up of 3.6 years. The most frequently mutated genes in NMIBC tumors were the TERT promoter (74%), FGFR3 (50%), KDM6A (47%), ARID1A (28%), PIK3CA (27%), KMT2D (24%), STAG2 (21%), and CDKN2A (17%). Alterations in chromatin modifying genes were highly prevalent, with 81% of the NMIBC tumors harboring at least one inactivating alteration. Alterations in the RTK/RAS/PIK3 pathway were present in 83% of NMIBC tumors, including high-grade NMIBC tumors where 58% had alterations in either ERBB2 or FGFR3. An expected stepwise increase in TP53/MDM2 alteration rates was seen (8% in LGTa, 22% in HG (45% in HG1, and 76% in MIBC). Alterations in the cell cycle regulation pathway were also common, with patterns of mutual exclusivity observed between CDKN1A and CCND1, between CDKN1A and CDKN2A, but not between CDKN2A and CCND1.

Conclusion: The majority of pre-treatment NMIBC tumors had at least one potentially “actionable” alteration. Next Generation Sequencing of NMIBC tumors provides a comprehensive genomic profile of NMIBC tumors to rationally design trials of intravesical and systemic targeted agents.
LYMPH NODE YIELD AS A PREDICTOR OF OVERALL SURVIVAL FOLLOWING REGIONAL LYMPHADENECTOMY FOR PENILE CANCER

Chad Ritch, MD, MBA; Nachiketh Soodana Prakash, MBBS, MS; Katherine Almengo, BS; David Alonzo, MD; Michael Ahdoot, MD; Sanoj Punnen, MD; Dipen Parekh, MD and Mark Gonzalgo, MD

Department of Urology, University of Miami, Miami, Florida

(Presented By: Chad R. Ritch, MD, MBA)

**Introduction:** There is limited data to define an appropriate threshold for lymph node yield (LNY) following regional lymphadenectomy (rND) for penile squamous cell carcinoma (pSCC) and, whether that specific threshold impacts overall survival (OS). We sought to determine whether a specific LNY affects OS following rND for pSCC and, to define the minimum beneficial number of lymph nodes (LN) to retrieve.

**Methods:** Using the National Cancer Database (NCDB), we identified men diagnosed with pSCC, who underwent rND, from 2004 to 2013. We excluded men diagnosed on autopsy or at the time of death, with preoperative chemotherapy or radiotherapy, M+ disease, and with < 3 months of follow up. We assessed the statistical distribution of LNY following rND. A multivariable logistic regression model was developed to assess predictors of OS including: age, comorbidity, race, stage, grade, nodal status, and LNY. Kaplan-Meier (KM) survival analysis was performed to compare OS by varying thresholds of LNY.

**Results:** 938 men with pSCC underwent rND. Of these 452 met inclusion criteria. Median follow up was 29.9 months. The median number of regional LN retrieved was 16. Based on the statistical distribution of LNY and, sensitivity analysis, a threshold of 15 LNs appeared to be clinically and statistically relevant. There was no significant difference in race, stage, grade for men with LNY ≤15 vs >15. However, men with LNY ≤ 15 were older than those with LNY >15 (64 vs 58 years, p<0.01). On multivariable analysis, significant independent predictors of worse OS were: age (HR: 1.02; CI [1.01-1.03], p<0.05), N+ disease (HR: 3.06; CI [2.12—4.42], p<.001), and LNY ≤ 15 (HR: 0.61; CI [0.44-0.85], p<0.01). Men with a LNY ≤ 15 demonstrated a significantly decreased 5-year OS compared to those with LNY > 15 (73% VS 50%, p<0.05). On subgroup analysis of men with T2, N0, LNY >15 trended toward better 5-year OS vs LNY ≤ 15 (90% VS 71%, p=0.06)

**Conclusion:** LNY following rND for pSCC appears to have an impact on OS independent of age, stage, nodal status and grade. A minimum LNY >15 following rND may have a beneficial impact on OS and may serve as the quantitative threshold for defining an adequate rND.
Podium #6
EVALUATION OF THE DECIPHER PROSTATE CANCER CLASSIFIER TO PREDICT METASTASIS AND DISEASE-SPECIFIC MORTALITY FROM GENOMIC ANALYSIS OF DIAGNOSTIC PROSTATE NEEDLE BIOPSY SPECIMENS
Eric A. Klein, MD¹; Zaid Haddad, BSc²; Lucia L.C. Lam, BSc²; Kaye Ong, BSc²; Christine Bueriki, PhD²; Kasra Yousefi, MSc²; Elai Davicioni, PhD²; Jeffrey J. Tosoian, MD³; Tamara L. Lotan, MD³; Felix Y. Feng, MD³; Bruce J. Trock, PhD³; Ashley E. Ross, MD, PhD³ and Paul L. Nguyen, MD⁵
¹Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA; ²GenomeDx Biosciences Inc. Vancouver, BC, Canada; ³James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, MD, USA; ⁴Department of Radiation Oncology, University of California at San Francisco, San Francisco, CA, USA; ⁵Department of Radiation Oncology, Dana-Farber/Brigham and Women’s Cancer Center and Harvard Medical School, Boston, MA, USA (Presented By: Eric A. Klein, MD)

Introduction: Accurate risk stratification after diagnosis of prostate cancer (PCa) is key to optimal treatment decision-making. Decipher RP is an extensively validated genomic classifier used to determine biological potential for metastasis. Here, in a multi-institutional cohort, we aimed to evaluate its ability to predict metastasis and prostate cancer-specific mortality from analysis of PCa needle biopsy tumor tissue specimens.

Methods: We identified 175 patients treated with either first-line RP or first-line radiation therapy (RT) + androgen deprivation therapy (ADT) with available genomic expression profiles generated from diagnostic biopsy specimens obtained from three tertiary referral centers: Cleveland Clinic, Brigham and Women’s Hospital and Johns Hopkins. The core with the highest grade was sampled and Decipher was calculated based on a locked random forest model. Cox univariable and multivariable (MVA) proportional hazards model and survival c-index were used to evaluate the performance of Decipher.

Results: Overall, 85% of patients had NCCN intermediate and high-risk disease. Of the 175 patients, 43% and 57% were treated with first-line RP and RT+ADT, respectively. With a median follow-up of 6 years, 32 patients developed metastases and 11 of these patients died of PCa. For prediction of metastasis 5 years post biopsy, Decipher had a c-index of 0.74 (95% confidence interval [CI] 0.63-0.84) compared to 0.66 (95% CI 0.53-0.77) for CAPRA and 0.66 (95% CI 0.55-0.77) for NCCN risk group. On MVA, when modeled with CAPRA, Bx Decipher remained a significant predictor of metastasis (Decipher Bx hazard ratio [HR] 1.33 per 10% increase in score, 95% CI 1.06–1.69, P=0.01). Decipher Bx was also a significant predictor of PCSM (Decipher Bx HR 1.57 per 10%, 95% CI 1.07–2.40, P=0.02)

Conclusion: Decipher Bx was able to predict metastasis and PCSM from diagnostic biopsy specimens in a cohort of primarily intermediate and high-risk men regardless of first line treatment. This additional genomic information provides important risk stratification to help guide therapy for men with intermediate- and high-risk disease.
THE ROLE FOR RESECTION OF POST-CHEMOTHERAPY RESIDUAL LIVER MASSES IN THE MANAGEMENT OF NON-SEMINOMATOUS GERM CELL TUMOR

Eugene Pietzak, MD; Melissa Assel; Maria Becerra; Daniel Tennenbaum; Darren Feldman; Dean Bajorin; Robert Motzer; George Bosl; Brett Carver; Daniel Sjoberg and Joel Sheinfeld
Memorial Sloan Kettering Cancer, New York, NY
(Presented By: Eugene J. Pietzak, III, MD)

Introduction: To evaluate the oncologic outcomes and histologic concordance of post-chemotherapy residual liver mass resection with post-chemotherapy retroperitoneal lymph node dissection (PC-RPLND).

Methods: After obtaining Institutional Review Board approval, we reviewed our prospectively maintained germ cell tumor (GCT) surgical database for patients with non-seminomatous GCT who underwent post-chemotherapy residual liver mass resection and concurrent PC-RPLND between 1990 and 2015.

Results: A total of 36 patients were identified, of which, 29 (81%) presented with a liver mass at initial diagnosis and 17 (47%) received salvage chemotherapy prior to liver resection. Teratoma was found in 14 (39%) and 6 (17%) of PC-RPLND and liver resection specimens, respectively. Viable GCT was found in 7 (19%) and 3 (8%) of PC-RPLND and liver resection specimens, respectively. Among patients who had either teratoma or viable GCT on PC-RPLND, 29% (95% CI 10%, 56%) had teratoma or viable GCT also on liver resection. The rate of benign versus malignant histologic discordance was 21% (95% CI 6%, 46%), with 4 of 19 patients having either teratoma or viable GCT on their liver resection when only fibrosis/necrosis was found in their PC-RPLND (Table 1). At 3 years after surgical intervention, the Kaplan-Meier estimated probability of cancer-specific survival was 73% (95% CI 55%, 85%) and the probability of progression-free survival was 75% (95% CI 56%, 87%).

Conclusion: In this contemporary cohort of patients, clinically significant histologic discordance was observed between post-chemotherapy residual liver mass resection and PC-RPLND. In addition to the significant histologic discordance seen, the importance of post-chemotherapy liver mass resection is further supported by the favorable survival outcomes these advanced NSGCT patients experienced. Until more reliable predictors of post-chemotherapy histology exist, complete surgical resection of all sites of residual disease should be performed, whenever feasible.

Table 1. Proportion of patients with fibrosis/necrosis, teratoma or viable GCT, and teratoma only on liver resection by RPLND histology.

<table>
<thead>
<tr>
<th>RPLND Histology</th>
<th>Fibrosis/Necrosis (n=27)</th>
<th>Teratoma or Viable GCT (n=9)</th>
<th>Teratoma (n=6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibrosis/Necrosis (n=19)</td>
<td>79% (54%, 94%)</td>
<td>21% (6%, 46%)</td>
<td>16% (3%, 40%)</td>
</tr>
<tr>
<td>Viable GCT (n=3)</td>
<td>67% (9%, 99%)</td>
<td>33% (1%, 91%)</td>
<td>0% (0%, 71%)</td>
</tr>
<tr>
<td>Teratoma (n=10)</td>
<td><em>60%</em> (26%, 88%)</td>
<td><em>40%</em> (12%, 74%)</td>
<td>30% (7%, 65%)</td>
</tr>
<tr>
<td>Teratoma or Viable GCT (n=4)</td>
<td>71% (44%, 90%)</td>
<td>29% (10%, 56%)</td>
<td>18% (4%, 43%)</td>
</tr>
</tbody>
</table>

*This proportion includes a patient with Somatic Malignant Transformation*
Podium #8

UROLOGIST PRACTICE STRUCTURE AND VALUE OF PROSTATE CANCER CARE

Lindsey Herrel, MD, MS¹; Brent Hollenbeck, MD, MS¹; Samuel Kaufman, MA¹; Phyllis Yan, MS¹; Tudor Borza, MD¹; Ted Skolarus, MD, MS¹; Florian Schroeck, MD, MS² and Vahakn Shahinian, MD, MS¹

¹University of Michigan, Ann Arbor, MI; ²Dartmouth College, Hanover, NH

(Presented By: Lindsey Allison Herrel, MD, MS)

Introduction: Current health care reforms focused on optimizing value, higher quality of care delivered at a lower cost, are particularly relevant for prostate cancer due to its high cost in the context of wide variations in its treatment. We examined the potential impact of urologist practice structure on the value of practice cancer care.

Methods: Using a 20% sample of national Medicare claims and data from the Surveillance, Epidemiology and End-Results (SEER)-Medicare linked registry, we examined spending (Medicare cohort) and quality (SEER-Medicare cohort) of prostate cancer treatment according to urologist practice type (single-specialty vs. MSG), size and ownership of an intensity modulated radiation therapy (IMRT) vault. Mixed models were used to adjust for patient differences.

Results: We identified 28,164 men with newly diagnosed prostate cancer treated by 6,381 urologists during our study interval (SEER cohort: 22,412 men and 2,199 urologists). We observed excess spending of $2,416 per beneficiary for large group practices compared to MSGs, and $2,770 in excess spending per beneficiary for practices with IMRT ownership compared to non-owning practices (p<0.001, Table). Adherence to all eligible quality measures was modestly better among MSGs compared to single specialty groups (20.0% adherence versus 18.2%, p=0.01) whereas there was no significant difference by ownership of IMRT (17.1% adherence in owners versus 18.9% non-owners, p=0.09).

Conclusion: Practices within MSGs demonstrate the lowest, whereas practices with IMRT ownership demonstrate the highest spending for prostate cancer care. Differences in quality were modest and of uncertain clinical importance, with substantial room for improvement, regardless of practice structure.

Funding: NCI (R01 CA168691) to BKH and VBS. FRS is supported by the Department of Veterans Affairs, VISN1 Career Development Award.

Table. Mean adjusted payments for first year after prostate cancer diagnosis by practice size and IMRT ownership.

<table>
<thead>
<tr>
<th>Practice Size</th>
<th>Solo</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>MSG</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All prostate cancer patients</td>
<td>$20,365</td>
<td>$20,192</td>
<td>$20,237</td>
<td>$21,371</td>
<td>$18,955</td>
<td>p&lt;0.001*</td>
</tr>
<tr>
<td>Patients receiving primary RT</td>
<td>$30,007</td>
<td>$30,818</td>
<td>$30,314</td>
<td>$31,273</td>
<td>$29,794</td>
<td>p&lt;0.001*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IMRT Ownership</th>
<th>Non-owners</th>
<th>Owners</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All prostate cancer patients</td>
<td>$19,755</td>
<td>$22,525</td>
<td>p&lt;0.001</td>
</tr>
<tr>
<td>Patients receiving primary RT</td>
<td>$30,162</td>
<td>$31,622</td>
<td>p&lt;0.001</td>
</tr>
</tbody>
</table>

*p-value for comparison of MSG payments to large group practice payments

RT: radiation therapy
Podium #9
PROGNOSTIC VALUE OF PD-1 AND PD-L1 EXPRESSION IN PATIENTS WITH HIGH-GRADE UROTHELIAL CARCINOMA OF THE UPPER URINARY TRACT
Laura-Maria Krabbe, MD¹; Barbara Heitplatz, MD²; Ryan Hutchinson, MD³; Solomon Woldu, MD³; Sina Preuss Cand, MD⁴; Martin Bögemann, MD⁴; Christopher Wood, MD⁵; Jose Karam, MD⁶; Alon Weizer, MD⁶; Jay Raman, MD⁷; Mesut Remzi, MD⁸; Nathalie Riou-Leclercq, MD⁹; Andrea Haitel, MD¹⁰; Marco Roscigno, MD¹¹; Christian Bolenz, MD¹²; Karim Bensalah, MD¹³; Arthur Sagalowsky, MD; Sharokh Shariat, MD⁸; Yair Lotan, MD; Evanguelos Xylinas, MD¹⁴ and Vitaly Margulis, MD³
¹University of Texas Southwestern Medical Center at Dallas, Dallas, TX; ²Department of Pathology, University of Muenster Medical Center, Muenster, Germany; ³Department of Urology, University of Texas Medical Center, Dallas, TX, USA; ⁴Department of Urology, University of Muenster Medical Center, Muenster, Germany; ⁵Department of Urology, MD Anderson Cancer Center, Houston, TX, USA; ⁶Department of Urology, University of Michigan Cancer Center, Ann Arbor, MI, USA; ⁷Division of Urology, Penn State Milton S.Hershey Medical Center, Hershey, PA, USA; ⁸Department of Urology, Medical University of Vienna, Vienna, Austria; ⁹Department of Pathology, Centre Hospitalier Universitaire de Rennes, Rennes, France; ¹⁰Department of Pathology, Medical University Vienna, Vienna, Austria; ¹¹Department of Urology, Ospedali Riuniti of Bergamo, Bergamo, Italy; ¹²Department of Urology, University of Ulm, Ulm, Germany; ¹³Department of Urology, Centre Hospitalier Universitaire de Rennes, Rennes, France; ¹⁴Department of Urology, Cochin Hospital, APHP, Paris Descartes University, Paris, France
(Presented By: Laura-Maria Krabbe, MD)

Introduction: To investigate the prognostic value of PD-1 and PD-L1 expression in patients with high-grade upper tract urothelial carcinoma (UTUC).

Methods: Tissue microarrays were created using 448 patients from the International UTUC collaboration who underwent extirpative surgery for high-grade UTUC and stained for PD-1 (antibody (AB): NAT105, diluted 1:250 from Ventana) and PD-L1 (AB: E1L3N© prediluted from Cell Signaling). PD-1 and PD-L1 expression was assessed in a semi-quantitative fashion and any percentage of staining of the tumor cells (PD-L1) and tumor-infiltrating lymphocytes (PD-1) was considered positive. Univariate (UVA) and multivariate analyses (MVA) were performed to assess independent prognosticators of oncological outcomes. No funding was received.

Results: Median age of the cohort was 69.2 years and 56.5% of patients were male. PD-L1 and PD-1 were positive in 24.1% and 37.5% of patients. PD-L1 positivity was only associated with favorable pathological stage, whereas PD-1 positivity was significantly associated with pelvicalyceal location, lymph node metastases, non-organ confined disease, presence of lymphovascular invasion, sessile architecture, necrosis, concomitant CIS, and history of non-muscle invasive bladder cancer. PD-L1 positivity was not significantly associated with survival outcomes. In Cox regression UVA, PD-1 positivity was associated with worse recurrence-free survival (RFS) (HR 1.5 (95%CI 1.08-2.14, p=0.016)), cancer-specific survival (CSS) (HR 1.5 (95%CI 1.07-2.19, p=0.021)), and overall survival (OS) (HR 1.5 (95%CI 1.10-1.97, p=0.009)) (see figure for KM curves). However in MVA, PD-1 positivity was not found to be an independent predictor of RFS, CSS or OS.

Conclusion: PD-1 positivity of tumor-infiltrating lymphocytes was associated with adverse pathological criteria and was a significant prognosticator for RFS, CSS and OS on UVA in patients treated with extirpative surgery for high-grade UTUC in a large, multi-institutional cohort. In MVA, the independent prognostic value of PD-1 was not confirmed. PD-L1 positivity was associated with lower tumor stage, but not with other pathological characteristics or survival outcomes.
Poster Session I — Summary

Poster Session I & Reception
Wednesday, November 30, 2016
4:30 p.m. – 6:15 p.m.
Poster Walks
See page 67 for full abstracts

Poster #1
USE OF ADJUVANT CHEMOTHERAPY IN PATIENTS WITH ADVANCED BLADDER CANCER AFTER NEOADJUVANT CHEMOTHERAPY
Wilson Sui¹; Emerson Lim, MD²; Guarionex DeCastro, MD³; James McKiernan, MD¹ and Christopher Anderson, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Medicine, Columbia University Medical Center, New York, NY
(Presented By: Wilson Sui)

Poster #2
LONG-TERM SURVIVAL OUTCOMES WITH INTRAVESICAL NANOPIRICLE ALBUMIN-BOUND PACLITAXEL FOR RECURRENT NONMUSCLE INVASIVE BLADDER CANCER AFTER PREVIOUS BACILLUS CALMETTE-GUÉRIN THERAPY
Dennis Robins, MD; Wilson Sui; Justin T. Matulay, MD; G. Joel DeCastro, MD; Christophor B. Anderson, MD and James M. McKiernan, MD
Department of Urology, Columbia University Medical Center, New York, NY
(Presented By: Dennis Robins, MD)

Poster #3
REPEAT USE OF BLUE LIGHT CYSTOSCOPY WITH HEXAMINOLEVULINATE FOR PATIENTS WITH UROTHELIAL CELL CARCINOMA
Giulia Lane, MD²; Tracy Downs, MD¹; Ayman Soubra, MD²; Amrita Rao, BS³; Lauren Hemsley, MPH²; Christopher Laylan, BS¹; Fangfang Shi, MS¹ and Badrinath Konety, MD, MBA²
¹University of Wisconsin, Madison, WI; ²University of Minnesota, Minneapolis, MN; ³Medical College of Wisconsin, Milwaukee, WI
(Presented By: Giulia I. Lane, MD)

Poster #4
SELF-REPORTED HEALTH AND STRESS AMONG PATIENT AND PARTNER DYADS PREPARING FOR CYSTECTOMY
Andrew Leone, MD; Dominic Tang, MD; Gregory Diorio, DO; Wade Sexton, MD; Michael Poch, MD; Carl Henriksen, MS; Paul Jacobsen, PhD and Scott Gilbert, MD
Moffitt Cancer Center, Tampa, FL
(Presented By: Andrew R. Leone, MD)

Poster #5
RADICAL CYSTECTOMY COMPARED TO COMBINED MODALITY TREATMENT FOR MUSCLE-INVASIVE BLADDER CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS OF OVER 12,000 PATIENTS
Vishal Vashistha, MD¹; Hanzhang Wang, MD²; Andrew Mazzone, BS³; Michael Liss MD³, Robert Svatek, MD² and Dharam Kaushik, MD²
¹Cleveland Clinic Foundation, Department of Internal Medicine; ²University of Texas Health Science Center at San Antonio, Department of Urology; ³Rush University Medical Center
(Presented By: Vishal Vashistha, MD)

Poster #6
THE BURDEN OF CYSTOSCOPIC BLADDER CANCER SURVEILLANCE - ANXIETY, DISCOMFORT, AND PATIENT PREFERENCES FOR DECISION MAKING
Kevin Koo, MD, MPH, MPhil*; Lisa Zubkoff, PhD*; Brenda Sirovich, MD, MD*; John Seigne, MBBS*; Philip Goodney, MD, MS* and Florian Schroek, MD, MS³
*White River Junction VAMC and Dartmouth College, Lebanon, NH; ³White River Junction VAMC; §Dartmouth College, Lebanon, NH
(Presented By: Florian R. Schroek, MD, MS)
Poster #7
INTERLEUKIN-17 IS SIGNIFICANTLY ELEVATED IN PATIENTS WHO FAIL TO RESPOND TO NEOADJUVANT CHEMOTHERAPY PRIOR TO CYSTECTOMY FOR BLADDER CANCER
Nathan Brooks, MD¹; Michael Brumm, BS² and Ken Nepple, MD¹
¹The University of Iowa Department of Urology, Iowa City, Iowa; ²The University of Iowa Holden Comprehensive Cancer Center, Iowa City, Iowa
(Presented By: Nathan A. Brooks, MD)

Poster #8
MICROPAPILLARY BLADDER CANCER: INSIGHTS FROM THE NATIONAL CANCER DATABASE
Wilson Sui¹; Justin T. Matulay, MD¹; Maxwell James¹; Dennis J. Robins, MD¹; Ifeanyi Onyeji¹; Marissa C. Theofanides, MD¹; Arindam RoyChoudhury, PhD²; G. Joel DeCastro, MD¹ and Sven Wenske, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Biostatistics, Mailman School of Public Health, Columbia University, New York, NY
(Presented By: Maxwell B. James)

Poster #9
BACILLUS CALMETTE-GUERIN STRAIN HAS NO SIGNIFICANT EFFECT ON RECURRENCE-FREE SURVIVAL WHEN USED INTRAVESICALLY WITH INTERFERON-ALPHA2B FOR NON-MUSCLE INVASIVE BLADDER CANCER
Ryan L. Steinberg, MD¹; Nathan Brooks, MD¹; Lewis J. Thomas, MD¹; Sarah J. Mott, MS² and Michael A. O'Donnell, MD¹
¹University of Iowa Health Care, Iowa City, IA; ²Holden Comprehensive Cancer Center, Iowa City, IA
(Presented By: Ryan L. Steinberg, MD)

Poster #10
IMPACT OF SURGICAL APPROACH TO CYSTECTOMY ON PERIOPERATIVE OUTCOMES: ANALYSIS OF DATA FROM THE NATIONAL CANCER DATABASE (NCDB)
Andrew Bachman; Alexander Parker; Marshall Shaw, MD; Brian Cross, MD; Kelly Stratton, MD; Michael Cookson, MD and Sanjay Patel, MD
University of Oklahoma College of Medicine, Oklahoma City, Oklahoma
(Presented By: Andrew G. Bachman, BA)

Poster #11
PREOPERATIVE MALNUTRITION AS A PREDICTOR OF POSTOPERATIVE MORBIDITY AND MORTALITY AFTER NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA
Matthew Katz, MD, MBA¹; Daniel Wolin, MD²; Nicholas Donin, MD³; William Meeks³; Scott Gulig³; Lee Zhao, MD¹; James Wysock, MD¹; William Huang, MD¹ and Marc Bjurlin, MD⁴
¹Department of Urology, NYU Langone Medical Center, New York, NY; ²Department of Urology, David Geffen School of Medicine, University of California, Los Angeles, CA; ³Data Management and Statistical Analysis Department, American Urological Association, Linthicum; ⁴Division of Urology, Department of Surgery, NYU Lutheran Medical Center, NYU Langone Health System, New York, NY
(Presented By: Matthew Katz, MD, MBA)
Poster #12

CLINICAL OUTCOMES OF PATIENTS (PTS) WITH UPPER TRACT UROTHELIAL CARCINOMA (UTUC) BASED ON THE INTENSITY OF SURGICAL LOCOREGIONAL AND SYSTEMIC TREATMENT: A RISC MULTICENTER STUDY

Andrea Necchi, MD¹; Gregory Pond, PhD, PStat²; Aristotelis Bamias, MD³; Yu-Ning Wong, MD⁴; Lauren Harshman, MD⁵; Evan Yu, MD⁶; Gunter Niegesch, MD⁷; Ugo De Giorgi, MD⁸; Rafael Morales-Barrera, MD⁹; Sandy Srinivas, MD¹⁰; Cora Sternberg, MD¹¹; Ali-Reza Golshayan, MD¹²; Simon Crabb, MD¹³; Sylvain Ladoire, MD¹⁴; Ulka Vaishampayan, MD¹⁵; Daniel Bowles, MD¹⁶; Ajjai Alva, MD¹⁷; Neeraj Agarwal, MD¹⁸; Guru Sonpavde, MD¹⁹; Matthew Milowsky, MD²⁰; Thomas Powles, MD²¹; Jonathan Rosenberg, MD²²; Matthew Galsky, MD²³ and Joaquim Bellmunt, MD, PhD²⁴

¹Fondazione IRCCS Istituto Nazionale dei Tumori; ²McMaster University, Hamilton, Ontario, Canada; ³University of Athens, Athens, Greece; ⁴Fox Chase Cancer Center, Philadelphia, PA, USA; ⁵Dana-Farber Cancer Institute, Boston, MA, USA; ⁶University of Washington, Seattle, WA, USA; ⁷Heinrich-Heine-University, Düsseldorf, Germany; ⁸IRCCS Istituto Scientifico Romagnolo per lo studio e la Cura dei Tumori, Meldola, Italy; ⁹Vall d’Hebron Institute of Oncology, Vall d’Hebron University Hospital, Universitat Autonoma de Barcelona, Barcelona, Spain; ¹⁰Stanford University School of Medicine, Stanford, CA, USA; ¹¹San Camillo Forlanini Hospital, Rome, Italy; ¹²Medical University of South Carolina, Charleston, SC, USA; ¹³University of Southampton, Southampton, United Kingdom; ¹⁴Center Georges-François Leclerc, Dijon, France; ¹⁵Karmanos Cancer Institute, Detroit, MI, USA; ¹⁶Denver Veterans Affairs Medical Center, Eastern Colorado Health Care System, Denver, CO, USA; ¹⁷University of Michigan, Ann Arbor, MI, USA; ¹⁸University of Utah, Salt Lake City, UT, USA; ¹⁹UAB Comprehensive Cancer Center, Birmingham, AL, USA; ²⁰University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA; ²¹Barts Health and the Royal Free NHS Trust, Queen Mary University of London, London, United Kingdom; ²²Memorial Sloan-Kettering Cancer Center, New York, NY, USA; ²³Mount Sinai School of Medicine, Tisch Cancer Institute, New York, NY, USA.

(Presented By: Andrea Necchi, MD)

Poster #13

ASSOCIATION OF PERIOPERATIVE VENOUS THROMBOEMBOLISM WITH LONG-TERM ONCOLOGIC OUTCOMES FOLLOWING RADICAL CYSTECTOMY

Harras Zaid, MD; Matthew Tollefson, MD; Igor Frank, MD; William Parker, MD; R. Houston Thompson, MD; Robert Tarrell; Prabin Thapa; John Cheville, MD and Stephen Boorjian, MD

Mayo Clinic, Rochester, MN

(Presented By: Harras Zaid, MD)

Poster #14

THE PREVALENCE OF PREOPERATIVE MALNUTRITION: A PROSPECTIVE STUDY OF PATIENTS UNDERGOING CYSTECTOMY

Conrad Tobert, MD; Nathan Brooks, MD; Lewis Thomas, MD; Chermiane Hung, BS and Kenneth Nepple, MD

University of Iowa Hospitals and Clinics, Department of Urology, Iowa City, IA

(Presented By: Conrad Tobert, MD)

Poster #15

THE ASSOCIATION OF AGE WITH UTILIZATION AND OUTCOMES OF RADICAL CYSTECTOMY FOR HIGH-GRADE NON-MUSCLE INVASIVE BLADDER CANCER: RESULTS FROM THE NATIONAL CANCER DATA BASE

William Parker, MD; Harras Zaid, MD; Elizabeth Habermann, PhD; Igor Frank, MD; R. Houston Thompson, MD; Matthew Tollefson, MD; R. Jeffrey Karnes, MD and Stephen Boorjian, MD

Mayo Clinic, Rochester, MN

(Presented By: William P. Parker, MD)
**Poster #16**

**Efficacy, Safety and Biomarkers of First-Line (1L) Atezolizumab (ATEZO) in Cisplatin (CIS)-Ineligible Locally Advanced or Metastatic Urothelial Carcinoma (MUC): A Phase II IMVIGOR210 Study Update**

Matthew Galsky¹, Joaquim Bellmunt², Arjun Balar³, Yohann Loriot⁴, Christine Theodore⁵, Enrique Grandé⁶, Daniel Castellano⁷, Margitta Retz⁸, Günter Nießisch⁹, Sergio Bracarda¹⁰, Andrea Necchi¹¹, Ulka Vaishampayan¹²,¹³, Srikala Sridhar¹⁴, Bernhard Eigl¹⁵, Syed Hussain¹⁶, Michiel van der Heijden¹⁷, Alexandra Drakaki¹⁸, Beiying Ding¹⁹, Richard Bourgon¹⁹, Sanjeev Mariathasan¹⁹, AnnChristine Thåström¹⁹, Oyewale Abidoye¹⁹ and Jonathan Rosenberg²⁰

¹Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai, New York, NY; ²Bladder Cancer Center, Dana-Farber/Brigham and Women's Cancer Center, Harvard Medical School, Boston, MA; ³Perlmutter Cancer Center, NYU Langone Medical Center, New York, NY; ⁴Gustave Roussy, Villejuif, France; ⁵Department of Oncology, Hôpital Foch, Suresnes, France; ⁶Hospital Universitario Ramón y Cajal, Madrid, Spain; ⁷Doce de Octubre University Hospital, Madrid, Spain; ⁸Urologische Klinik und Poliklinik, Technische Universität München, Munich, Germany; ⁹Department of Urology, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany; ¹⁰USL Toscana Sud-Est Ospedale San Donato, Arezzo, Italy; ¹¹Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, Italy; ¹²Karmanos Cancer Institute, Detroit, MI, USA; ¹³Princess Margaret Cancer Center, Toronto, ON; ¹⁴Princess Margaret Cancer Center, Toronto, ON, Canada; ¹⁵BCCA Vancouver Cancer Centre, Vancouver, Canada; ¹⁶University of Liverpool, Clatterbridge Cancer Centre NHS Foundation Trust, Liverpool, UK; ¹⁷Netherlands Cancer Institute, Amsterdam, the Netherlands; ¹⁸UCLA Medical Center, Los Angeles, CA; ¹⁹Genentech, Inc., South San Francisco, CA; ²⁰Memorial Sloan Kettering Cancer Center, New York, NY

(Presented By: Matthew Galsky, MD)

**Poster #17**

**Association of Prior Pelvic Radiation with Long-Term Oncologic Outcomes Following Radical Cystectomy**

Harras Zaid, MD; Matthew Tollefson, MD; Igor Frank, MD; William Parker, MD; R. Houston Thompson, MD; Robert Tarrell, MD; Prabin Thapa, MD; John Cheville, MD and Stephen Boorjian, MD

Mayo Clinic, Rochester, MN

(Presented By: Harras Zaid, MD)

**Poster #18**

**Neoadjuvant Vascular Targeted Photodynamic Therapy in Urothelial Cancer – Preclinical Data**

Barak Rosenzweig, MD¹; Renato B. Corradi, MD²; Sadna Budhu, PhD³; Ricardo Alvim, MD⁴; Pedro Recabal, MD⁵; Stephen La Rosa⁶; Sylvia Jebiwott⁷; Alex Somma⁸; Sebastien Monette, MD⁴; Avigdor Scherz, PhD⁶; Kwanghee Kim, PhD² and Jonathan A. Coleman, MD⁶

¹Department of Surgery, Urology Service, Memorial Sloan Kettering Cancer Center, New York, NY; ²Department of Surgery, Sloan Kettering Institute, Memorial Sloan Kettering Cancer Center, New York, NY; ³Immunology Program, The Jedd Wolchok Lab, Memorial Sloan Kettering Cancer Center, New York, NY; ⁴Department of Pathology, Memorial Sloan Kettering Cancer Center, New York, NY; ⁵Department of Plant Sciences, Weizmann Institute of Science, Rehovot, Israel; ⁶Department of Surgery, Urology Service, Memorial Sloan Kettering Cancer Center, New York, NY. Weill Cornell Medical College, New York, NY

(Presented By: Barak Rosenzweig, MD)

**Poster #19**

**The Effect of Adjuvant Chemotherapy for Patients with Adverse Pathology After Neoadjuvant Chemotherapy for Muscle Invasive Bladder Cancer**

William Parker, MD; Elizabeth Habermann, PhD; Courtney Day, BS; Harras Zaid, MD; Igor Frank, MD; R. Houston Thompson, MD; Matthew Tollefson, MD; Stephen Boorjian, MD and R. Jeffrey Karnes, MD

Mayo Clinic, Rochester, MN

(Presented By: William P. Parker, MD)
Poster #20
FACTORS ASSOCIATED WITH FAVORABLE PATHOLOGY AT RADICAL CYSTECTOMY AFTER PRIOR INTRAVESICAL THERAPY FOR NON-MUSCLE INVASIVE BLADDER CANCER
William Parker, MD; Harras Zaid, MD; Prabin Thapa, MS; Matthew Tollefson, MD; Igor Frank, MD; R. Houston Thompson, MD; Stephen Boorjian, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, MN
(Presented By: William P. Parker, MD)

Poster #21
TOP-LINE RESULTS FROM VESIGENURTACEL-L (HS-410) IN COMBINATION WITH BCG FROM A RANDOMIZED, BLINDED PHASE 2 TRIAL IN PATIENTS WITH NON-MUSCLE INVASIVE BLADDER CANCER (NMIBC)
Gary Steinberg, MD¹; Neal D. Shore, MD²; Lawrence Karsh, MD³; James L. Bailen, MD⁴; Trinity J. Bivalacqua, MD, PhD⁵; Karim Chamie, MD⁶; James Cochran, MD⁷; Richard David, MD⁸; Robert Grubb, MD⁹; Wael Harb, MD¹⁰; Jeffrey Holzbeierlein, MD¹¹; Ashish M. Kamat, MD¹²; Vijay Kasturi, MD¹³; Edouard J. Trabulsi, MD¹⁴; Michael Williams, MD¹⁵; Frederick N. Wolk, MD¹⁶; Michael E. Woods, MD¹⁷; Melissa Price, PhD¹⁷; Brandon Early, MS¹⁷ and Taylor H. Schreiber, MD, PhD¹⁷
¹University of Chicago Medical Center, Chicago, IL; ²Carolina Urologic Research Center, Myrtle Beach, SC; ³The Urology Center of Colorado, Denver, CO; ⁴First Urology, Jeffersonville, IN; ⁵Johns Hopkins University, Baltimore, MD; ⁶University of California Los Angeles, Los Angeles, CA; ⁷Urology of North Texas, Dallas, TX; ⁸Skyline Urology, Torrance, CA; ⁹Washington University of St. Louis, St. Louis, MO; ¹⁰Horizon Oncology, Lafayette, IN; ¹¹Kansas University Medical Center, Westwood, KS; ¹²MD Anderson Cancer Center, Houston, TX; ¹³University of Massachusetts Memorial Medical Center, Worcester, MA; ¹⁴Thomas Jefferson University, Philadelphia, PA; ¹⁵Urology of Virginia, Virginia Beach, VA; ¹⁶University of North Carolina, Chapel Hill, NC; ¹⁷Heat Biologics Inc.
(Presented By: Gary D. Steinberg, MD)

Poster #22
ROBOT-ASSISTED RADICAL CYSTECTOMY WITH INTRACORPOREAL URINARY DIVERSION IN THE SETTING OF CHALLENGING PATIENT FACTORS
Daniel M. O. Freitas, MD; Toshitaka Shin, PhD; Andre Berger, MD; Mihir Desai, MD; Inderbir Gill, MD, MCh and Monish Aron, MD
USC- Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA
(Presented By: Daniel Melecchi De Oliveira Freitas, MCSS)

Poster #23
ROLE OF POSTCHEMOTHERAPY SURGERY (PCTS) IN PATIENTS (PTS) WITH METASTATIC UROTHELIAL BLADDER CARCINOMA (UBC) WITH PELVIC OR RETROPERITONEAL LYMPH-NODE (LN) SPREAD: A PROPENSITY SCORE-WEIGHTED ANALYSIS
Andrea Necchi, MD¹; Luigi Mariani, MD¹; Salvatore Lo Vullo, MD¹; Evan Yu, MD²; Michael Woods, MD²; Yu-Ning Wong, MD²; Lauren Harshman, MD³; Ajai Alva, MD³; Cora Stemberg, MD³; Aristotelis Bamiás, MD³; Petros Grivas, MD³; Florian Roghmán, MD³; Jakub Dobruch, MD³; Bernhard Egl, MD³; Matthew Milowsky, MD³; Gunter Niegisch, MD³; Sumanta Pal, MD³; Ugo De Giorgi, MD³; Ulka Vaishampayan, MD³; Evanguelos Xylinas, MD³; Thomas Powles, MD³; Jonathan Rosenberg, MD³; Joaquim Bellmunt, MD³; Matthew Galsky, MD² and Kees Hendricksen, MD³
¹Fondazione IRCCS Istituto Nazionale dei Tumori; ²University of Washington, Seattle, WA, USA; ³University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA; ⁴Fox Chase Cancer Center, Philadelphia, PA, USA; ⁵Dana-Farber Cancer Institute, Boston, MA, USA; ⁶University of Michigan, Ann Arbor, MI, USA; ⁷San Camillo Forlanini Hospital, Rome, Italy; ⁸University of Athens, Athens, Greece; ⁹Taussig Cancer Institute, Cleveland Clinic, Cleveland, OH, USA; ¹⁰Ruhr-University Bochum, Marien Hospital Herne, Herne, Germany; ¹¹Centre of Postgraduate Medical Education, European Health Centre Otwock, Poland; ¹²British Columbia Cancer Agency, Vancouver, BC, Canada; ¹³Heinrich-Heine-University, Düsseldorf, Germany; ¹⁴City of Hope Comprehensive Cancer Center, Duarte, CA, USA; ¹⁵IRCCS Istituto Scientifico Romagnolo per lo studio e la Cura dei Tumori, Meldola, Italy; ¹⁶Karmanos Cancer Institute, Detroit, MI, USA; ¹⁷Cochin Hospital, Assistance-Publique Hôpitaux de Paris, Paris Descartes University, Paris, France; ¹⁸Barts Health and the Royal Free NHS Trust, Queen Mary University of London, London, United Kingdom; ¹⁹Memorial Sloan Kettering Cancer Center, New York, NY, USA; ²⁰Mount Sinai School of Medicine, Tisch Cancer Institute, New York, NY, USA; ²¹The Netherlands Cancer Institute, Amsterdam, The Netherlands
(Presented By: Andrea Necchi, MD)
Poster #24
Efficacy, Safety and Biomarkers of Atezolizumab (ATEZO) in Platinum-Treated Locally Advanced or Metastatic Urothelial Carcinoma (MUC) Patients (PTS): Update from the Phase II Study IMVIGOR210
Daniel Petrylak¹, Jonathan Rosenberg², Yohann Loriot³, Thomas Powles⁴, Andrea Necchi⁵, Syed Hussain⁶, Rafael Morales⁷, Margitta Retz⁸, Günter Niegisch⁹, Ignacio Durán¹⁰, Christine Théodore¹¹, Jose Luis Pérez Gracia¹², Enrique Grande¹³, Beiying Ding¹⁴, Richard Bourgon¹⁴, Sanjeev Mariathasan¹⁴, AnnChristine Thåström¹⁴, Oyewale Abidoye¹⁴ and Michiel van der Heijden¹⁵
¹Yale Cancer Center, New Haven, CT; ²Memorial Sloan Kettering Cancer Center, New York, NY; ³Gustave Roussy, Villejuif, France; ⁴Barts Cancer Institute, Queen Mary University of London, London, UK; ⁵Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, Italy; ⁶University of Liverpool, Clatterbridge Cancer Centre NHS Foundation Trust, Liverpool, U; ⁷Vall d’Hebron Institute of Oncology, Vall d’Hebron University Hospital, Universitat Autonoma de Barcelona, Barcelona, Spain; ⁸Urologische Klinik und Poliklinik, Technische Universität München, Munich, Germany; ⁹Department of Urology, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany; ¹⁰Hospital Universitario Virgen del Rocio, Instituto de Biomedicina, Sevilla, Spain; ¹¹Department of Oncology, Hôpital Foch, Suresnes, France; ¹²Clínica Universidad de Navarra, Pamplona, Spain; ¹³Hospital Universitario Ramón y Cajal, Madrid, Spain; ¹⁴Genentech, Inc., South San Francisco, CA; ¹⁵Netherlands Cancer Institute, Amsterdam, the Netherlands. (Presented By: Daniel P. Petrylak, MD)

Poster #25
Utility of High Throughput Screening in Identifying and Re-Purposing Small Molecule Inhibitors for Urothelial Carcinoma
L. Spencer Krane¹, Reema Railkar¹, Thomas Sanford¹, Benjamin Gibbs¹, Chris Ricketts¹, David Wei¹, Kai Hammerich¹, Abhinav Sidana¹, Brad Scroggins¹, Rajarshi Guha², Kelli Wilson², Xiaohu Zhang², Craig Thomas² and Piyush Agarwal¹
¹National Cancer Institute, Bethesda, MD; ²National Center for Advanced Translational Sciences, Bethesda, MD (Presented By: Thomas Sanford, MD)

Poster #26
Targeting Protein Kinase D2 May Represent a Therapeutic Strategy for Bladder Cancer
Iawen Hsu, Thomas Sanford, Reema Railkar, Quentin Li and Piyush Agarwal
National Cancer Institute, Bethesda, MD (Presented By: Thomas Sanford, MD)

Poster #27
A Comparison of Post-Cystectomy Survival in Down-staged MIBC Patients vs. High-Risk NMIBC Patients
Aaron Brant, BS; Max Kates, MD; Meera Chappidi, BS, MPH; Nikolai Sopko, MD, PhD and Trinity Bivalacqua, MD, PhD
Johns Hopkins School of Medicine, Baltimore, MD (Presented By: Meera R. Chappidi, BS, MPH)

Poster #28
Whole Exome Assessment of Grade Progression in Low-Grade Non-Invasive Bladder Tumors
Ralf Kittler, PhD; Christine Shiang; Ryan Hutchinson, MD; Payal Kapur, MD and Yair Lotan, MD
UTSW, Dallas, TX (Presented By: Ryan Hutchinson, MD)

Poster #29
Preliminary Evaluation of a Novel Intravesical Cisplatin Nanoformulation for Non-muscle-Invasive Bladder Cancer
Max Kates, MD; Abhijit Date; Nikolai Sopko; Alexander Baras; Takahiro Yoshida; Hotaka Matsui; Justin Hanes; Laura Ensign and Trinity Bivalaqua (Presented By: Max Kates, MD)
Poster #30
THE IMPACT OF PLASMACYTOID VARIANT HISTOLOGY ON SURVIVAL OF PATIENTS WITH UROTHELIAL CARCINOMA OF BLADDER AFTER RADICAL CYSTECTOMY
Qiang Li, MD, PhD¹; Melissa Assel²; Eugene Pietzak¹; Daniel Sjoberg³; Harry Herr⁴; Machele Donat¹; Eugene Cha¹; Bernard Bochner¹ and Guido Dalbagni¹
¹Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York, New York
(Presented By: Qiang Li, MD, PhD)

Poster #31
DEFECTIVE ERCC2 CONFRS INCREASED CISPLATIN AND IONIZING RADIATION (IR) SENSITIVITY IN BLADDER CANCER CELLS
Qiang Li, MD, PhD¹; Andrew Bell²; Emmet Jordan, MD³; Sizhi Gao, MD, PhD³; Jennifer Ma³; Eugene Pietzak, MD¹; Guido Dalbagni, MD¹; Bernard Bochner, MD¹; Jonathan Rosenberg, MD⁴; Dean Bajorin, MD⁴; David Solit, MD³; Nadeem Riaz, MD² and Gopa Iyer, MD⁴
¹Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Department of Radiation Oncology, Memorial Sloan Kettering Cancer Center, New York, New York; ³Marie-Josee and Henry R. Kravis Center for Molecular Oncology, Memorial Sloan Kettering Cancer Center, New York, New York; ⁴Genitourinary Oncology Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York
(Presented By: Qiang Li, MD, PhD)

Poster #32
COMPARISON OF READMISSION AND SHORT-TERM MORTALITY RATES BETWEEN DIFFERENT TYPES OF URINARY DIVERSION IN PATIENTS UNDERGOING RADICAL CYSTECTOMY
Bruno Nahar, MD¹; Tulay Koru-Sengul, PhD²; Nachiketh Soodana Prakash, MD¹; Vivek Venkatramani, MD¹; Feng Miao³; Aliyah Gauri³; David Alonzo, MD¹; Sanjaya Swain, MD¹; Murugesan Manoharan, MD¹; Chad Ritch, MD¹; Sanoj Punnen, MD¹; Dipen Parekh, MD¹ and Mark Gonzalgo, MD¹
¹Department of Urology - University of Miami, FL; ²Department of Public Health Sciences, University of Miami, FL
(Presented By: Bruno Nahar, MD)

Poster #33
CLINICAL AND PROGNOSTIC RELEVANCE OF DNA REPAIR GENES POLYMORPHISMS IN BLADDER CANCER IN CHINA
Gongjian Zhu, MD; Zhaohui Chen, MS and Zhiping Wang, MD
Lanzhou University
(Presented By: Gongjian Zhu, Sr., MD)

Poster #34
LESSONS FROM 151 URETERAL REIMPLANTATIONS FOR POST-CYSTECTOMY URETEROENTERIC STRICTURES: A SINGLE CENTER EXPERIENCE OVER A DECADE
Vignesh Packiam, MD; Vijay Agrawal, MD; Andrew Cohen, MD; Joseph Pariser, MD; Scott Johnson, MD; Gregory Bales, MD; Norm Smith, MD and Gary Steinberg, MD
University of Chicago Medicine, Chicago, IL
(Presented By: Vignesh Packiam, MD)

Poster #35
ESTABLISHING FEASIBILITY AND FUNCTION OF TUMOR INFILTRATING LYMPHOCYTES IN BLADDER CANCER
Michael Poch, MD; MacLean Hall; Krithika Kodumudi, PhD; Doris Wiener; Charles James; Julie Le; Cortlin Croft; Mayer Fishman, MD, PhD and Shari Pilon-Thomas, PhD
Moffitt Cancer Center
(Presented By: Michael Adam Poch, MD)
<table>
<thead>
<tr>
<th>Poster #36</th>
<th>TRENDS IN PATIENT REFUSAL OF NEO-ADJUVANT CHEMOTHERAPY FOR MUSCLE INVASIVE BLADDER CANCER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Pauline Filippou, MD; Allison Deal, MD; Ben McCormick, MD; Gopal Narang, MD; Matthew Nielsen, MD, MS; Raj Pruthi, MD; Eric Wallen, MD; Michael Woods, MD and Angela Smith, MD, MS</td>
<td></td>
</tr>
<tr>
<td>Chapel Hill, NC</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Pauline Lenore Filippou, MD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #37</th>
<th>OUTCOMES OF NESTED VARIANT OF UROTHELIAL CARCINOMA FOLLOWING RADICAL CYSTECTOMY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Joel Hillelsohn, MD¹; Dev Mally, MD² and Guido Dalbagni, MD²</td>
<td></td>
</tr>
<tr>
<td>¹New York Medical College Valhalla, NY; ²Memorial Sloan Kettering New York, New York</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Joel Hillelsohn, MD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #38</th>
<th>FINANCIAL TOXICITY AND DELAYS IN CARE AMONG BLADDER CANCER PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Marianne Casilla-Lennon, BS; Seul Ki Choi, BS; Allison Deal, MS; Gopal Narang, MD; Pauline Filippou, MD; Benjamin McCormick, MD; Raj Pruthi, MD; Eric Wallen, MD; Michael Woods, MD; Matthew Nielsen, MD, MS and Angela Smith, MD, MS</td>
<td></td>
</tr>
<tr>
<td>Chapel Hill, NC</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Marianne M. Casilla-Lennon, BS)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #39</th>
<th>PARTIAL CYSTECTOMY DOES NOT COMPROMISE OVERALL SURVIVAL FOR MUSCLE INVASIVE BLADDER CANCER: RESULTS FROM THE NATIONAL CANCER DATABASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>David Alonzo, MD; Tulay Koru-Sengul, PhD; Feng Miao, PhD; Michael Ahdoot, MD; Nachiketh Soodana Prakash, MD; Bruno Nahar, MD; Katherine Almengo; Amanda Mure, MD; Vivek Venkatramani, MD; Sanjaya Swain, MD; Sanoj Punnen, MD¹; Dipen Parekh, MD; Mark Gonzalzo, MD, PhD and Chad Ritch, MD, MBA</td>
<td></td>
</tr>
<tr>
<td>Miami, FL</td>
<td></td>
</tr>
<tr>
<td>(Presented By: David G. Alonzo, MD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #40</th>
<th>LYNCH SYNDROME - ASSOCIATED UPPER TRACT UROTHELIAL CANCER: ASSESSMENT OF CLINICAL SCREENING CRITERIA AND TISSUE - BASED POINT OF CARE TESTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Michael Metcalfe, MD; Priya Rao, MD; Maureen Mork, MD; Lianchun Xiao, MD; Russell Broaddus, MD and Surena Matin, MD</td>
<td></td>
</tr>
<tr>
<td>University of Texas, MD Anderson Cancer Center</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Michael Joseph Metcalfe, MD)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #41</th>
<th>UROLOGIST PRACTICE AFFILIATION AND INTENSITY MODULATED RADIATION THERAPY FOR PROSTATE CANCER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Brent Hollenbeck, MD, MS¹; Samuel Kaufman, MA¹; Phyllis Yan, MS¹; Lindsey Herrel, MD, MS¹; Tudor Borza, MD, MS¹; Florian Schroeck, MD, MS²; Bruce Jacobs, MD, MPH³; Ted Skolarus, MD, MS¹ and Vahakn Shahinian, MD, MS¹</td>
<td></td>
</tr>
<tr>
<td>¹University of Michigan, Ann Arbor, MI; ²The Institute for Health Policy and Clinical Practice, Geisel School of Medicine at Dartmouth College, Hanover, NH; ³The Department of Urology, University of Pittsburgh</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Lindsey Allison Herrel, MD, MS)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Poster #42</th>
<th>A PREDICTIVE RISK STRATIFICATION MODEL FOR DELIRIUM AFTER MAJOR UROLOGIC CANCER SURGERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster session I – Summary</td>
<td></td>
</tr>
<tr>
<td>Albert Ha, BS¹,²; Ross Krasnow, MD¹,²; Adam Kibel, MD¹,² and Steven Chang, MD, MS¹,²</td>
<td></td>
</tr>
<tr>
<td>¹Harvard Medical School, Boston, MA; ²Brigham and Women's Hospital, Boston, MA</td>
<td></td>
</tr>
<tr>
<td>(Presented By: Albert S. Ha, BS)</td>
<td></td>
</tr>
</tbody>
</table>
Poster #43
A POPULATION-BASED ANALYSIS OF THE INCIDENCE, COST, AND OUTCOMES OF POSTOPERATIVE DELIRIUM FOLLOWING MAJOR UROLOGIC CANCER SURGERIES
Albert Ha, BS¹,²; Ross Krasnow, MD¹,²; Adam Kibel, MD¹,² and Steven Chang, MD, MS¹,²
¹Harvard Medical School, Boston, MA; ²Brigham and Women's Hospital, Boston, MA
(Presented By: Albert Sangji Ha, BS)

Poster #44
NATIONAL UTILIZATION OF ROBOTIC RADICAL NEPHRECTOMY FOR CLINICAL STAGE 1 RENAL CELL CARCINOMA: RESULTS FROM A POPULATION-BASED COHORT
Matthew Bream, MD; John Francis, MD; Robert Abouassaly, MD and Simon Kim, MD, MPH
University Hospitals Case Medical Center, Case Western Reserve University, Cleveland, Ohio
(Presented By: Matthew Bream, MD)

Poster #45
ACCOUNTABLE CARE ORGANIZATIONS, UROLOGIST PRACTICE AFFILIATION AND PROSTATE CANCER
Amy N. Luckenbaugh, MD¹; Samuel R. Kaufman²; Phyllis Yan²; Tudor Borza²; Lindsey A. Herrel²; David C. Miller²; Vahakn B. Shahinian³ and Brent K. Hollenbeck²
¹University of Michigan Ann Arbor, Michigan; ²University of Michigan - Dow Division for Health Services Research, Department of Urology Ann Arbor, MI; ³University of Michigan - Kidney Epidemiology Cost Center Ann Arbor, MI
(Presented By: Amy Luckenbaugh, MD)

Poster #46
TPX2 AS A PROGNOSTIC INDICATOR AND POTENTIAL THERAPEUTIC TARGET IN CLEAR CELL RENAL CELL CARCINOMA
Zachary Glaser¹; Harold Love, PhD¹; Shunhua Guo, BM²; Lan Gellert, MD, PhD²; Chang Sam, MD, MBA¹; S. Duke Herrell, MD¹; Daniel Barocas, MD¹; David Penson, MD, MPH¹; Michael Cookson, MD¹ and Peter Clark, MD¹
¹Vanderbilt University Medical Center, Department of Urologic Surgery; ²Vanderbilt University Medical Center, Department of Pathology
(Presented By: Zachary A. Glaser)

Poster #47
DIFFERENTIAL EFFECT OF BODY MASS INDEX BY GENDER ON ONCOLOGICAL OUTCOMES IN PATIENTS WITH RENAL CELL CARCINOMA
Zachary Glaser; Melih Balci, MD; Sam Chang, MD, MBA; S. Duke Herrell, MD; Daniel Barocas, MD; Matthew Resnick, MD, MPH; Joseph Smith, Jr., MD; David Penson, MD, MPH and Peter Clark, MD
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN
(Presented By: Zachary A. Glaser)

Poster #48
SERUM ADIPONECTIN LEVEL MAY BE AN INDEPENDENT PREDICTOR OF CLEAR CELL RENAL CELL CARCINOMA
Junlong Wu; Hongkai Wang, MD; Weijie Gu, MD; Beihe Wang, MD; Bo Dai, MD; Hailiang Zhang, MD; Guohai Shi, MD; Yijun Shen, MD; Yiping Zhu, MD; Yao Zhu, MD and Dingwei Ye, MD
Department of Urology, Fudan University Shanghai Cancer Center, Shanghai, China
(Presented By: Junlong Wu, MD)

Poster #49
WHOLE GENOME TRANSCRIPTIONAL ANALYSIS OF CLEAR CELL RENAL CELL CARCINOMA WITH VENOUS TUMOR THROMBUS REVEALS INTRATUMORAL HETEROGENEITY AND GENES ASSOCIATED WITH POOR OUTCOME
Dharam Kaushik, MD¹; Wasim Chowdhury, MS¹; Ping Wu, PhD¹; Teresa Johnson-Pais, PhD¹; Yidong Chen, PhD²; Michael A. Liss, MD² and Ronald Rodriguez, MD, PhD¹
¹Department of Urology, UTHSCSA, San Antonio; ²Department of Epidemiology and Biostatistics, UTHSCSA, San Antonio
(Presented By: Dharam Kaushik, MD)
Poster Session I — Summary

Poster #50
COMPARISON OF SURGICAL MARGINS BETWEEN OPEN, LAPAROSCOPIC AND ROBOTIC PARTIAL NEPHRECTOMIES IN KIDNEY CANCER PATIENTS IN A POPULATION BASED COHORT
Tanya N. Watts, MS4¹; Andrew G. Bachman, MS4²; Alexander A. Parker, MS4³; Shane M. Pearce, MD²; Brian W. Cross, MD⁴; Michael S. Cookson, MD¹ and Sanjay G. Patel, MD¹
¹University of Oklahoma College of Medicine- Department of Urology, Oklahoma City, OK; ²University of Chicago Pritzker School of Medicine- Department of Urology, Chicago, IL
(Presented By: Tanya Nicole Watts)

Poster #51
DISCRIMINATION OF MALIGNANT AND BENIGN KIDNEY TISSUE WITH 1064 NM DISPERSIVE RAMAN SPECTROSCOPY
Miki Haifler, MD, MSc¹; Isaac Pence, PhD²; Alexander Dumont, MSc³; Benjamin Ristau, MD⁴; Richard Greenberg, MD⁴; David Chen, MD⁴; Alexander Kutikov, MD⁴; Marc Smaldone, MD, MSPH⁴; Rosalia Viterbo, MD⁴; Robert Uzzo, MD⁴; Amnon Zisman, MD, MPH⁴; Anita Mahadevan-Jansen, PHD² and Chetan Patil, PHD³
¹Philadelphia; ²Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, USA; ³Department of Bioengineering, College of Engineering, Temple University, Philadelphia, PA, USA; ⁴Department of Urology, Fox Chase Cancer Center, Temple Health, Philadelphia, PA, USA; ⁵Department of Urology, Assaf Haroffe, Medical Center, Tzrifin, Beer Yaakov, Israel
(Presented By: Michael Haifler, MD, MSc)

Poster #52
 PATTERNS OF CARE AND SURVIVAL COMPARISON OF ADULT AND PEDIATRIC WILMS TUMOR IN THE UNITED STATES: A STUDY OF THE NATIONAL CANCER DATABASE
Alonso Carrasco, Jr., MD¹; Arya Amini, MD²; Carrye R. Cost, MD³; Brian S. Greffe, MD³; Timothy P. Garrington, MD³; Jennifer L. Brunny, MD³; Arthur K. Liu, MD, PhD² and Nicholas G. Cost, MD³
¹Department of Surgery- Division of Urology - Aurora, Colorado; ²Department of Radiation Oncology; ³Department of Pediatrics, Division of Hematology and Oncology - Aurora Colorado; ⁴Department of Surgery, Division of Pediatric Surgery - Aurora Colorado; ⁵Department of Surgery- Division of Urology at University of Colorado School of Medicine- Aurora, Colorado
(Presented By: Alonso Carrasco, Jr., MD)

Poster #53
CLINICOPATHOLOGIC CHARACTERIZATION AND OUTCOMES FOR PATIENTS WITH RENAL MEDULLARY CARCINOMA: RESULTS FROM THE NATIONAL CANCER DATABASE
Harras Zaid, MD; R. Houston Thompson, MD; Bradley Leibovich, MD; William Parker, MD; Brian Costello, MD; Lance Pagliaro, MD and Stephen Boorjian, MD
Mayo Clinic, Rochester, MN
(Presented By: Harras Zaid, MD)

Poster #54
BENIGN AND TUMOR PARENCHYMA METABOLIC PROFILES AFFECT COMPENSATORY RENAL GROWTH IN RENAL CELL CARCINOMA SURGICAL PATIENTS
Barak Rosenzweig, MD¹; Nimrod D Rubinstein, PhD²; Ed Reznik, PhD²; Piotr Zareba, MD¹; Roman Shingarev, MD¹; Steven M. Stirdivant, PhD²; Krishna Juluru, MD³; Oguz Akin, MD³; James J. Hsieh, MD, PhD²; Edgar A Jamies, MD⁴; Paul Russo, MD¹; Katalin Susztak, MD, PhD³; Jonathan A. Coleman, MD¹ and A. Ari Hakimi, MD, PhD¹
¹Department of Surgery, Urology Service, Memorial Sloan Kettering Cancer Center, New York, NY; ²Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA; ³Computational Biology Program, Memorial Sloan-Kettering Cancer Center, New York, NY; ⁴Nephrology Services, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY; ⁵Metabolon Inc, Durham, North Carolina; ⁶Department of Radiology, Weill Cornell Medical College, New York, NY; ⁷Human Oncology and Pathogenesis Program, Memorial Sloan Kettering Cancer Center, New York, NY; ⁸Renal Electrolyte and Hypertension Division, Department of Medicine, University of Pennsylvania, Philadelphia, Pennsylvania
(Presented By: Barak Rosenzweig, MD)
Poster Session I – Summary

Poster #55
VISUAL TRANSLATION OF IMDC CRITERIA IN METASTATIC RENAL CELL CARCINOMA FOR PATIENT-CENTERED DECISION MAKING

Anobel Odisho, MD, MPH¹,²; Sumanta Pal, MD³,⁴; Michael Shapiro, BS¹,²; Ashley Dixon, MD¹,²; J. Connor Wells, BS⁵,⁶; Jose Manuel Ruiz-Morales, MD³,⁶; Daniel Heng, MD, MPH⁵,¹⁶ and John Gore, MD, MS¹,²
¹University of Washington; ²Seattle, WA; ³City of Hope National Medical Center; ⁴Duarte, CA; ⁵Tom Baker Cancer Center, University of Calgary; ⁶Calgary, AB
(Presented By: Anobel Y. Odisho, MD, MPH)

Poster #56
PREDICTORS OF LONG-TERM CHRONIC KIDNEY DISEASE AND NON-RENAL CANCER MORTALITY AFTER RENAL CANCER SURGERY

Joseph Zabell, MD¹; Sevag Demirjian, MD¹; Brian Lane, MD, PhD²; Ithaar Derweesh, MD³ and Steven C. Campbell, MD, PhD¹
¹Cleveland Clinic, Cleveland, OH; ²Spectrum Health, Grand Rapids, MI; ³University of California, San Diego, San Diego, CA
(Presented By: Joseph Zabell, MD)

Poster #57
ASSOCIATION BETWEEN LYMPH NODE YIELD AND SURVIVAL AMONG PATIENTS UNDERGOING RADICAL NEPHROURORETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA

Piotr Zareba, MD, MPH; Barak Rosenzweig, MD and Jonathan Coleman, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Piotr Zareba, MD, MPH)

Poster #58
IMPACT OF PERIOPERATIVE INFECTION ON CANCER-SPECIFIC SURVIVAL AFTER NEPHRECTOMY FOR RENAL CELL CARCINOMA

Jacob E. Tallman, BA¹; Shane M. Pearce, MD¹; Kristine Kuchta, MS³; Brian T. Helfand, MD, PhD² and Scott E. Eggener, MD¹
¹University of Chicago, Chicago, IL; ²NorthShore University Health System, Evanston, IL
(Presented By: Jacob Tallman, BA)

Poster #59
CAN LOOKS DECEIVE? NOT ALL CLINICALLY “CYSTIC” RENAL MASSES HARBOUR INDOLENT BIOLOGY

Benjamin Ristau, MD¹; Lyudmilla DeMora, PhD¹; Eric Ross, PhD, ScM¹; Randall Lee, BS²; Michael Haifler, MD¹; Andres Correa, MD¹; Shreyas Joshi, MD¹; David Chen, MD¹; Richard Greenberg, MD¹; Marc Smaldone, MD, MSHP¹; Rosalia Viterbo, MD¹; Robert Uzzo, MD¹ and Alexander Kutikov, MD¹
¹Fox Chase Cancer Center, Temple University Health System, Philadelphia, PA; ²Drexel University Medical School, Philadelphia, PA
(Presented By: Benjamin T Ristau, MD)

Poster #60
ASSOCIATION OF SINGLE NUCLEOTIDE POLYMORPHISMS WITH RENAL CELL CARCINOMA METASTASES IN PATIENTS WITH DUAL DIAGNOSES OF RENAL CELL CARCINOMA AND MELANOMA

Justin Gregg, MD¹; Zack Glaser, BS¹; Curran Emeruwa, MD²; Johnson Wong, MD²; Christopher Johnson, BS²; Arturo Holmes, BS³; Darrel Ellis, MD³; Loren Lipworth, ScD⁴; Todd Edwards, PhD² and Peter Clark, MD¹
¹Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN; ²Meharry Medical College, Nashville, TN; ³Vanderbilt University Medical Center, Department of Medicine, Division of Dermatology; ⁴Vanderbilt University Medical Center, Department of Medicine, Division of Epidemiology
(Presented By: Justin Gregg, MD)
Poster #61
INITIAL EXPERIENCE WITH SYNCHRONOUS BILATERAL RENAL CRYOABLATION FOR MULTIFOCAL RENAL MASSES
Ross Mason, MD; Thomas Atwell, MD; Bimal Bhindi, MD; Grant Schmit, MD; John Schmitz, MD; Bradley Leibovich, MD; Stephen Boorjian, MD and R. Houston Thompson, MD
Mayo Clinic, Rochester, MN
(Presented By: Ross J. Mason, MD, FRCSC)

Poster #62
DISTINGUISHING PEDIATRIC AND ADOLESCENT RENAL CELL CARCINOMA FROM OTHER RENAL MALIGNANCIES
Jamil Syed¹; Kevin Nguyen¹; Charlotte Wu, MD²; Minhaj Siddiqui, MD³; Adam Hittelman, MD⁴; Nicholas Cost, MD⁴ and Brian Shuch, MD⁵
¹New Haven; ²New Haven Ct; ³Baltimore Maryland; ⁴Aurora Colorado
(Presented By: Jamil Syed)

Poster #63
IMPLEMENTATION OF VENOUS TUMOR THROMBECTOMY PATHWAY AND QUALITY CONTROL METRICS AT A HIGH VOLUME CENTER
Deepak Pruthi, MD, FRCSC¹; Arpan Satsangi, BSc¹; Kevan Iffrig, MD¹; Miguel Cajipe, MD¹; Wasim Chowdhury, MS¹; Hanzhang Wang, MD, MPH¹; Georges Haidar, MD²; Edward Sako, MD, PhD³; Michael Liss, MD¹; Ronald Rodriguez, MD, PhD¹ and Dharam Kaushik, MD¹
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Vascular/Endovascular Surgery, University of Texas Health Sciences Center, San Antonio, Texas; ³Department of Cardiothoracic Surgery, University of Texas Health Sciences Center, San Antonio, Texas
(Presented By: Deepak K. Pruthi, MD, FRCSC)

Poster #64
PARTIAL NEPHRECTOMY VS CRYOABLATION AND RADIOFREQUENCY ABLATION FOR CT1 RENAL MASSES: A SYSTEMATIC REVIEW AND META-ANALYSIS OF >3,900 PATIENTS
Jesus Rivero, MD¹; Jose De la Cerda, MD, MPH¹; Hanzhang Wang, MPH¹; Ann Farrell, MLS²; Michael Liss, MD, MAS¹; Ronald Rodriguez, MD, PhD¹ and Dharam Kaushik, MD¹
¹Department of Urology, University of Texas Health Science Center at San Antonio, TX; ²Plummer Library, Mayo Clinic, Rochester, MN
(Presented By: Jesus R. Rivero, Jr., MD)

Poster #65
PATHOLOGICAL DETERMINANTS OF ONCOLOGIC OUTCOMES IN STAGE II RENAL CELL CARCINOMA: AN INTERNATIONAL MULTICENTER ANALYSIS
Daniel Han, MD²; Alp Tuna Bekscar, MD²; Zachary Hamilton, MD²; Sean Berquist²; Abd-el Rahman Hassan²; Charles Field²; Aaron Bloch²; Conrad Tobert, MD²; Fang Wan²; James Proudfoot²; Reza Mehrazin, MD³; Anthony Patterson, MD³; Bulent Akdogan, MD¹; Haluk Ozen, MD¹; Brian Lane, MD¹ and Ithaar Derweesh, MD²
¹Ankara, Turkey; ²San Diego, CA; ³Grand Rapids, MI; ⁴Memphis, TN
(Presented By: Daniel Han, MD)

Poster #66
IMMUNE CELL PHENOTYPING OF CLEAR CELL RENAL CELL CARCINOMA: PRELIMINARY REPORT
Mazyar Ghanaat, MD; Ming Liu, PhD; Brandon Manley, MD; Maria Becerra, MD; Mahyar Kashan, BA; Almedina Redzemovic, MS; Jonathan Coleman, MD; Paul Russo, MD; James Hsieh, MD, PhD; Ming Li, PhD and Ari Hakimi, MD
Memorial Sloan Kettering Cancer Center New York, NY
(Presented By: Mazyar Ghanaat, BS, MD)
Poster #67
PRACTICE PATTERNS IN THE BIOPSY OF LOCALIZED RENAL MASSES IN THE NATIONAL CANCER DATABASE
Vidit Sharma, MD; Mary Beth Westerman, MD; Bradley C. Leibovich, MD and Matthew K. Tollefson, MD
Mayo Clinic, Rochester, MN
(Presented By: Vidit Sharma, MD)

Poster #68
OUTCOMES AND PROGNOSTIC FACTORS OF PRIMARY URETHRAL CANCER
Wilson Sui¹; Arindam Roy Choudry, PhD²; Sven Wenske, MD¹; G. Joel DeCastro, MD¹; James McKiernan, MD¹ and Christopher Anderson, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Biostatistics, Mailman School of Public Health, Columbia University
(Presented By: Wilson Sui)

Poster #70
TRENDS IN THE USE OF CHEMOTHERAPY FOR TREATMENT OF UPPER TRACT UROTHELIAL CARCINOMA USING THE NATIONAL CANCER DATA BASE
Benjamin McCormick, MD; Allison Deal, MS; Pauline Filippou, MD; Gopal Narang, MD; Raj Pruthi, MD; Eric Wallen, MD; Michael Woods, MD; Matthew Nielsen, MD, MS and Angela Smith, MD, MS
Chapel Hill, NC
(Presented By: Benjamin J. McCormick, MD)

Poster #71
NATIONAL TRENDS IN NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA: AN ANALYSIS OF THE NSQIP DATABASE, 2005-2014
Andrew Lenis, MD, MS¹; Nicholas Donin, MD¹; William Meeks, MS²; Scott Gulig, MS²; Karim Chamie, MD, MSHS¹ and Marc Bjurlin, DO³
¹Department of Urology, UCLA, Los Angeles, California; ²Data Management and Statistical Analysis Department, American Urological Association, Linthicum, Maryland; ³Department of Urology, NYU, New York, New York
(Presented By: Andrew Thomas Lenis, MD, MS)

Poster #72
MINIMALLY INVASIVE INGUINAL LYMPHADENECTOMY IN THE MANAGEMENT OF PENILE CARCINOMA
Christopher M. Russell, MD; Simpa S. Salami, MD, MPH; Adam Niemann, BS; Alon Z. Weizer, MD; Todd M. Morgan, MD and Jeffery S. Montgomery, MD, MHS
Department of Urology, University of Michigan, Ann Arbor, Michigan
(Presented By: Christopher M. Russell, MD)
Poster #73
OUTCOMES OF PERI-OPERATIVE CHEMOTHERAPY (PO-CT) FOR LOCALLY ADVANCED PENILE SQUAMOUS CELL CARCINOMA (LA-PSCC): RESULTS FROM A MULTICENTER ANALYSIS
Andrea Necchi, MD¹; Gregory Pond, PhD, PStat²; Daniele Raggi, MD¹; Sarah Ottenhof, MD³; Simon Horenblas, MD³; Vincent Khoo, MD⁴; Oliver Hakenberg, MD⁵; Axel Heidenreich, MD⁶; Bernhard Eigl, MD⁷; Lucia Nappi, MD⁷; Kazumasa Matsumoto, MD⁸; Ulka Vaishampayan, MD⁹; Michael Woods, MD¹⁰; Patrizia Giannatempo, MD¹¹; Daniel Geynisman, MD¹²; Mirko Prieto, MD¹³; Evangelos Xylinas, MD¹⁴; Matthew Milowsky, MD¹⁴; Giuseppe Di Lorenzo, MD¹⁴ and Guru Sonpavde, MD¹⁵
¹Fondazione IRCCS Istituto Nazionale dei Tumori; ²McMaster University, Hamilton, Ontario, Canada; ³The Netherlands Cancer Institute, Amsterdam, The Netherlands; ⁴The Royal Marsden Hospital, London, United Kingdom; ⁵University Hospital Rostock, Rostock, Germany; ⁶Universitätsklinikum Köln, Köln, Germany; ⁷British Columbia Cancer Agency, Vancouver, BC, Canada; ⁸Kilasato University School of Medicine, Sagamihara, Japan; ⁹Karmanos Cancer Institute, Detroit, MI, USA; ¹⁰University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA; ¹¹Fox Chase Cancer Center Temple Health, Philadelphia, PA, USA; ¹²Università degli Studi di Torino, Ospedale Molinette, Torino, Italy; ¹³Cochin Hospital, APHP, Paris Descartes University, Paris, France; ¹⁴Università Federico II, Napoli, Italy; ¹⁵UAB Comprehensive Cancer Center, Birmingham, AL, USA
(Presented By: Andrea Necchi, MD)

Poster #74
INCREASED USE OF ALVIMOPAN IS ASSOCIATED WITH DECREASED POSTOPERATIVE ILEUS IN RADICAL CYSTECTOMY PATIENTS
Aydin Pooli, MD; Joshua D. Belle, MBBS; Dmitry Oleynikov, MD, FACS and Christopher M. Deibert, MD, MPH
University of Nebraska Medical Center
(Presented By: Aydin Pooli, MD)

Poster #75
DECIPHER TEST IMPACTS ADJUVANT TREATMENT DECISION-MAKING AMONG PATIENTS WITH HIGH-RISK PATHOLOGY AT RADICAL PROSTATECTOMY: RESULTS FROM THE MULTICENTER PROSPECTIVE PRO-IMPACT STUDY
John Gore, MD, MS¹; Marguerite du Plessis, BSc²; Maria Santiago-Jimenez, MS³; Kasra Yousefi, MS³; Darby Thompson, PhD³; Mark Bandyk, MD⁴; Fernando Blanco, MD⁵; Gordon Brown, MD⁶; David Chen, MD⁷; William Clark, MD⁸; Michael Franks, MD⁹; Lawrence Karsh, MD¹⁰; Adam Kibel, MD¹¹; Hyung Kim, MD¹²; Brian Lane, MD¹³; Yair Lotan, MD¹⁴; William Lowrance, MD¹⁵; Murugesan Manoharan, MD¹⁶; Paul Maroni, MD¹⁷; Scott Perrapato, MD¹⁸; Paul Sieber, MD¹⁸; Edouard Trabulsi, MD¹⁹; Robert Waterhouse, MD²⁰; Elai Davicioni, PhD² and Daniel Lin, MD¹
¹University of Washington, Seattle, WA; ²GenomeDx Biosciences Inc., Vancouver, BC, Canada; ³EMMES Canada, Burnaby, BC, Canada; ⁴Lakeland Regional Cancer Center; ⁵Urological Research Network, Columbia University Dept of Urology, Miami, FL; ⁶Delaware Valley Urology, LLC, Voorhees, NJ; ⁷Fox Chase Cancer Center, Philadelphia, PA; ⁸Alaska Clinical Research Center, Anchorage, AK; ⁹Virginia Urology, Richmond, VA; ¹⁰The Urology Center of Colorado, Denver, CO; ¹¹Brigham and Women’s Hospital, Boston, MA; ¹²Cedars-Sinai Medical Center, Los Angeles, CA; ¹³Spectrum Health Medical Group, Grand Rapids, MI; ¹⁴UT Southwestern Medical Center, Dallas, TX; ¹⁵Huntsman Cancer Hospital, Institute, University of Utah, Salt Lake City, UT; ¹⁶University of Miami Miller, Miami, FL; ¹⁷University of Colorado, Denver Medical Campus, Denver, CO; ¹⁸Lancaster Urology, Lancaster, PA; ¹⁹Thomas Jefferson University, Philadelphia, PA; ²⁰Carolina Urology Partners, Gastonia, NC
(Presented By: John L. Gore, MD, MS)
Poster #76
DECIPHER TEST IMPACTS TREATMENT DECISION-MAKING AMONG PATIENTS WITH BIOCHEMICAL RECURRENCE AFTER RADICAL PROSTATECTOMY: RESULTS FROM THE MULTICENTER PROSPECTIVE PRO-IMPACT STUDY
John Gore, MD, MS¹; Marguerite du Plessis, BSc²; Maria Santiago-Jimenez, MS³; Kasra Yousefi, MS²; Darby Thompson, PhD⁴; Mark Bandyk, MD⁴; Fernando Bianco, MD⁵; Gordon Brown, MD⁶; David Chen, MD⁷; William Clark, MD³; Michael Franks, MD⁶; Lawrence Karsh, MD¹⁰; Adam Kibel, MD¹¹; Hyung Kim, MD¹²; Brian Lane, MD¹³; Yair Lotan, MD¹⁴; William Lowrance, MD¹⁵; Murugesan Manoharan, MD¹⁶; Paul Maroni, MD¹⁷; Scott Perrapato, MD¹⁸; Paul Sieber, MD¹⁸; Edouard Trabulsi, MD¹⁹; Robert Waterhouse, MD²¹; Elai Davicioni, PhD² and Daniel Lin, MD¹
¹University of Washington, Seattle, WA; ²GenomeDx Biosciences Inc., Vancouver, BC, Canada; ³EMMES Canada, Burnaby, BC, Canada; ⁴Lakeland Regional Cancer Center; ⁵Urological Research Network, Columbia University Dept of Urology, Miami, FL; ⁶Delaware Valley Urology, LLC, Voorhees, NJ; ⁷Fox Chase Cancer Center, Philadelphia, PA; ⁸Alaska Clinical Research Center, Anchorage, AK; ⁹Virginia Urology, Richmond, VA; ¹⁰The Urology Center of Colorado, Denver, CO; ¹¹Brigham and Women's Hospital, Boston, MA; ¹²Cedars-Sinai Medical Center, Los Angeles, CA; ¹³Spectrum Health Medical Group, Grand Rapids, MI; ¹⁴UT Southwestern Medical Center, Dallas, TX; ¹⁵Huntsman Cancer Hospital Institute, University of Utah, Salt Lake City, UT; ¹⁶University of Miami Miller, Miami, FL; ¹⁷University of Colorado, Denver Medical Campus, Denver, CO; ¹⁸Lancaster Urology, Lancaster, PA; ¹⁹Thomas Jefferson University, Philadelphia, PA; ²⁰Carolina Urology Partners, Gastonia, NC
(Presented by: John L. Gore, MD, MS)

Poster #77
THE IMPACT OF GENETIC VARIATION IN SOLUTE CARRIER ORGANIC ANION (SLCO) ENCODED MEMBRANE TRANSPORTERS ON PROSTATE CANCER RECURRENCE POST RADICAL PROSTATECTOMY
Mazen Alsinnawi, MBCh, FRCS¹; Eunpi Cho, MD²; Brandy E. Olin, MSc²; Christopher R. Porter, MD¹ and Elahe A. Mostaghel, MD²
¹Virginia Mason Medical Center, Seattle, Washington; ²Fred Hutchinson Cancer Research Center, Seattle, WA
(Presented by: Mazen Alsinnawi, MBChB, FRCS)

Poster #78
CONTEMPORARY MANAGEMENT OF MEN WITH HIGH-RISK LOCALIZED PROSTATE CANCER IN THE UNITED STATES
Adam Weiner, MD¹; Richard Matulewicz, MD, MS¹; Edward Schaeffer, MD, PhD¹ and Scott Eggener, MD²
¹Northwestern University, Chicago, IL; ²University of Chicago, Chicago, IL
(Presented By: Adam B. Weiner, MD)

Poster #79
ASSESSMENT OF NEEDLE TIP DEFLECTION DURING TRANSRECTAL GUIDED PROSTATE BIOPSY- IMPLICATIONS FOR TARGETED BIOPSIES
Daniel Halstuch, MD¹; Jack Baniel, MD¹; Rachel Ozalvo¹; Sivan Sela¹; Yaara Ber, PhD¹ and David Margel, MD, PhD²
¹Division of Urology, Rabin Medical Center, Petah-Tikva, Israel; ²Department of Urology, Rabin Medical Center& Ramat-Aviv Medical Center, Israel
(Presented By: David Margel, MD, PhD)

Poster #80
VASCULAR-TARGETED PHOTODYNAMIC THERAPY WITH TOOKAD® SOLUBLE IN LOCALIZED PROSTATE CANCER: MOVING FROM HEMI-ABLATION TO TARGETED TREATMENT
David Margel, MD, PhD¹; Abdel-Rahmene Azzouzi, MD, PhD²; Yaara Ber, PhD³; Rachel Ozalbo³; Sivan Sela³ and Jack Baniel, MD¹
¹Department of Urology, Rabin Medical Center& Ramat-Aviv Medical Center, Israel; ²Department of Urology, Angers, France.; ³Division of Urology, Rabin Medical Center, Petah-Tikva, Israel
(Presented By: David Margel, MD, PhD)
Poster #81
PROSPECTIVE STUDY OF HEALTH RELATED QUALITY OF LIFE IN MEN WITH HIGH AND INTERMEDIATE RISK PROSTATE CANCER
Mazen Alsinnawi, MBChB, FRCS¹; Jennifer Cullen, PhD²; Lauren M. Hurwitz, MHS³; John S. Banerji, MD⁴; Katherine E. Levie, CCRP⁵; Erika M. Wolff, PhD⁶; Inger L. Rosner, MD⁷; John Massman III, PhD¹; Timothy C. Brand, MD²; Joseph R. Sterbis, MD²; April E. Slee, MS³ and Christopher R. Porter, MD¹
¹Virginia Mason Medical Center, Seattle, Washington; ²CPDR, Rockville, Maryland; ³Axio, Seattle, Washington
(Presented by: Mazen Alsinnawi)

Poster #82
FACTORS PREDICTING SKELETAL-RELATED EVENTS IN PATIENTS WITH BONE METASTATIC CASTRATION-RESISTANT PROSTATE CANCER
Zachary Klaassen, MD¹; Lauren E. Howard, MS²; Amanda de Hoedt³; Christopher L. Amling, MD³; William J. Aronson, MD⁴; Matthew R. Cooperberg, MD, MPH⁵; Christopher J. Kane, MD⁶; Martha K. Terris, MD⁷ and Stephen J. Freedland, MD¹
¹University of Toronto, University Health Network, Toronto, Ontario; ²Durham Veterans Affairs Medical Center, Durham, NC; ³Oregon Health & Sciences University, Portland, OR; ⁴West Los Angeles Veterans Affairs Medical Center, West Los Angeles, CA; ⁵San Francisco Veterans Affairs Medical Center, San Francisco, CA; ⁶San Diego Veterans Affairs Medical Center, San Diego, CA; ⁷Augusta Veterans Affairs Medical Center, Augusta, GA; ⁸Cedars-Sinai Medical Center, Los Angeles, CA
(Presented By: Zachary Klaassen, MD)

Poster #83
IMPACT OF PROXIMITY TO NCI- AND NCCN-DESIGNATED CANCER CENTERS ON OUTCOMES FOR PATIENTS WITH PROSTATE CANCER UNDERGOING RADICAL PROSTATECTOMY USING BIG DATA: A SEER-MEDICARE ANALYSIS
Cameron Ghaffary, MD¹; Zhigang Duan, MD²; Brian Chapin, MD³; Tamer Dafashy, MS¹; Christopher Kosarek, MD¹; Karim Chamie, MD¹; Simon Kim, MD⁵; Karen Hoffman, MD⁶; Sharon Giorando, MD¹ and Stephen Williams, MD¹
¹The Department of Surgery, Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²The Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ³Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁴Department of Urology, David Geffen School of Medicine at UCLA, Los Angeles, CA; ⁵Department of Urology, Case Western Reserve University; ⁶Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁷Houston Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Cameron Ghaffary, MD)

Poster #84
OVERALL SURVIVAL ADVANTAGE WITH RADICAL PROSTATECTOMY FOR PROSTATE CANCER
Stephen Williams, MD¹; Christopher Kosarek, MD¹; Jinhai Huo, PhD²; Karim Chamie, MD³; Marc Smaldone, MD, MSHP⁴; Justin Fang, MD¹; Leslie Ynalvez⁴; Simon Kim, MD, MPH⁵; Karen Hoffman, MD, MHS, MPH⁶; Sharon Giordano, MD, MPH⁶ and Brian Chapin, MD¹
¹The Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ³Department of Urology, University of California Los Angeles, Los Angeles, CA; ⁴Department of Urology, Fox Chase Cancer Center, Temple University Health System, Philadelphia, PA; ⁵Department of Urology, Case Western Reserve University, Cleveland, OH; ⁶Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Christopher David Kosarek, MD)
Poster #85
MALIGNANCIES IN MALE BRCA MUTATION CARRIERS – RESULTS FROM A PROSPECTIVELY SCREENED COHORT OF PATIENTS ENROLLED TO A DEDICATED MALE BRCA CLINIC
Roy Mano, MD¹; Ofer Benjaminov, MD²; Inbal Kedar, MSc³; Yaara Ber, PhD⁴; Sivan Sela, BSc⁴; Rachel Ozalvo, MA⁴; Jack Baniel, MD¹ and David Margel, MD, PhD⁴
¹Department of Urology, Rabin Medical Center, Petach Tikva, Israel and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; ²Department of Imaging, Rabin Medical Center, Petach Tikva, Israel and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; ³The Raphael Recanati Genetics Institute, Rabin Medical Center, Petach Tikva, Israel and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel; ⁴Department of Urology, Rabin Medical Center, Petach Tikva, Israel
(Presented By: Roy Mano, MD)

Poster #86
SHORT-TERM OUTCOMES OF ACTIVE SURVEILLANCE FOR PROSTATE CANCER IN MINORITY POPULATIONS
Jun Song, BS; Benjamin Waldorf, MD and Adam Reese, MD
Lewis Katz School of Medicine at Temple University, Philadelphia, PA
(Presented By: Jun H. Song, BS)

Poster #87
PROXIMITY OF POSITIVE PROSTATE BIOPSY CORE TO CAPSULAR MARGIN MAY HELP PREDICT EXTRACAPSULAR EXTENSION AND POSITIVE MARGIN AT PROSTATECTOMY
Nirmish Singla, MD; Jordon Walker; Niccolo Passoni, MD; Karen de la Fuente and Claus Roehrborn, MD
UTSW, Dallas, TX
(Presented By: Nirmish Singla, MD)

Poster #88
ATYPICAL SMALL ACINAR PROLIFERATION: PROGRESSION TO CLINICALLY SIGNIFICANT PROSTATE CANCER?
Leslie Ynalvez¹; Christopher Kosarek, MD¹; Preston Kerr, MD¹; Justin Fang, MD¹; Eduardo Eyzaguirre, MD²; Eduardo Orihuela, MD¹ and Stephen Williams, MD¹
¹The Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²The Department of Pathology, The University of Texas Medical Branch, Galveston, TX
(Presented By: Christopher D. Kosarek, MD)

Poster #89
CLINICAL USE OF THE PROSTATE HEALTH INDEX FOR THE DETECTION OF PROSTATE CANCER: PROSPECTIVE RESULTS FROM A LARGE ACADEMIC PRACTICE
Jeffrey Tosoian, MD, MPH¹; Sasha Druskin, MD¹; Darian Andreas¹,²; Patrick Mullane¹; Meera Chappidi³; Sarah Joo⁴; Kamyar Ghabili, MD¹; Joseph Agostino¹; Katarzyna Macura, MD, PhD⁵; H. Ballentine Carter, MD¹; Edward Schaeffer, MD, PhD⁶; Alan Partin, MD, PhD¹; Lori Sokoll, PhD⁶ and Ashley Ross, MD, PhD⁶
¹The James Buchanan Brady Urological Institute and Department of Urology at the Johns Hopkins University School of Medicine, Baltimore, MD, USA; ²Virginia Commonwealth University School of Medicine, Richmond, VA, USA; ³Department of Radiology and Radiological Sciences at the Johns Hopkins University School of Medicine, Baltimore, MD, USA; ⁴The Department of Urology at the Northwestern University Feinberg School of Medicine, Chicago, IL, USA; ⁵The James Buchanan Brady Urological Institute and Department of Urology, Department of Pathology, and Sidney Kimmel Comprehensive Cancer Center at the Johns Hopkins University School of Medicine, Baltimore, MD, USA
(Presented By: Sasha Courand Druskin, MD)

Poster #90
TRENDS IN THE UTILIZATION OF ACTIVE SURVEILLANCE FOR STAGE I PROSTATE CANCER BASED ON TYPE OF TREATING INSTITUTION: RESULTS FROM NATIONAL CANCER DATABASE
Johar Syed, MD and Sameer Siddiqui, MD
St Louis University Hospital, MO
(Presented By: Johar Syed)
Poster #91
MRI AXIAL ORIENTATION MAY AFFECT THE RESULTS OF MRI-US FUSION BIOPSIES
David Margel, MD, PhD¹; Michael Oren, MD²; Yaara Ber, PhD³; Philip Rosen⁴ and Ofer Benjaminov, MD⁴
¹Department of Urology, Rabin Medical Center & Ramat-Avim Medical Center, Israel; ²Department of Urology, HaEmek Medical Center, Afula, Israel; ³Division of Urology, Rabin Medical Center, Petah-Tikva, Israel; ⁴Department of Imaging, Rabin Medical Center, Petah-Tikva, Israel
(Presented By: David Margel, MD, PhD)

Poster #92
ANTIBIOTIC DIRECTED PROPHYLAXIS FOR TRANSRECTAL PROSTATE BIOPSY: AN APPLICATION OF AUA RECOMMENDATIONS IN THE SETTING OF HIGH FLUOROQUINOLONE E. COLI RESISTANCE
Yifan Meng; Jimena Cubillos, MD; Edward Messing, MD and Janet Kukreja, MD, MPH
University of Rochester Medical Center, Rochester, NY
(Presented By: Yifan Meng)

Poster #93
ASSESSING DECIPHER FOR PREDICTING LYMPH NODE POSITIVE DISEASE AMONG MEN DIAGNOSED WITH INTERMEDIATE RISK DISEASE TREATED WITH PROSTATECTOMY AND EPLND
Mary Achim¹, Surena Matin¹, Brian Chapin¹, Patricia Troncoso², Elsa Li Ning Tapia³, Mireya Guerrero³, Ina Prokhorova³, Anders Olson³, Zaid Haddad³, Lucia Lam³, Kasra Yousefi², Christine Buerki³, Elai Davicioni³ and John W. Davis, MD, FACS¹
¹Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ²Department of Pathology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ³GenomeDx Biosciences, Inc., Vancouver, British Columbia, Canada
(Presented By: John W. Davis, MD, FACS)

Poster #94
INDIVIDUAL PATIENT LEVEL META-ANALYSIS OF THE PERFORMANCE OF THE DECIPHER GENOMIC CLASSIFIER IN HIGH RISK MEN POST-PROSTATECTOMY TO PREDICT DEVELOPMENT OF METASTATIC DISEASE
Daniel E. Spratt⁴, Kasra Yousefi³, Samineh Deheshi², Ashley E. Ross³, Edward M. Schaeffer⁴, Bruce J. Trock³, R. Jeffrey Karnes⁵, Andrew G. Glass⁶, Robert B. Den⁷, Adam P. Dicker⁷, Stephen J. Freedland⁸, Shuang G. Zhao¹, Lucia L. C. La ³, Marguerite du Plessis⁸, Voleak Cheurng², Zaid Haddad², Christine Buerki³, Elai Davicioni³, Sheila Weinmann⁸, Eric A. Klein⁹ and Felix Y. Feng, MD⁴
¹Department of Radiation Oncology, Michigan Center for Translational Pathology, Comprehensive Cancer Center, University of Michigan, Ann Arbor, MI, USA; ²GenomeDx Biosciences, Vancouver, British Columbia, Canada; ³James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, MD, USA; ⁴Department of Urology, Northwestern University IL, USA; ⁵Department of Urology, Mayo Clinic, Rochester, MN, USA; ⁶Center for Health Research, Kaiser Permanente Northwest, Portland, OR, USA; ⁷Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA; ⁸Department of Surgery, Division of Urology, Center for Integrated Research on Cancer and Lifestyle, Samuel Oschin Comprehensive Cancer Center, Cedars-Sinai Medical Center, Los Angeles, CA, USA; ⁹Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA (Presented By: Felix Feng, MD)

Poster #95
CONFIRMATORY MRI-GUIDED PROSTATE BIOPSY INFORMS CLINICAL CARE IN AN ACTIVE SURVEILLANCE POPULATION
Zachary Hamilton, MD; Unwanaobong Nseyo, MD; Brittney Cotta, MD; Natalie Schenker-Ahmed, PhD; A. Karim Kader, MD; Christopher J. Kane, MD; David Karow, MD and J. Kellogg Parsons, MD
University of California, San Diego
(Presented By: Zachary A. Hamilton, MD)
Poster #96
NUMBER NEEDED TO TREAT TO ACHIEVE ONE ADDITIONAL PATIENT FREE OF CLINICAL EVENT: COMPARISON OF ENZALUTAMIDE AND BICALUTAMIDE IN PATIENTS WITH METASTATIC CASTRATION-RESISTANT PROSTATE CANCER
Raoul S. Concepcion¹, David F. Penson², Lawrence Karsh³, Hongbo Yang⁴, Neil M. Schultz⁵, Bruce A. Brown⁶, Arie Barlev⁷ and Scott C. Flanders⁸
¹Urology Associates; ²Vanderbilt University Medical Center; ³The Urology Center of Colorado; ⁴Analysis Group, Inc; ⁵Astellas Pharma, Inc.; ⁶Meditation, Inc.
(Presented By: Raoul S. Concepcion, MD, FACS)

Poster #97
CAN FREQUENCY OF PROSTATE BIOPSY ON ACTIVE SURVEILLANCE BE REDUCED WITHOUT SIGNIFICANTLY INCREASING RISK?
Gregory Auffenberg, MD, MS¹; Christine Barnett¹; Zian Cheng¹; Fan Yang¹; Jiachen Wang¹; David Miller, MD, MPH¹; James Montie, MD¹; Mufaddal Mamawala, MBBS, MPH, CPH² and Brian Denton, PhD¹
¹University of Michigan, Ann Arbor, MI; ²Johns Hopkins University, Baltimore, MD
(Presented By: Gregory B. Auffenberg, MD, MS)

Poster #98
INCIDENCE OF PROSTATE CANCER STRATIFIED BY RACE AND GLEASON SCORE: A SEER DATABASE ANALYSIS FOLLOWING USPSTF SCREENING RECOMMENDATIONS
Daniel Au¹; Johar Syed, MD and Sameer Siddiqui, MD
¹ St Louis University Hospital, MO
(Presented By: Johar Syed, MD)

Poster #99
DECIPHER CORRELATION PATTERNS ON BIOPSY: INITIAL EXPERIENCE FROM 738 PROSPECTIVE PATIENTS
Ashley Ross, MD, PhD¹; Stacy Loeb²; María Santiago-Jiménez³; Zaid Haddad³; Lucia L. C. Lam³; Kasra Yousefi³; Elai Davicion³; Eric A. Klein⁴; Robert B. Den⁵ and Daniel E. Spratt⁶
¹James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, MD, USA; ²Department of Urology and Population Health, New York University and Manhattan Veterans Affairs Medical Center, NY, USA; ³GenomeDx Biosciences Inc. Vancouver, BC, Canada; ⁴Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA; ⁵Department of Radiation Oncology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA; ⁶Department of Radiation Oncology, Michigan Center for Translational Pathology, Comprehensive Cancer Center, University of Michigan, Ann Arbor, MI, USA
(Presented By: Ashley Ross, MD, PhD)

Poster #100
EFFECT OF EDUCATION, POVERTY, AND URBANIZATION LEVELS ON INCIDENCE OF PROSTATE CANCER FOLLOWING 2012 USPSTF RECOMMENDATIONS: RESULTS FROM THE POPULATION BASED SEER DATABASE ANALYSIS
Daniel Au; Johar Syed, MD and Sameer Siddiqui, MD
St Louis University Hospital, MO
(Presented By: Johar Syed)

Poster #101
DIRECT PHARMACOKINETIC AND PHARMACODYNAMIC COMPARISON OF SUBCUTANEOUS VERSUS INTRAMUSCULAR LEUPRORELIN ACETATE FORMULATIONS IN MALE SUBJECTS
Daniel Saltzstein, MD¹; Jack McLane, MD²; Stuart Atkinson, MB, ChB, Medicine³ and Clifton Vestal, MD⁴
¹Urology San Antonio, San Antonio, TX; ²TOLMAR, Inc., Fort Collins, CO; ³TOLMAR Pharmaceuticals, Inc., Lincolnshire, IL; ⁴Urology Associates of North Texas, Arlington, TX
(Presented By: Daniel Robin Saltzstein, MD)
Poster #102
THE EFFECT OF PROSTATE CANCER TREATMENT ON PATIENT REPORTED URINARY AND SEXUAL FUNCTION VARIES BY DISEASE SEVERITY: 3-YEAR RESULTS FROM THE CEASAR STUDY
Mark Tyson MD, JoAnn Rudd-Alvarez MA, Tatsuki Koyama PhD, Matthew Resnick MD, MPH, David Penson MD, MPH and Dan Barocas MD, MPH
Vanderbilt University
(Presented By: Mark D. Tyson, MD)

Poster #103
BEYOND CLASSICAL RISK ADJUSTMENT: SOCIOECONOMIC STATUS AND HOSPITAL PERFORMANCE IN UROLOGIC ONCOLOGY
Anobel Odisho, MD, MPH¹,²; Ruth Etzioni, PhD³,² and John Gore, MD, MS¹,²
¹University of Washington; ²Seattle, WA; ³Fred Hutchinson Cancer Research Center
(Presented By: Anobel Y. Odisho, MD, MPH)

Poster #104
RECLASSIFICATION RATES OF PATIENTS ON ACTIVE SURVEILLANCE AFTER THE ADDITION OF MRI-US FUSION BIOPSY OF THE PROSTATE: AN ANALYSIS OF THE SEVEN MOST USED CRITERIA ON A PROSPECTIVE COHORT OF MEN
Bruno, Nahar MD¹; Andrew Katims¹; Nachiketh Soodana Prakash, MD¹; Vivek Venkatramani, MD¹; Tulay Koru-Sengul, PhD²; Bruce Kava, MD¹; Ramgopal Satyanarayana, MD¹; Murugesan Manoharan, MD¹; Mark Gonzalgo, MD¹; Chad Ritch, MD¹; Dipen Parekh, MD¹ and Sanoj Punnen, MD¹
¹Department of Urology - University of Miami, FL; ²Department of Public Health Sciences, University of Miami, FL
(Presented By: Bruno Nahar, MD)

Poster #105
A NOVEL METHOD FOR HARVESTING AND CULTURE OF EX VIVO HUMAN PROSTATE TISSUE
Kymora Scotland, MD, PhD; Matthew Schiewer, PhD; Ayesha Shafi, PhD; Renee de Leeuw, PhD; Peter McCue, MD; Costas Lallas, MD; Edouard Trabulsi, MD; Karen Knudsen, PhD and Leonard Gomella, MD
Thomas Jefferson University, Philadelphia, PA
(Presented By: Kymora B. Scotland, MD, PhD)

Poster #106
THE 4KSCORE TEST ACCURATELY PREDICTS AGGRESSIVE PROSTATE CANCER IN MEN OF ALL AGES AND RACE.
Bruno Nahar, MD¹; Daniel Sjoberg²; Stephen Zappala, MD³; Vivek Venkatramani, MD¹; Dipen Parekh, MD¹ and Sanoj Punnen, MD¹
¹Department of Urology - University of Miami, FL; ²Memorial Sloan Kettering Cancer Center, NY; ³Andover Urology, MA
(Presented By: Bruno Nahar, MD)

Poster #107
EXTENSION OF BASELINE PROSTATE ATROPHY IS ASSOCIATED WITH LOWER INCIDENCE OF PROSTATE CANCER ON REPEAT BIOPSY
Daniel Moreira, MD, MHS¹; Gerald Andriole, MD²; Ramiro Castro-Santamaria, MD³ and Stephen Freedland, MD⁴
¹University of Illinois at Chicago; ²Washington University at Saint Louis, MO; ³GSK, King of Prussia, PA; ⁴Cedars-Sinai, Los Angeles, CA
(Presented By: Daniel M. Moreira, MD, MHS)

Poster #108
4D PROSTATE BRACHYTHERAPY: LONG TERM RESULTS OF A REAL-TIME BRACHYTHERAPY TECHNIQUE FOR PROSTATE CANCER
Ricardo Oliveira Soares, MD; Jennifer Uribe, MD; Santiago Uribe-Lewis, PhD; Julian Money-Kyrle, MD; Sara Khaksar, MD; Robert Laing, MD and Stephen Langley, MD
Guildford, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)
Poster #109
HEMI-ABLATIVE PROSTATE BRACHYTHERAPY (HAPPY) TRIAL: DOSIMETRY EVALUATION AND INITIAL TRIFECTA OUTCOMES
Ricardo Oliveira Soares, MD; Robert Laing, MD; Adrian Franklin, MD; Jennifer Uribe, MD; Alex Horton, MD; Santiago Uribe-Lewis, MD and Stephen Langley, MD
Guildford, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)

Poster #110
A MOLECULAR SUBGROUP OF PRIMARY PROSTATE CANCER WITH METASTATIC BIOLOGY AT PRESENTATION
Ricardo Oliveira Soares, MD¹; Hardev Pandha, MD, PhD²; Steven Walker³; Izhar Bhagwan, MD¹ and Christopher Eden, MD¹
¹Guildford, UK; ²Craigavon, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)

Poster #111
IMPACT OF PRIMARY CARE PHYSICIAN EXPERIENCE ON ADHERENCE TO UNITED STATES PREVENTATIVE SERVICES TASK FORCE RECOMMENDATION AGAINST PSA SCREENING
Ryan Hutchinson, MD; Solomon Woldu, MD; Nirmish Singla, MD; Abdulhadi Akhtar, MD; Justin Haridas; Deepa Bhat, MS; Claus Roehrborn, MD;and Yair Lotan, MD
UT Southwestern Medical Center
(Presented by: Solomon Woldu)

Poster #112
IMPACT OF INTERVAL BETWEEN BIOPSY AND RADICAL PROSTATECTOMY ON COMPLICATIONS, FUNCTIONAL, AND ONCOLOGIC OUTCOMES
Mary E. Westerman, MD; Vidit Sharma, MD; Stephen A. Boorjian, MD; Igor Frank, MD; Matthew T. Gettman, MD; R. Houston Thompson, MD; Matthew K. Tollefson, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, Minnesota
(Presented by: Mary E Westerman, MD)

Poster #113
ADAPTING STRATEGIES FOR PREVENTION OF INFECTION FOLLOWING TRANSRECTAL PROSTATE BIOPSY AND FIDUCIAL MARKER PLACEMENT
Solomon Woldu, MD; Ryan Hutchinson, MD; Nirmish Singla, MD; Brad Hornberger, PA; Claus Roehrborn, MD and Yair Lotan, MD
UT Southwestern Medical Center
(Presented by: Solomon Woldu)

Poster #114
IMAGE-BASED MONITORING OF TARGETED BIOPSY-PROVEN PROSTATE CANCER: ACTIVE SURVEILLANCE IN 502 MEN WITH MEDIAN 5 YEARS FOLLOW-UP
Thomas G. Clifford¹, Andre Luis de Castro Abreu¹, Inderbir S. Gill¹, Duke Bahn², Sunao Shoji³, Arnaud Marien¹, Toshitaka Shin¹, Carlos E. Fay¹, Sameer Chopra¹, Nariman Ahmadi¹, Jie Cai¹ and Osamu Ukimura¹
¹Center for Active Surveillance, Focal Therapy & Image-guided Surgery, USC Institute of Urology, Catherine & Joseph Aresty Department of Urology, Keck School of Medicine, University of Southern California, Los Angeles, California, USA; ²Prostate Institute of America, Community Memorial Hospital, Ventura, CA
(Presented By: Thomas G. Clifford)

Poster #115
THE HETEROGENEOUS GENOMIC LANDSCAPE OF LOW-RISK PROSTATE CANCER
Matthew Cooperberg¹, Nicholas Erho², June Chan¹, Felix Feng¹, Janet Cowan¹, Jeffry Simko¹, Christine Buerki², Imelda Tenggara¹, Elai Davicioni³ and Peter Carroll²
¹UCSF; ²GenomeDx
(Presented By: Matthew R. Cooperberg, MD, MPH)
Poster Session I — Summary

Poster #116
EVALUATING THE IMPACT OF LOCAL THERAPY ON OVERALL SURVIVAL IN PATIENTS WITH METASTATIC PROSTATE CANCER – RESULTS FROM A NATIONAL POPULATION-BASED CANCER REGISTRY
Vivek Venkatramani, MD¹; Tulay Koru-Sengul, PhD²; Bruno Nahar, MD³; Feng Miao, PhD²; Nachiketh Soodana Prakash, MS¹; Sanjaya Swain, MD³; Murugesan Manoharan, MD³; Chad Ritch, MD³; Mark Gonzalgo, MD³; Dipen Parekh, MD³ and Sanoj Punnen, MD¹
¹Department of Urology, University of Miami Miller School of Medicine, Miami, Florida; ²Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL; ³Department of Urology, University of Miami Miller School of Medicine, Miami, FL
(Presented By: Vivek Venkatramani, MD)

Poster #117
MEXICAN-AMERICANS WITH LOW RISK PROSTATE CANCER CONSIDERING ACTIVE SURVEILLANCE MAY HARBOR A RISK OF AN ADVERSE OUTCOME: AN ANALYSIS OF THE SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS (SEER) REGISTRY
Jonathan Katz, MD¹; Raymond Balise, PhD²; Vivek Venkatramani, MD³; Felix Chinea, MD⁴; Murugesan Manoharan, MD³; Mark Gonzalgo, MD³; Chad Ritch, MD³; Alan Pollack, MD⁴; Dipen Parekh, MD³ and Sanoj Punnen, MD³
¹Department of Urology, University of Miami Miller School of Medicine, Miami, FL; ²Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL; ³Department of Urology, University of Miami Miller School of Medicine, Miami, FL; ⁴Department of Radiation Oncology, University of Miami Miller School of Medicine, Miami, Florida
(Presented By: Vivek Venkatramani, MD)

Poster #118
THE IMPACT OF SOCIOECONOMIC STATUS, RACE, AND INSURANCE TYPE ON THE RISK OF NEWLY DIAGNOSED METASTATIC PROSTATE CANCER IN THE UNITED STATES
Adam Weiner, MD¹; Richard Matulewicz, MD, MS¹; Jeffrey Tosoian, MD, MPH²; Joseph Feinglass, PhD¹ and Edward Schaeffer, MD, PhD¹
¹Northwestern University, Chicago, IL; ²James Buchanan Brady Urological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD
(Presented By: Adam Benjamin Weiner, MD)

Poster #119
DOES RADIOLOGIST-TO-RADIOLOGIST VARIABILITY AFFECT THE ACCURACY OF PROSTATE MAGNETIC RESONANCE IMAGING INTERPRETATION?
Eric Kim, MD; Niraj Badhiwala, MD; Joel Vetter, MD; Kathryn Fowler, MD; Anup Shetty, MD; Aaron Mintz, MD; Robert Grubb, MD and Gerald Andriole, MD
Washington University School of Medicine, St. Louis, MO
(Presented By: Eric H. Kim, MD)

Poster #120
ROLE OF 5-ALPHA REDUCTASE INHIBITORS AMONG MEN MANAGED BY ACTIVE SURVEILLANCE FOR PROSTATE CANCER: OVER 5 YEARS MEDIAN FOLLOW UP
Toshitaka Shin, MD, PhD¹; Andre Luis de Castro Abreu¹; Inderbir S. Gill¹; Sameer Chopra¹; Daniel Melecchi de Oliveira Freitas¹; Carlos E. Fay¹; Masakatsu Oishi²; Alfredo Bove¹; Thomas G. Clifford¹; Nariman Ahmadi¹; Jie Cai¹; Duke Bahn³ and Osamu Ukimura²
¹USC Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA; ²USC Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA. Department of Urology, Kyoto Prefectural University of Medicine, Kyoto, Japan; ³Prostate Institute of America, Ventura, CA, USA
(Presented by: Toshitaka Shin)
Poster Session I – Summary

Poster #121
NEGATIVE MAGNETIC RESONANCE IMAGING OF THE PROSTATE: IS BIOPSY STILL NECESSARY?
Eric Kim, MD; Robert Wang; Joel Vetter, MS; Kathryn Fowler, MD; Anup Shetty, MD; John Weaver, MD; Niraj Badhiwala, MD; Robert Grubb, MD and Gerald Andriole, MD
Washington University School of Medicine, St. Louis, MO
(Presented By: Eric H. Kim, MD)

Poster #122
EVALUATION OF THE MICROBIOME IN PROSTATE CANCER
David Golombos, MD¹; Padraic O’Malley, MD²; Patrick Lewicki, BA¹; LaMont Barlow, MD¹; Abimbola Ayangbesan, BA¹; Galeb Abu-Ali, PhD³; Curtis Huttenhower, PhD³; Christopher Barbieri, MD, PhD⁴ and Douglas Scherr, MD⁴
¹Department of Urology, Weill Cornell Medicine, New York, NY, USA; ²Department of Urology, Dalhousie University, Halifax, Nova Scotia, Canada; ³Department of Biostatistics, Harvard T.H. Chan School of Public Health, Boston, MA, USA
(Presented By: David Michael Golombos, MD)

Poster #123
STATIN USE DOES NOT CONFER PROTECTION AGAINST ADVERSE ONCOLOGIC OUTCOMES AMONG MEN ELECTING ACTIVE SURVEILLANCE LOCALIZED PROSTATE CANCER
Yaw Nyame, MD, MBA; Lamont Wilkins, BS; Nima Almassi, MD; Daniel Greene, MD; Andrew Stephenson, MD, MBA; Eric Klein, MD; Michael Gong, MD, PhD and Ryan Berglund, MD
Cleveland Clinic, Cleveland, OH
(Presented By: Yaw A. Nyame, MD, MBA)

Poster #124
PRIMARY TOTAL GLAND CRYOABLATION FOR PROSTATE CANCER. 5 YEARS OF ONCOLOGIC AND FUNCTIONAL FOLLOW-UP DATA PROSPECTIVELY COLLECTED AND COMPARED TO RADICAL PROSTATECTOMY
Alfredo Maria Bove, Andre Luis De Castro Abreu, Sameer Chopra, Toshitaka Shin, Carlos Fay, Daniel Melecchi De Oliveira Freitas, Nariman Ahmadi, Thomas Clifford, Jie Cai, Duke Bahn, Osamu Okimura, Gary Lieskovsky and Inderbir S. Gill
University of Southern California
(Presented by: Andre Luis De Castro Abreu)

Poster #125
NOMOGRAM MODEL INTEGRATING MP-MRI IN PREDICTING PATHOLOGIC PROGRESSION OF PROSTATE CANCER IN ACTIVE SURVEILLANCE PATIENTS
Win Shun Lai, MD¹; Jennifer Gordetsky, MD²; John Thomas, MD³; Jeffrey Nix, MD¹ and Soroush Rais-Bahrami, MD⁴
¹Department of Urology, University of Alabama at Birmingham, Birmingham, AL; ²Department of Pathology, Department of Urology, University of Alabama at Birmingham, Birmingham, AL; ³Department of Radiology, University of Alabama at Birmingham, Birmingham, AL; ⁴Department of Urology, Department of Radiology, University of Alabama at Birmingham, Birmingham, AL
(Presented By: Win Shun V. Lai, MD)

Poster #126
TRANSCRIPTOME WIDE ANALYSIS OF MRI-TARGETED BIOPSY AND MATCHING SURGICAL SPECIMENS FROM HIGH-RISK PROSTATE CANCER PATIENTS TREATED WITH RADICAL PROSTATECTOMY
Jan Philipp Radtke¹, Peter Black², Mandeep Takhar³, Nicholas Erho³, Marguerite du Plessis⁴, Christine Buerki⁵, Kaye Ong⁶, Elai Davicioni⁵ and Boris Hadaschik¹
¹Department of Urology, University Hospital Heidelberg, Heidelberg, Germany; ²Department of Urologic Sciences, University of British Columbia, Vancouver BC, Canada; ³Research and Development, GenomeDx Biosciences Inc., Vancouver BC, Canada
(Presented By: Peter Colin Black, MD)
Poster #127
THE ASSOCIATION BETWEEN NUMBER OF PRIOR BIOPSIES AND COMPLICATIONS DURING RADICAL PROSTATECTOMY
Vidit Sharma, MD; Mary Beth Westerman, MD; Matthew K. Tollefson, MD; R. Houston Thompson, MD; Stephen A. Boorjian, MD; Igor Frank, MD; Matthew T. Gettman, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, MN
(Presented By: Vidit Sharma, MD)

Poster #128
MANAGEMENT TRENDS FOR MEN WITH EARLY STAGE NON-SEMINOMATOUS GERM CELL TUMORS OF THE TESTICLE: A POPULATION-BASED STUDY
Adam Weiner, MD; Shane Pearce, MD and Scott Egegner, MD
Northwestern University, Chicago, IL; University of Chicago, Chicago, IL
(Presented By: Adam Benjamin Weiner, MD)

Poster #129
PATTERNS OF CARE AND SURVIVAL OUTCOMES FOR ADOLESCENT AND YOUNG ADULT (AYA) PATIENTS WITH TESTICULAR SEMINOMA IN THE UNITED STATES: A STUDY OF THE NATIONAL CANCER DATABASE
Alonso Carrasco, Jr., MD; Arya Amini, MD; Paul Maroni, MD; Elizabeth Kessler, MD; Carrye R. Cost, MD; Brian S. Greffe, MD; Timothy P. Garrington, MD; Arthur K. Liu, MD, PhD and Nicholas G. Cost, MD
Department of Surgery- Division of Urology - Aurora, Colorado; Department of Radiation Oncology - Aurora, Colorado; Department of Surgery, Division of Urology - Aurora, Colorado; Department of Genitourinary Cancer - Aurora, Colorado; Department of Pediatrics, Division of Hematology and Oncology - Aurora Colorado; Department of Surgery, Division of Urology University of Colorado School of Medicine
(Presented By: Alonso Carrasco, Jr., MD)

Poster #130
POST-CHEMOTHERAPY RETROPERITONEAL LYMPH NODE DISSECTION FOR ADVANCED GERM CELL MALIGNANCY: HISTOLOGY AND CLINICAL OUTCOMES IN PATIENTS WITH ELEVATED SERUM TUMOR MARKERS
Qiang Li, MD, PhD; Piotr Zareba, MD, MPH; Brett Carver, MD; George Bosl, MD; Darren Feldman, MD; Dean Bajorin, MD; Robert Motzer, MD and Joel Sheinfeld, MD
Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; Genitourinary Oncology Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Qiang Li, MD, PhD)

Poster #131
IMPACT OF SOCIOECONOMIC STATUS ON SURVIVAL IN MEN WITH METASTATIC TESTICULAR CANCER
Michael Leapman, MD; Renu Eapen, MD; Samuel Washington, MD; Sima Porten, MD, MPH and Maxwell Meng, MD
Yale University School of Medicine Department of Urology, New Haven, CT; University of California San Francisco, San Francisco, CA
(Presented By: Michael Leapman, MD)
Poster #1
USE OF ADJUVANT CHEMOTHERAPY IN PATIENTS WITH ADVANCED BLADDER CANCER AFTER NEOADJUVANT CHEMOTHERAPY
Wilson Sui¹; Emerson Lim, MD²; Guarionex DeCastro, MD¹; James McKiernan, MD¹ and Christopher Anderson, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Medicine, Columbia University Medical Center, New York, NY
(Presented By: Wilson Sui)

Introduction: Patients with non-organ confined disease at radical cystectomy (RC) have a poor prognosis, especially after neoadjuvant chemotherapy (NAC). We hypothesized that use of adjuvant chemotherapy (AC) is associated with improved survival compared to observation among patients with advanced disease at RC after NAC.

Methods: Using the National Cancer Database, we identified patients who received NAC prior to RC and had advanced stage (pT3/4) or pathologically involved nodes (pN+) at the time of surgery from 2004-2013. We determined whether patients then received AC or were managed with observation only. We used multivariable proportional hazards regression to estimate the impact of AC on overall survival and performed a pre-specified subgroup analysis for pN+ patients only.

Results: Overall 46% (N=1,116) of patients who received NAC and underwent RC were pT3/4 and/or pN+. Of these patients, 23% (N=259) received subsequent chemotherapy and the rest were observed. Median survival for the entire cohort was 20 months (95% CI 19–22) and there was no survival advantage for the AC cohort on multivariate analysis. On sub-group analysis, pN+ patients who received AC showed a higher median survival compared to the observation cohort (22 months [95% CI 18–26] versus 17 months [95% CI 15–19]; p = 0.044). After adjusting for demographic and cancer characteristics, AC was associated with a decreased hazards of death (HR 0.68, 95% CI 0.49–0.97) compared to observation for pN+ patients.

Conclusion: Patients who are pT3/4 and/or pN+ after NAC and RC have a poor prognosis. The addition of AC in a subset of these patients may be beneficial. Further research should focus identifying patients who may benefit from additional chemotherapy.
Poster #2
LONG-TERM SURVIVAL OUTCOMES WITH INTRAVESICAL NANOPARTICLE ALBUMIN-BOUND PACLITAXEL FOR RECURRENT NONMUSCLE INVASIVE BLADDER CANCER AFTER PREVIOUS BACILLUS CALMETTE-GUÉRIN THERAPY
Dennis Robins, MD; Wilson Sui; Justin T. Matulay, MD; G. Joel DeCastro, MD; Christoper B. Anderson, MD and James M. McKiernan, MD
Department of Urology, Columbia University Medical Center, New York, NY
(Presented By: Dennis Robins, MD)

Introduction: Response rates to salvage intravesical therapies for BCG-refractory non-muscle-invasive bladder cancer (NMIBC) range between 10 and 30%. We have previously reported the results of a phase II trial of intravesical nanoparticle albumin bound (nab)-paclitaxel, which demonstrated minimal toxicity and a 35.7% response rate. We now present an updated cohort with long-term follow-up.

Methods: This was an investigator initiated, single-center, single-arm, phase II trial investigating the use of intravesical nab-paclitaxel in patients with recurrent Tis, Ta, and T1 urothelial carcinoma who failed at least one prior induction course of intravesical bacillus Calmette-Guérain (BCG). Patients received 500mg/100ml of nab-paclitaxel administered as 6 weekly intravesical instillations. Six weeks after the final instillation, response was evaluated by cystoscopy with biopsy, cytology, and cross-sectional imaging and any positive element constituted a recurrence. All complete responders (CR) were started on full-dose monthly maintenance for 6 months. Overall survival (OS), recurrence-free survival (RFS), cystectomy-free survival (CFS), and cancer-specific survival (CSS) were described using Kaplan-Meier curves.

Results: A total of 28 patients were enrolled with a median age of 79 (interquartile range 73-85) and a median number of prior intravesical therapies of 2. The median follow-up was 41 months (interquartile range 21-61). Ten of the 28 (36%) patients achieved CR 6 weeks after their final nab-paclitaxel instillation. 6 out of 10 CR patients remained durable responders after a median of 33 months (interquartile range 21-45). The estimated 5-year OS, RFS and CFS were 56%, 18%, and 54%, respectively. Radical cystectomy was performed in 11/28 (39.2%) patients, of which only 2/11 (18.1%) had pT2 or greater disease. Only 2 patients died of bladder cancer for a 5-year CSS of 91.3%.

Conclusion: Intravesical nab-paclitaxel achieved a 36% CR rate at 3 months as salvage therapy for patients with NMIBC and previous BCG failure. This response was durable for nearly one-fifth of patients, and over half of all patients avoided cystectomy at 5-years.
Poster #3
REPEAT USE OF BLUE LIGHT CYSTOSCOPY WITH HEXAMINOLEVULINATE FOR PATIENTS WITH UROTHELIAL CELL CARCINOMA
Giulia Lane, MD¹; Tracy Downs, MD¹; Ayman Soubra, MD²; Amrita Rao, BS³; Lauren Hemsley, MPH²; Christopher Laylan, BS¹; Fangfang Shi, MS¹ and Badrinath Konety, MD, MBA²
¹University of Wisconsin, Madison, WI; ²University of Minnesota, Minneapolis, MN; ³Medical College of Wisconsin, Milwaukee, WI
(Presented By: Giulia I. Lane, MD)

Introduction: Hexaminolevulinate hydrochloride (HAL) with blue light cystoscopy (BLC) is approved by the U.S. Food and Drug Administration as an adjunct to white light cystoscopy (WLC) for the detection of urothelial cell carcinoma. In this study we examine the tolerability of the repeat use of WLC+BLC.

Methods: We retrospectively reviewed the records of all patients who underwent WLC+BLC with HAL during a 34-month period at two institutions. We compared the incidence of adverse events (AEs) after initial and subsequent procedures. We grouped, graded and assigned degree of attribution for all AEs. We compared the incidence of AE after first versus subsequent use.

Results: 181 patients underwent a total of 271 WLC+BLC. Of those 181 patients, 118 (65%) underwent WLC+BLC only 1 time. The other 63 (35%) patients underwent WLC+BLC 2 or more times: 44 (24%) of them 2 times, 18 (10%) of them, 3 or more times. We noted 89 AEs out of 271 procedures (33%), of which 66 (74%) occurred after the patient’s 1st WLC+BLC; 14 (16%) after 2nd and 9 (10%) after 3rd or more. We found no statistically significant difference in frequency of AEs between those patients undergoing 1st versus 2nd WLC+BLC (P=0.134). In comparing the frequency of specific categories of AEs after first versus second WLC+BLC with HAL, there was no significant difference between the rates of specific AEs (Table 1). 89% of all adverse events were genitourinary in nature including dysuria, hematuria and bladder spasms. Four patients had hypersensitivity reactions including 1 with eye swelling, 1 with vision changes, 1 with penis swelling and 1 with rash. There was no statistically significant difference noted in the frequency of grades of AEs in patients undergoing 1st versus 2nd WLC+BLC with HAL (P=1.000). We observed one grade 3 and no grade 4 or 5 AE. There was no statistically significant difference in the frequency of each attribution rating between 1st versus 2nd WLC+BLC with HAL (P=0.250). None of the AEs were classified as probably or definitely related to HAL.

Conclusion: In this retrospective study we found no statistically significant difference in the frequency, grade or attribution of AEs between 1st versus 2nd use of WLC+BLC with HAL.

Table 1
Frequency of adverse events by CTCAE organ class

<table>
<thead>
<tr>
<th>CTCAE organ class</th>
<th>WLC+BLC with HAL</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 (n=181)</td>
<td>2 (n=83)</td>
<td>3+ (n=18)</td>
<td>Total (n=271)</td>
<td>P-value¹</td>
</tr>
<tr>
<td>Genitourinary</td>
<td>59</td>
<td>11</td>
<td>9</td>
<td>79 (69)</td>
<td>0.092²</td>
</tr>
<tr>
<td>Neurological</td>
<td>2a</td>
<td>0</td>
<td>0</td>
<td>2 (2)</td>
<td>--</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>1b</td>
<td>0</td>
<td>0</td>
<td>1 (1)</td>
<td>--</td>
</tr>
<tr>
<td>Cardiac</td>
<td>1c</td>
<td>0</td>
<td>0</td>
<td>1 (1)</td>
<td>--</td>
</tr>
<tr>
<td>Immuneological</td>
<td>1d</td>
<td>3b</td>
<td>0</td>
<td>4 (5)</td>
<td>0.625</td>
</tr>
<tr>
<td>Unexpected</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>2 (2)</td>
<td>--</td>
</tr>
<tr>
<td>postoperative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hospital admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Adverse</td>
<td>56 (36)</td>
<td>14 (22)</td>
<td>9 (44)</td>
<td>85</td>
<td>0.134³</td>
</tr>
<tr>
<td>Events n(%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹McNemar’s test comparing 1st versus 2nd WLC+BLC in patients undergoing 2 or more WLC+BLC with HAL.
²Chi-squared value unable to be calculated as frequency of incidence is 0.
³McNemar’s test comparing total AEs between 1st, 2nd and 3rd or more WLC+BLC with HAL.

BLC = blue light cystoscopy; CTCAE = Common Terminology Criteria for Adverse Events; HAL = Hexaminolevulinate Hydrochloride; WLC = White light cystoscopy.
Poster #4
SELF-REPORTED HEALTH AND STRESS AMONG PATIENT AND PARTNER DYADS PREPARING FOR CYSTECTOMY
Andrew Leone, MD; Dominic Tang, MD; Gregory Diorio, DO; Wade Sexton, MD; Michael Poch, MD; Carl Henriksen, MS; Paul Jacobsen, PhD and Scott Gilbert, MD
Moffitt Cancer Center, Tampa, FL
(Presented By: Andrew R. Leone, MD)

Introduction: Research among breast, prostate and colorectal cancer patient-partner dyads has shown that partners experience stress and anxiety at equal or higher levels compared to patients. However, little information is available for bladder cancer dyads. The objective of this study was to examine and compare self-reported physical and psychological health among dyads prior to radical cystectomy.

Methods: 41 dyads were recruited to this multi-institutional prospective study. Dyad participants completed several health questionnaires prior to RC (baseline assessment), including the SF-36 (general health), PHQ-8 (distress and depression), MOS-SS (sleep scale) and Coping Strategies Index (coping style). Participant responses were scored and compared between patients and partners using t-tests.

Results: Mean age was 69 years and 66 years for patients and partners. The majority of patients were male (80.5%) and white (90% patients, 95% spouses). Half of household incomes were less than or equal to $60,000. Higher levels of avoidance (coping style) were seen among patients compared to partners (CSI mean scores 17.95 vs 15.05, p<0.0001). Mean SF-36 physical component scores were significantly lower in patients compared to spouses (37.37 vs. 51.32, p= <0.001). PHQ-8 scores were higher in patients compared to spouses (6.87 vs. 4.98, p= 0.04, PHQ-8> 10 cutoff for major depression). Other survey results were similar. Complete results are shown in Table.

Conclusion: Self-reported health indicators differed in physical and psychological health domains between patients and partners prior to RC, with patients reporting poorer health. Patients adopted avoidance more commonly as a coping strategy. These results contrast somewhat from studies investigating stress and depression symptoms among patient-partner dyads in other cancers.

<table>
<thead>
<tr>
<th>Domain</th>
<th>Patient Mean</th>
<th>St Dev</th>
<th>Spouse Mean</th>
<th>St Dev</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSI Problem Solving</td>
<td>26.30</td>
<td>4.30</td>
<td>26.14</td>
<td>4.78</td>
<td>0.86</td>
</tr>
<tr>
<td>CSI Seeking Support</td>
<td>20.40</td>
<td>4.32</td>
<td>22.15</td>
<td>5.55</td>
<td>0.07</td>
</tr>
<tr>
<td>CSI Avoidance</td>
<td>17.95</td>
<td>3.94</td>
<td>15.05</td>
<td>2.94</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SF-36-physical</td>
<td>37.37</td>
<td>10.50</td>
<td>51.32</td>
<td>9.46</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>SF-36-mental</td>
<td>46.59</td>
<td>12.24</td>
<td>47.02</td>
<td>11.63</td>
<td>0.99</td>
</tr>
<tr>
<td>PHQ-8</td>
<td>6.87</td>
<td>5.89</td>
<td>4.98</td>
<td>5.27</td>
<td>0.04</td>
</tr>
<tr>
<td>Sleep Scale</td>
<td>34.76</td>
<td>15.46</td>
<td>33.23</td>
<td>16.06</td>
<td>0.60</td>
</tr>
</tbody>
</table>
Poster #5
RADICAL CYSTECTOMY COMPARED TO COMBINED MODALITY TREATMENT FOR MUSCLE-INVASIVE BLADDER CANCER: A SYSTEMATIC REVIEW AND META-ANALYSIS OF OVER 12,000 PATIENTS
Vishal Vashistha, MD¹; Hanzhang Wang, MD²; Andrew Mazzone, BS³; Michael Liss MD², Robert Svatek, MD² and Dharam Kaushik, MD²
¹Cleveland Clinic Foundation, Department of Internal Medicine; ²University of Texas Health Science Center at San Antonio, Department of Urology; ³Rush University Medical Center
(Presented By: Vishal Vashistha, MD)

Introduction: Radical cystectomy (RC) has historically been the mainstay treatment for muscle-invasive bladder cancer (MIBC) while combined modality treatment (CMT—radiation therapy, concurrent chemotherapy and maximal transurethral resection of bladder tumor) is preserved for patients with substantial comorbidities. There is paucity of data comparing the efficacy of radical cystectomy with CMT for patients with MIBC. We sought to perform a comprehensive assessment of overall survival (OS), disease-specific survival (DSS), progression free survival (PFS) and treatment related complications between radical cystectomy and CMT Method: We searched seven major databases (PubMed, Scopus, EMBASE, Proquest, CINAHL, and the Registered Clinical Trials registry) for randomized-controlled trials (RCTs) and prospective and retrospective studies directly comparing RC with CMT from database inception to March 2016. We conducted meta-analyses using random effects models evaluating OS, DSS and PFS with hazard ratios (HR) and 95% confidence intervals (CI). Statistical heterogeneity among studies was evaluated using the I² statistic. Risk of bias was assessed using the Newcastle-Ottawa Scale. Treatment toxicities were reviewed qualitatively.

Results: Nineteen studies evaluating 12,380 subjects were selected for systematic review. For studies eligible for meta-analyses, we found no statistically significant difference in OS at 5 years (HR: 0.96, favoring CMT, CI [0.72–1.29; p=0.778]) or 10 years (HR: 1.02, favoring cystectomy, CI [0.73–1.42; p=0.905]). No difference was observed in DSS at 5 years (HR: 0.83, favoring radiation, CI [0.54–1.28; p=0.390]) or 10 years (HR: 1.17, favoring cystectomy, CI [0.89–1.55; p=0.264]) or PFS at 10 years (HR: 0.85, favoring CMT, CI [0.43–1.67; p=0.639]). The cystectomy arms appeared to have a higher rate of early major complications while rates of minor complications were similar between the two treatments arms. All studies were defined as low or moderate risk of bias.

Conclusion: Current meta-analysis reveals no differences in OS, DSS, and PFS between radical cystectomy and CMT. Further randomized trials are necessary to identify the appropriate treatment for specific patients.
Introduction: Periodic cystoscopic surveillance involves a tradeoff for patients with Non-Muscle Invasive Bladder Cancer (NMIBC), who must balance their discomfort and anxiety related to cystoscopy against the risk for cancer recurrence. The 2016 AUA/SUO guideline specifically recommends shared decision making for these patients, although evidence on the topic is scarce. We examined patient discomfort, anxiety, and preferences for decision making in NMIBC to inform future work aimed at implementing shared decision making.

Methods: Veterans with a prior diagnosis of NMIBC were invited to complete the validated Customer Satisfaction Survey (CSS) assessing discomfort and worry and to participate in semi-structured focus groups to understand their experience and desire to be involved in surveillance decision making. Focus group transcripts were analyzed qualitatively, using (1) systematic iterative coding, (2) triangulation, involving multiple perspectives from urologists and an implementation scientist in the analyses, and (3) searching and accounting for disconfirming evidence.

Results: Twelve patients participated in three focus groups. Median number of lifetime cystoscopy procedures was 6.5 (interquartile range (IQR) 4-10). Survey responses showed participants expressing a high degree of discomfort (62, IQR 46-64, maximum possible (max) 70) and worry (36, IQR 31-42, max 42). Qualitative findings are summarized in the Table. Patients expressed substantial pre-procedural anxiety and worry about disease. Most did not perceive themselves as having a role in decision making on surveillance care. Preferences for decision making varied widely, ranging from acceptance of the physician’s recommendation to uncertainty to dissatisfaction with not being involved more in determining surveillance care.

Conclusion: Bladder cancer patients experience substantial discomfort, anxiety, and worry related to surveillance cystoscopy. While some are content with deferring surveillance decisions to their physicians, others would prefer to be more involved. Future work should focus on defining patients’ preferred approaches to surveillance decision making and on developing effective shared decision support tools.

Themes | Example Quotations
--- | ---
Pre-procedural Anxiety & Worry about Disease | 
Anxiety | “When they [the urologist] called me they said that this is actually good cancer. It’s something we can take care of. So it’s always in your mind that maybe the next time, it could be bad cancer.”
Worry | “You always worry whether it’ll come back or not... So there’s a lot of anxiety associated with it. And (...) is somebody going to tell me it’s back? That’s what you worry about.”
Preferences for Decision Making | 
Acceptance of Physician’s Recommendation | “If the doctor says we need to see it every three months until we know everything is okay, and then we go to six months. And we follow through with that, and we’ve let [the doctor] make those decisions.”
Uncertainty | “[The doctor] was saying maybe come back in two years. But I don’t know. I’ll think about it. I don’t know if it’s necessary, to tell you the truth.”
Dissatisfaction with not being involved more | “No, you’re not involved [as the patient]. They [the doctors] tell you.”
INTERLEUKIN-17 IS SIGNIFICANTLY ELEVATED IN PATIENTS WHO FAIL TO RESPOND TO NEOADJUVANT CHEMOTHERAPY PRIOR TO CYSTECTOMY FOR BLADDER CANCER

Nathan Brooks, MD¹; Michael Brumm, BS² and Ken Nepple, MD¹
¹The University of Iowa Department of Urology, Iowa City, Iowa; ²The University of Iowa Holden Comprehensive Cancer Center, Iowa City, Iowa
(Presented By: Nathan A. Brooks, MD)

Introduction: Interleukin 17 (IL-17) is a cytokine associated with an increased neutrophil response. Neutrophils recruited by IL-17 producing cells actively suppress cytotoxic T cells. This suppression leads to increased tumor cell proliferation in mouse models of lung, prostate, and colon cancer. Little is known regarding IL-17 production in patients with muscle invasive bladder cancer (MIBC).

Methods: We analyzed the serum of 31 patients receiving neoadjuvant chemotherapy (NC) collected immediately prior to cystectomy. Using the Bio-Plex Pro™ Human Cytokine 17 plex assay, paired patient samples and controls were analyzed via the BioPlex 200 system. Concentrations of each cytokine analyzed was compared between patients responding to and failing to respond to NC.

Results: The mean (±standard deviation) concentration (pg/ml) for responders to chemotherapy (n=17) was 6.5 ± 1.8 vs 14.5 ± 3.6 for non-responders (n=14) a difference of 9.5 (p=0.046) (Figure). There was no significant difference for any of the other tested cytokines. IL-17 levels did not differ significantly based on age or gender or the presence of malnutrition or frailty.

Conclusion: IL-17 is significantly elevated in patients who fail to respond to neoadjuvant chemotherapy for MIBC. Further investigation is warranted to elucidate the role of IL-17 producing lymphocytes in MIBC.

Mean IL-17 Concentration in Patients Responding to Neoadjuvant Chemotherapy
Poster #8
MICROPAPILLARY BLADDER CANCER: INSIGHTS FROM THE NATIONAL CANCER DATABASE
Wilson Sui¹; Justin T. Matulay, MD¹; Maxwell James¹; Dennis J. Robins, MD¹; Ifeanyi Onyeji¹; Marissa C. Theofanides, MD¹; Arindam RoyChoudhury, PhD²; G. Joel DeCastro, MD¹ and Sven Wenske, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Biostatistics, Mailman School of Public Health, Columbia University, New York, NY
(Presented By: Maxwell B. James)

Introduction: Micropapillary bladder cancer (MPBC) is a variant histology of urothelial carcinoma (UC) that is associated with poor outcomes however given its rarity, little is known outside of institutional reports. We sought to use a population-level cancer database to describe the epidemiology, treatment patterns and survival outcomes for MPBC.

Methods: The National Cancer Database (NCDB) was queried for all cases of MPBC and UC using International Classification of Disease-O-3 morphologic codes between 2004 - 2014. Primary outcome was survival outcomes stratified by treatment modality. Treatments included radical cystectomy (RC) with or without neoadjuvant chemotherapy (NAC) or adjuvant chemotherapy (AC).

Results: Overall 869 patients with MPBC and 389,603 patients with UC met the inclusion criteria. Median age of the MPBC cohort was 69.9 years (58.9–80.9) with the majority of the cohort presenting with high-grade (89.3%) and muscle invasive or locally advanced disease (47.6%). For cT1 MPBC, outcomes of RC and BPS were not statistically different. For ≥cT2 disease, NAC showed a survival benefit compared to RC alone for UC but not for MPBC. On multivariate analysis, MPBC histology independently predicted worse increased risk of death. On subanalysis of the MPBC RC patients, NAC did not improve survival outcomes compared to RC alone.

Conclusion: Neoadjuvant chemotherapy utilization and early cystectomy did not show a survival benefit in patients with MPBC. This histology independently predicts decreased survival and prognosis is poor regardless of treatment modality. Further research should focus on developing better treatment options for this rare disease.

Figure 1. Survival in patients with ≥cT2 disease who received radical cystectomy stratified by histology and utilization of neoadjuvant chemotherapy.
Poster #9
BACILLUS CALMETTE-GUERIN STRAIN HAS NO SIGNIFICANT EFFECT ON RECURRENCE-FREE SURVIVAL WHEN USED INTRAVESICALLY WITH INTERFERON-ALPHA2B FOR NON-MUSCLE INVASIVE BLADDER CANCER
Ryan L. Steinberg, MD¹; Nathan Brooks, MD¹; Lewis J. Thomas, MD¹; Sarah J. Mott, MS² and Michael A. O'Donnell, MD¹
¹University of Iowa Health Care, Iowa City, IA; ²Holden Comprehensive Cancer Center, Iowa City, IA
(Presented By: Ryan L. Steinberg, MD)

Introduction: Conflicting reports exist regarding disparate outcomes between Bacillus Calmette-Guerin (BCG) strains used as adjuvant treatment for non-muscle invasive bladder cancer (NMIBC). We aimed to assess if a difference in treatment failure exists between BCG strains when used with interferon (IFN).

Methods: A post hoc analysis of the Phase 2 BCG/IFN study was performed. There were 901 patients with sufficient records for analysis. Enrollment criteria for the study was liberal. Beginning 3 - 8 weeks after transurethral resection or biopsy, patients received induction with 6 weekly intravesical treatments of BCG (TICE or Connaught) with 50 million units of IFN. Surveillance began 4-6 weeks after induction and continued quarterly for 2 years. Separate models were created for BCG naïve and failure patients. Multivariable analysis was performed using Cox proportional hazards regression.

Results: Overall, 503 patients were BCG naïve and 398 patients had prior BCG failures with similar baseline characteristics. TICE BCG was used in 64.6% of BCG naïve patients and 71.4% of BCG failure patients. In BCG naïve patients, the 2 year recurrence-free survival (RFS) with BCG Connaught was improved on univariable analysis (65% vs TICE 54%, p=0.05) but not sustained on multivariable analysis (p=0.28). RFS at 2 years was similar between strains in BCG failure patients (TICE 44% vs Connaught 47%, p=0.53) in a multivariable model (Figure 1). Tumor focality, tumor size, and duration of disease (>2 years) were common variables associated with increased risk of treatment failure. In BCG failure patients, failure of 2 or more BCG induction courses and a BCG failure interval of less than 12 months were also associated with an increased risk of failure.

Conclusion: No significant difference in RFS was evidenced between patients treated with TICE or Connaught BCG in combination with IFN.
Poster #10
IMPACT OF SURGICAL APPROACH TO CYSTECTOMY ON PERIOPERATIVE OUTCOMES: ANALYSIS OF DATA FROM THE NATIONAL CANCER DATABASE (NCDB)
Andrew Bachman; Alexander Parker; Marshall Shaw, MD; Brian Cross, MD; Kelly Stratton, MD; Michael Cookson, MD and Sanjay Patel, MD
University of Oklahoma College of Medicine, Oklahoma City, Oklahoma
(Presented By: Andrew G. Bachman, BA)

Introduction: To examine the nationwide impact of surgical approach to cystectomy on perioperative outcomes.

Methods: We performed a retrospective cohort study of patients who underwent cystectomy for bladder cancer between 2010 and 2013 using the National Cancer Database (NCDB). Surgical approach was stratified by open vs. minimally invasive (robotic or laparoscopic). Demographic, structural, and pathologic characteristics were compared by surgical approach. Perioperative outcomes included surgical margins, length of postoperative stay, 30 and 90-day mortality, and 30-day postoperative readmission rates. Univariate analysis was performed using the chi-squared test and multivariate analysis was performed using binary logistic regression to identify factors associated with perioperative outcomes.

Results: A total of 9439 patients met our inclusion criteria of which 3218/6221 (34.1%) received a minimally invasive approach (MIA). Univariate analysis demonstrated a statistically significant association between open verses minimally invasive cystectomy and positive surgical margins (11.1% vs. 9.4%), length of hospital stay > 7 days (54.3% vs. 49.5%), mortality at 30 days (2.4% vs. 1.5%), and 30-day postoperative readmission rates (10.9% vs. 9.2%) (all P <0.02). Multivariate logistic regression analysis while controlling for covariates identified minimally invasive approach as predictor of shorter postoperative length of stay (P<0.0005), and decreased likelihood of readmission within 30 days (P<0.05). Minimally invasive approach alone was not significantly associated with positive or negative margins, 30-day postoperative mortality, or 90-day postoperative mortality (Table1).

Conclusion: The use of minimally invasive surgical approach for cystectomy has been increasing with time particularly with increased surgeon familiarity with robotic techniques. Minimally invasive approach is predictive of shorter length of hospital stay and decreased likelihood of readmission, likely justifying the higher operative costs of minimally invasive surgery.

Funding: The University of Oklahoma College of Medicine - Department of Urology.
Poster #11
PREOPERATIVE MALNUTRITION AS A PREDICTOR OF POSTOPERATIVE MORBIDITY AND MORTALITY AFTER NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA
Matthew Katz, MD, MBA¹; Daniel Wollin, MD¹; Nicholas Donin, MD²; William Meeks³; Scott Gulig³; Lee Zhao, MD¹; James Wysock, MD¹; William Huang, MD¹ and Marc Bjurlin, MD⁴
¹Department of Urology, NYU Langone Medical Center, New York, NY; ²Department of Urology, David Geffen School of Medicine, University of California, Los Angeles, CA; ³Data Management and Statistical Analysis Department, American Urological Association, Linthicum; ⁴Division of Urology, Department of Surgery, NYU Lutheran Medical Center, NYU Langone Health System, New York, NY
(Presented By: Matthew Katz, MD, MBA)

Introduction: Nutritional status is increasingly recognized as an important predictor of prognosis in cancer patients. We evaluated the impact of preoperative malnutrition on morbidity and mortality following nephroureterectomy for upper tract urothelial carcinoma.

Methods: Using data from The American College of Surgeons National Surgical Quality Improvement Program (NSQIP), a risk-adjusted data collection mechanism for analyzing clinical outcomes including perioperative data, 30-day surgical complications, and mortality, we evaluated the association between variables suggestive of poor nutritional status and complications and overall mortality following nephroureterectomy. Preoperative variables suggestive of poor nutritional status included hypoalbuminemia (<3.5 vs. >3.5 g/dl), weight loss 6 months before surgery (>10%), and body mass index (BMI). The overall complication rate was calculated, and predictors of complications and mortality were identified using multivariable logistic regression models. All analyses were completed using IBM SPSS Statistics 23.

Results: A total of 1,106 patients were identified who underwent nephroureterectomy for upper tract urothelial carcinoma from 2005-2014. The overall complication rate was 15.2% (n=168) and mortality rate was 2.0% (n=22). On bivariable analysis, those with hypoalbuminemia (p<0.001) had significantly longer length of hospital stay, while BMI (p=0.057) was associated with longer operative times. After controlling for age, sex, medical comorbidities, medical resident involvement, operation year, operative time, and prior operation, hypoalbuminemia was found to be a significant independent predictor of postoperative complications (OR 1.95 95% CI 1.09-3.46, p=0.024) and mortality (OR 5.76, 95% CI 1.88-17.59, p=0.002).

Conclusion: Hypoalbuminemia is a significant predictor of an increased rate of surgical complications and, in addition to BMI, is a predictor for mortality following nephroureterectomy for upper tract urothelial carcinoma. This finding highlights the importance of preoperative nutritional status in this population and suggests that interventions to improve nutrition preoperatively may improve outcomes.
Introduction: The optimal management of pts with UTUC is unknown, in particular regarding the need for, and extent of, lymph-node dissection (LND) and the role of perioperative chemotherapy (CT). We evaluated the impact of diverse surgical locoregional and systemic treatment on outcomes of pts with UTUC.

Methods: We conducted an analysis from the database of Retrospective International Study of Invasive/Advanced Cancer of the Urothelium (RISC) database, which is a retrospective study of pts with muscle-invasive or advanced UC. Data from 22 centers was collected and surgery was performed between 02/1997 and 02/2013. Kaplan-Meier estimates were used to estimate time-to-event outcomes such as relapse-free survival (RFS) or overall survival (OS). Cox regression analyses were performed to evaluate potential prognostic factors. The log-rank and χ² test were used to compare differences in clinical outcomes between pN stages and between subgroups according to adjuvant CT (ACT). All tests were 2-sided and statistical significance was defined as a p-value ≤0.05.

Results: 198 pts were included in this analysis. 69.7% had primary tumor in the renal pelvis, 30.3% in the ureter, 5.1% only had non-UC histological variants. 75 pts (37.9%) had no LN removed (pNx), 8 (4%) received neoadjuvant (NA) CT, 67 (33.8%) ACT. The number of removed LN was not univariably associated with RFS (p=0.38) nor with OS (p=0.28). Results of multivariable analyses for RFS and OS are shown in the table. The benefit of ACT on OS was mainly seen in ‘anyT,pNx’ and in ‘anyT,pN1-3’ pathologic categories (p=0.007 and p=0.037, respectively). pN stage (pNx/pN0/pN1-3) was not associated with the site of relapse (retroperitoneal LN vs pelvic LN vs liver-lung-bone/other) (p=0.76) but pts with pNx or pN1-3 stages were more likely to relapse ≤6 month vs pN0 pts (42.7 and 47.6% vs 13.3%, respectively, p<0.001).

Conclusion: In our analysis, the extent of LN removal in UTUC was not associated with improved outcome, although notably pNx pts had a similar early relapse-rate as proven pN-positive pts. Conversely, ACT seemed to be equally effective across the pN stages, including pNx, and should be considered for all pts if no NACT was given.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Statistic</th>
<th>N</th>
<th>Hazards Ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RFS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pN Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>177</td>
<td>Ref.</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td></td>
<td>2.55 (1.64, 3.95)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.24 (0.84, 1.84)</td>
<td></td>
</tr>
<tr>
<td>pN0</td>
<td>No vs Yes</td>
<td></td>
<td>2.72 (1.88, 3.94)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>ACT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pN Stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>177</td>
<td>Ref.</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td></td>
<td></td>
<td>1.97 (1.11, 3.50)</td>
<td>0.059</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.19 (0.72, 1.94)</td>
<td></td>
</tr>
<tr>
<td>pN0</td>
<td>No vs Yes</td>
<td></td>
<td>2.57 (1.57, 4.23)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Poster #13
ASSOCIATION OF PERIOPERATIVE VENOUS THROMBOEMBOLISM WITH LONG-TERM ONCOLOGIC OUTCOMES FOLLOWING RADICAL CYSTECTOMY
Harras Zaid, MD; Matthew Tollefson, MD; Igor Frank, MD; William Parker, MD; R. Houston Thompson, MD; Robert Tarrell; Prabin Thapa; John Cheville, MD and Stephen Boorjian, MD
Mayo Clinic, Rochester, MN
(Presented By: Harras Zaid, MD)

Introduction: Venous thromboembolism (VTE) has been reported to occur in 2-5% of patients undergoing radical cystectomy (RC). While VTE is an important cause of perioperative morbidity, the association of these events with long-term cancer prognosis has not been established. Herein, we evaluated the association of perioperative VTE with patients’ risk of subsequent disease recurrence and mortality.

Methods: We reviewed 2889 patients undergoing RC between 1980-2009 at the Mayo Clinic to identify patients diagnosed with a VTE within 90 days of RC. These cases were then matched in a 1:2 fashion to control patients undergoing RC who did not develop VTE. Matching was performed on the basis of age, BMI, receipt of neoadjuvant chemotherapy, and pathologic T and N stages. Recurrence-free (RFS), cancer-specific (CSS), and overall survival (OS) were estimated utilizing the Kaplan-Meier method and compared with the log-rank test.

Results: A total of 132 patients with a VTE within 90 days of RC were identified, accounting for 4.6% of all patients analyzed. These cases were matched to 257 controls per criteria noted above, and were overall well-matched (Table). Of the 389 patients in this study, median follow-up after RC was 9.2 years, during which time 152 (39%) patients experienced recurrence and 306 (78%) died, including 157 (40%) who died of bladder cancer. We found no significant difference in 5-year RFS (59% versus 61%; p=0.75); CSS (57% versus 64%; p=0.13); or OS (45% versus 50%; p=0.15) between patients with versus without perioperative VTE, respectively.

Conclusion: We found that VTE within 90 days of RC did not significantly impact long-term cancer outcomes. While these events represent an important cause of perioperative morbidity, no interaction with oncologic control was noted, and patients may be counseled accordingly.
Poster #14
THE PREVALENCE OF PREOPERATIVE MALNUTRITION: A PROSPECTIVE STUDY OF PATIENTS UNDERGOING CYSTECTOMY
Conrad Tobert, MD; Nathan Brooks, MD; Lewis Thomas, MD; Chermiane Hung, BS and Kenneth Nepple, MD
University of Iowa Hospitals and Clinics, Department of Urology, Iowa City, IA
(Presented By: Conrad Tobert, MD)

Introduction: Radical cystectomy is the gold standard for treatment of muscle invasive bladder cancer. Perioperative morbidity is common and has been reported as high as 65%, making identification of any at-risk patients imperative. In cystectomy patient, malnutrition may be under-recognized. In addition, accurate clinical documentation using recommended methodology is important for appropriate hospital reimbursement. 1) Assess the prevalence of preoperative malnutrition in cystectomy patients using the currently recommended tool for malnutrition diagnosis (Academy/ASPEN Consensus Statement for the Identification and Documentation of Malnutrition), which is based on the presence of at least two of six clinical characteristics. 2) Determine the association of preoperative patient characteristics with malnutrition.

Methods: All cystectomy patients at our institution from January 2015 to June 2016 were prospectively evaluated by a registered dietician at their preoperative visit using the recently published Consensus Statement criteria, the current gold standard for malnutrition diagnosis.

Results: Preoperative malnutrition was present in 24 of 83 (28.9%) cystectomy patients. Of the patients with malnutrition: 11 (46%) had mild malnutrition, 4 (17%) had moderate malnutrition and 9 (38%) had severe malnutrition. Among the six individual clinical characteristics for malnutrition: 18 (21.0%) had decreased caloric intake, 34 (40.9%) had weight loss, 31 (37.3%) had loss of subcutaneous fat, 33 (39.7%) had loss of muscle mass, 25 (30.1%) had the clinical presence of edema, and 23 (27.7%) had decreased grip strength. Malnutrition was more common in patients that were male (p<0.01), lower BMI (p<0.01), and longer distance from our institution (p=0.04). Age, marital status, charlson comorbidity index, neoadjuvant chemotherapy, surgical pathology and nodal status were not associated with preoperative malnutrition.

Conclusion: Malnutrition is common in patients undergoing cystectomy. Preoperative assessment with a standardized methodology provides a model for identification of at risk patients and appropriate clinical documentation. Further analysis of the effect of malnutrition on perioperative outcomes will be forthcoming.

Funding: Supported by American Cancer Society Institutional Seed Grant.
Postersession I – Full Abstracts

Poster #15
THE ASSOCIATION OF AGE WITH UTILIZATION AND OUTCOMES OF RADICAL CYSTECTOMY FOR HIGH-GRADE NON-MUSCLE INVASIVE BLADDER CANCER: RESULTS FROM THE NATIONAL CANCER DATA BASE
William Parker, MD; Harras Zaid, MD; Elizabeth Habermann, PhD; Igor Frank, MD; R. Houston Thompson, MD; Matthew Tollefson, MD; R. Jeffrey Karnes, MD and Stephen Boorjian, MD
Mayo Clinic, Rochester, MN
(Presented By: William P. Parker, MD)

Introduction: Radical cystectomy (RC) is a preferred option for high-risk non-muscle invasive bladder cancer (NMIBC), particularly after failure of intravesical therapy. However, clinicians may be reluctant to offer surgery to older patients given concerns regarding morbidity. We sought to evaluate the association of age with utilization and clinicopathologic outcomes of RC for NMIBC.

Methods: The National Cancer Data Base was queried to identify patients with high-grade NMIBC from 2004-2013. Patients were stratified according to age at diagnosis: <60, 61-70, 71-80, >80 years. Multivariable logistic regression was performed to assess the association of age group with utilization of RC, pathologic upstaging to pT2-4 or pN+, as well as 30- and 90-day mortality after surgery. Overall survival (OS) was compared using the Kaplan-Meier method and log-rank test.

Results: A total of 63,402 patients were identified with NMIBC, of whom only 3,641 (5.7%) underwent RC. Utilization of RC remained relatively constant over the study period (4.3%-6.8%; p=0.44). On multivariable analysis (Table), increasing age was inversely associated with RC utilization. In patients who underwent RC, pathologic upstaging was identified in 1,445 (40%) patients, with no independent association noted between age and upstaging risk. Patients 61-80 had a significantly increased risk of perioperative mortality versus patients <60, while age >80 was associated with increased risks of 30 (OR 3.42; p=0.02) and 90-day mortality (OR 3.81; p=0.01). Notably, NMIBC pathologic tumor stage remained associated with improved OS compared to progression to pT2-4 or N+ disease at RC for all age groups, with the median OS improvement not reached in those under 60; 31 months in those 61-70; 54 months in those 71-80; and 36 months in those over 80 (all p<0.01).

Conclusion: Despite similar risks of pathologic upstaging, older patients are significantly less likely to receive a RC. Perioperative mortality is higher in patients >80, although an OS benefit to pathologic NMIBC at RC is maintained across age strata, emphasizing the importance of balancing competing causes of death in these patients.

<table>
<thead>
<tr>
<th>Receipt of RC</th>
<th>Total</th>
<th>Event (%)</th>
<th>OR*</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤60</td>
<td>11,450</td>
<td>1,009 (88)</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>61-70</td>
<td>17,147</td>
<td>1,256 (7.3)</td>
<td>0.83</td>
<td>0.75 - 0.92</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>71-80</td>
<td>19,702</td>
<td>1,967 (5.4)</td>
<td>0.63</td>
<td>0.56 - 0.71</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&gt;80</td>
<td>15,103</td>
<td>309 (2.1)</td>
<td>0.24</td>
<td>0.20 - 0.23</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Pathologic Upstaging</td>
<td>933</td>
<td>370 (39.7)</td>
<td>ref</td>
<td>ref</td>
<td>ref</td>
</tr>
<tr>
<td>≤60</td>
<td>1,123</td>
<td>400 (36.2)</td>
<td>1.03</td>
<td>0.93 - 1.26</td>
<td>0.81</td>
</tr>
<tr>
<td>61-70</td>
<td>978</td>
<td>462 (47.2)</td>
<td>1.23</td>
<td>1.06 - 1.56</td>
<td>0.10</td>
</tr>
<tr>
<td>71-80</td>
<td>279</td>
<td>133 (47.7)</td>
<td>1.19</td>
<td>0.96 - 1.53</td>
<td>0.29</td>
</tr>
<tr>
<td>&gt;80</td>
<td>897</td>
<td>8 (0.9)</td>
<td>ref</td>
<td>ref</td>
<td>Ref</td>
</tr>
<tr>
<td>30 day Mortality</td>
<td>897</td>
<td>8 (0.9)</td>
<td>ref</td>
<td>ref</td>
<td>Ref</td>
</tr>
<tr>
<td>≤60</td>
<td>1,993</td>
<td>23 (2.1)</td>
<td>1.28</td>
<td>0.52 - 3.15</td>
<td>0.60</td>
</tr>
<tr>
<td>61-70</td>
<td>924</td>
<td>24 (2.6)</td>
<td>1.11</td>
<td>0.43 - 2.91</td>
<td>0.83</td>
</tr>
<tr>
<td>71-80</td>
<td>266</td>
<td>18 (6.8)</td>
<td>3.42</td>
<td>1.23 - 9.49</td>
<td>0.02</td>
</tr>
<tr>
<td>&gt;80</td>
<td>891</td>
<td>16 (18)</td>
<td>Ref</td>
<td>ref</td>
<td>Ref</td>
</tr>
<tr>
<td>90 day Mortality</td>
<td>891</td>
<td>16 (18)</td>
<td>Ref</td>
<td>ref</td>
<td>Ref</td>
</tr>
<tr>
<td>≤60</td>
<td>1,991</td>
<td>40 (2.0)</td>
<td>1.25</td>
<td>0.64 - 2.45</td>
<td>0.51</td>
</tr>
<tr>
<td>61-70</td>
<td>932</td>
<td>57 (6.1)</td>
<td>1.85</td>
<td>0.92 - 3.72</td>
<td>0.08</td>
</tr>
<tr>
<td>71-80</td>
<td>265</td>
<td>30 (11.3)</td>
<td>3.01</td>
<td>1.76 - 8.75</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*Multivariable logistic regression adjusted for gender, Charlson-Deyo score, ECOG status, clinical stage, median income, percentage with a high school degree, distance to facility, population of residence, insurance status, facility type, and facility location.
Poster #16

EFFICACY, SAFETY AND BIOMARKERS OF FIRST-LINE (1L) ATEZOLIZUMAB (ATEZO) IN CISPLATIN (CIS)-INELIGIBLE LOCALLY ADVANCED OR METASTATIC UROTHELIAL CARCINOMA (MUC): A PHASE II IMVIGOR210 STUDY UPDATE

Matthew Galsky¹, Joaquim Bellmunt², Arjun Balara³, Yohann Loriot⁴, Christine Theodore⁵, Enrique Grande⁶, Daniel Castellano⁷, Margitta Retz⁸, Günter Niegisch⁹, Sergio Bracarda¹⁰, Andrea Necchi¹¹, Ulka Vaishampayan¹²,¹³, Srikala Sridhar¹⁴, Bernhard Eigl¹⁵, Syed Hussain¹⁶, Michiel van der Heijden¹⁷, Alexandra Drakaki¹⁸, Beiyiing Ding¹⁹, Richard Bourgon¹⁹, Sanjeev Mariahansan¹⁹, AnnChristine Thåström¹⁹, Oywale Abidoye¹⁹ and Jonathan Rosenberg²⁰

¹Tisch Cancer Institute, Icahn School of Medicine at Mount Sinai, New York, NY; ²Bladder Cancer Center, Dana-Farber/Brigham and Women's Cancer Center, Harvard Medical School, Boston, MA; ³Perlmutter Cancer Center, NYU Langone Medical Center, New York, NY; ⁴Gustave Roussy, Villejuif, France; ⁵Department of Oncology, Hôpital Foch, Suresnes, France; ⁶Hospital Universitario Ramón y Cajal, Madrid, Spain; ⁷Doce de Octubre University Hospital, Madrid, Spain; ⁸Urologische Klinik und Poliklinik, Technische Universität München, Munich, Germany; ⁹Department of Urology, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany; ¹⁰USL Toscana Sud-Est Ospedale San Donato, Arezzo, Italy; ¹¹Fondazione IRCCS, Istituto Nazionale dei Tumori, Milan, Italy; ¹²Karmanos Cancer Institute, Detroit, MI, USA; ¹³Princess Margaret Cancer Center, Toronto, ON, Canada; ¹⁴BCCA Vancouver Cancer Centre, Vancouver, Canada; ¹⁵University of Liverpool, Catterbridge Cancer Centre NHS Foundation Trust, Liverpool, UK; ¹⁶Netherlands Cancer Institute, Amsterdam, the Netherlands; ¹⁷UCLA Medical Center, Los Angeles, CA; ¹⁸Memorial Sloan Kettering Cancer Center, New York, NY

(Presented By: Matthew Galsky, MD)

Introduction: Most mUC patients (pts) never receive 1L standard cis-based chemotherapy, and treatments (Tx) for cis-ineligible pts are accompanied by short response durations, minimal OS benefit and toxicity. As a result, 1L cis-ineligible disease has high unmet need. mUC has a high mutation load (ML) that may be associated with clinical benefit from atezo (anti-PD-L1). Here we further examine atezo in the 1L setting (including ORR, DOR, OS) and in exploratory studies correlated OS with ML.

Methods: Pts had no prior Tx for mUC; cis-ineligibility criteria included renal impairment (GFR <60 and >30 mL/min), ECOG PS ≥2 and/or ≥G2 hearing loss or peripheral neuropathy. Pts received atezo 1200 mg IV q3w until RECIST v1.1 PD. The primary endpoint was ORR (central review); DOR and OS were key secondary endpoints. ML was estimated by genomic profiling using a 315-gene FoundationOne panel.

Results: 70% of 119 evaluable pts were cis ineligible due to renal impairment. In all pts, confirmed ORR was 24%, with a 7% CR rate (Table). 21/28 responses were ongoing at March 14, 2016 data cut off (14.4-mo median follow-up), with mDOR not reached (range 3.7-16.6 wk). Responses occurred regardless of PD-L1 status and in pts with poor prognostic factors (Table). The all-pt mOS was 14.8 mo (95% CI 10.1 mo-NE; 47% event:pt ratio). Evaluable pts whose tumor samples had highest ML (>16 and ≤62.2 mut/megabase [MB]; highest quartile) had significantly longer OS vs those with lower ML (≤16 mut/MB): P=0.0079 (HR 0.3023 [95% CI 0.1186-0.7700]). Median Tx duration was 15 wk. Atezo was well tolerated: 66% had a Tx-related AE, 17% had a ≥G3 AE, 15% had a ≥G2 hearing loss or peripheral neuropathy. Pts received atezo 1200 mg IV q3w until RECIST v1.1 PD. The primary endpoint was ORR (central review); DOR and OS were key secondary endpoints. ML was estimated by genomic profiling using a 315-gene FoundationOne panel.

Conclusion: Encouraging DOR, OS and tolerability were seen in cis-ineligible mUC pts treated with 1L atezo. Exploratory analyses showed that OS was associated with genomic factors such as ML. These data support atezo in this setting of unmet need and suggest that pts may be successfully treated without chemotherapy. Sponsor: F. Hoffmann-La Roche Ltd. NCT02108652.

Table. Key Baseline Characteristics and Responses to Atezo (all pts)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>ORR (%)</th>
<th>95% CI</th>
<th>CR Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-L1 IC status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC2/3 (n=32)</td>
<td>28%</td>
<td>14%, 47%</td>
<td>6%</td>
</tr>
<tr>
<td>IC1/2/3 (n=80)</td>
<td>25%</td>
<td>16%, 36%</td>
<td>6%</td>
</tr>
<tr>
<td>IC1 (n=48)</td>
<td>23%</td>
<td>12%, 37%</td>
<td>6%</td>
</tr>
<tr>
<td>IC0 (n=39)</td>
<td>21%</td>
<td>9%, 36%</td>
<td>8%</td>
</tr>
<tr>
<td>Overall (N=119)</td>
<td>24%</td>
<td>16%, 32%</td>
<td>7%</td>
</tr>
<tr>
<td>Age ≥80 years (n=25)</td>
<td>28%</td>
<td>12%, 49%</td>
<td>4%</td>
</tr>
<tr>
<td>Metastatic site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visceral (n=78)</td>
<td>15%</td>
<td>8%, 25%</td>
<td>1%</td>
</tr>
<tr>
<td>Liver (n=25)</td>
<td>12%</td>
<td>3%, 31%</td>
<td>0%</td>
</tr>
<tr>
<td>Lymph node only (n=31)</td>
<td>32%</td>
<td>17%, 51%</td>
<td>16%</td>
</tr>
<tr>
<td>Renal impairment (n=83)</td>
<td>27%</td>
<td>17%, 37%</td>
<td>7%</td>
</tr>
<tr>
<td>ECOG PS 2 (n=24)</td>
<td>25%</td>
<td>10%, 47%</td>
<td>4%</td>
</tr>
<tr>
<td>Perioperative chemo (n=22)</td>
<td>36%</td>
<td>17%, 59%</td>
<td>9%</td>
</tr>
</tbody>
</table>
ASSOCIATION OF PRIOR PELVIC RADIATION WITH LONG-TERM ONCOLOGIC OUTCOMES FOLLOWING RADICAL CYSTECTOMY

Harras Zaid, MD; Matthew Tollefson, MD; Igor Frank, MD; William Parker, MD; R. Houston Thompson, MD; Robert Tarrell, MD; Prabin Thapa, MD; John Cheville, MD and Stephen Boorjian, MD
Mayo Clinic, Rochester, MN
(Presented By: Harras Zaid, MD)

Introduction: Receipt of pelvic radiotherapy (PRT) prior to radical cystectomy (RC) has unclear association on oncologic outcomes.

Methods: The Mayo Clinic cystectomy registry was queried to review 2139 patients undergoing RC for M0 bladder cancer between 1990 and 2010. We then identified patients receiving PRT prior to RC, and matched these cases to non-radiated controls (~1:2) on the basis of age, sex, receipt of neoadjuvant chemotherapy, and pathologic T and N stages. Cancer-specific survival (CSS), and progression-free survival (PFS) were estimated using the Kaplan-Meier method and compared with the log-rank test.

Results: Of 2139 patients undergoing RC, 104 (4.9%) had received PRT prior to surgery. These patients were matched to 191 non-radiated control patients (no PRT). Overall, patients were well-matched on disease and patient characteristics (Table). Median follow-up was 9.6 years (IQR 6.0, 14.8). During this time, 108 patients experienced disease recurrence and 218 died, including 122 who died from bladder cancer. Five-year CSS among patients who did versus did not receive PRT was 55% versus 63% (p=0.10), while the 5-year PFS was 55% versus 61% (p=0.32). Furthermore, the pattern of disease recurrence (abdominal/visceral, urothelial, local/pelvic, thoracic, soft tissue/other) did not differ between the no PRT and PRT groups (all p>0.05).

Conclusion: Receipt of PRT prior to RC is not associated with worse oncologic outcomes. While prior PRT may increase surgical complexity, CSS, PFS, and patterns of recurrence are similar to patients who have not received PRT.
Introduction: Recurrence rate following surgical treatment of locally advanced urothelial cancer is high. Despite guidelines recommendation, neoadjuvant chemotherapy acceptance rate falls below 12%. We examined the efficacy and mechanism of neoadjuvant sub-ablative vascular targeted photodynamic therapy (sbVTP) in urothelial cancer.

Methods: We used WST-11 (TOOKAD® Soluble, Steba Biotech, France) as a photosensitizer for sbVTP, followed by surgical tumor resection in a mouse model. Therapeutic efficacy was evaluated by systemic luminescent imaging and survival studies of 10-25 mice per group. Immunohistochemistry and flow cytometry were used to elucidate mechanism. Kaplan-Meier, Mann-Whitney and Fischer exact test were used to analyze the data. All statistical tests were two-sided.

Results: Tumor volume at day of surgery was 1222 mm3 (95% CI 976-1468 mm3) and 135 mm3 (95% CI 66-204 mm3) for none sbVTP treated animals vs. sbVTP treated animals, respectively (P<0.0001). Systemic progression rate at surgery day was 30% vs. 7%, accordingly (p<0.05). Median progression free and overall survival were 45 and 55 days for surgery only group, respectively, and have not been reached for the sbVTP + surgery group (p<0.05) (Fig.1). Local recurrence rates were significantly lower accordingly. Early antigen presenting cells rise followed by long term memory, effector and active T-cells increase in spleen, lungs and blood was induced by sbVTP. Tumors following sbVTP showed intermittent positive signal ('blinking') which may represent an ongoing immune response.

Conclusion: sbVTP as neoadjuvant treatment in urothelial cancer, delayed local and systemic progression prior surgery, followed by prolonged progression free survival, overall survival, and reduced local recurrence thereafter. Immune based mechanism was established to induce its long term effect.

Funding: NIH grant P30-CA008748. Sidney Kimmel Center for Prostate and Urologic Cancers
Poster #19
THE EFFECT OF ADJUVANT CHEMOTHERAPY FOR PATIENTS WITH ADVERSE PATHOLOGY AFTER NEOADJUVANT CHEMOTHERAPY FOR MUSCLE INVASIVE BLADDER CANCER
William Parker, MD; Elizabeth Habermann, PhD; Courtney Day, BS; Harras Zaid, MD; Igor Frank, MD; R. Houston Thompson, MD; Matthew Tollefson, MD; Stephen Boorjian, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, MN
(Presented By: William P. Parker, MD)

Introduction: While neoadjuvant chemotherapy (NAC) for muscle-invasive bladder cancer (MIBC) is recognized as the standard of care, the management of patients with locally advanced and/or nodal disease after NAC and radical cystectomy (RC) is not well defined. We sought to evaluate the association of adjuvant chemotherapy (AC) and overall survival (OS) among patients with adverse pathology after NAC and RC.

Methods: The National Cancer Database was reviewed to identify patients with adverse pathology (pT3N0, pT4N0, or pTanyN1-3) at RC following NAC from 2006-2012. Patients were stratified by receipt of AC. Clinical and pathologic variables were abstracted. OS was the primary end-point and differences on the basis of AC were assessed using the Kaplan-Meier method and log-rank test. Multivariable Cox proportional hazards regression was used to assess the association of AC with OS controlling for age, sex, race, Charlson score, year of diagnosis, pathologic stage, and receipt of adjuvant radiotherapy.

Results: Adverse pathology following NAC and RC was identified in 1,361 patients from 2006-2012, of whom 328 (24.1%) received AC. Staging was pT3N0 in 444 (32.6%), pT4N0 in 162 (11.9%), and pTanyN1-3 in 755 (55.5%). Median OS for the entire cohort was 22.9 months, which differed by pathologic stage: 34.6, 21.4, and 19.3 months in patients with pT3N0, pT4N0, and pTanyN1-3, respectively (p<0.01). No difference in OS was noted by receipt of AC (median OS of 24.6 months with AC vs 22.0 months without AC; p=0.18). When stratified by pathologic stage, median OS was no different comparing patients receiving AC to those without AC: pT3N0: 37.9 vs 34.6 months (p=0.97), pT4N0: 23.4 vs 18.7 months (p=0.22), and pTanyN1-3: 22.7 vs 18.2 months (p=0.06). On multivariable analysis, receipt of AC was not associated with a significant difference in the risk of overall mortality (HR 0.86; 95%CI 0.74-1.01; p=0.06) for all patients. When stratified by stage, AC was associated with a reduced mortality in patients with pT4N0 disease (HR 0.56; 95%CI 0.33-0.97; p=0.04), but not pT3N0 or pTanyN1-3 (p>0.05).

Conclusion: Patients with adverse pathology at RC after NAC have a median OS of approximately 2 years which is influenced by pathologic stage. The receipt of AC for these patients was not associated with improvements in survival except in patients with pT4N0 disease, suggesting that use of AC for adverse pathology may not be warranted in all cases.
Factors Associated with Favorable Pathology at Radical Cystectomy After Prior Intravesical Therapy for Non-Muscle Invasive Bladder Cancer

Introduction: The management of non-muscle invasive bladder cancer (NMIBC) failing first line intravesical therapy (IVT) is either radical cystectomy (RC) or alternative IVTs, which are traditionally not as effective after prior IVT failure. RC is a morbid procedure and not all patients harbor invasive disease at final pathology. Thus, there exists a need to identify factors which may be associated with favorable pathology at RC. We therefore sought to evaluate clinical and pathologic features associated with either pathologic complete response (pT0N0) or persistent non-invasive disease (<pT2N0) at RC among patients with IVT failure.

Methods: We retrospectively reviewed patients with NMIBC who underwent RC after at least one prior course of IVT. Clinicopathologic features including age, gender, time from diagnosis to RC, presence of lymphovascular invasion (LVI), cT-stage, multifocality, number of prior intravesical recurrences, type of treatment, and number of prior courses (1 versus 2 or more) were abstracted. Multivariable logistic regression was used to evaluate their association with pT0N0 or <pT2N0 at RC.

Results: We identified 406 patients from 1980-2012 who underwent RC for NMIBC after at least one prior course of IVT (BCG: n=173 (42.6%), BCG + IFN: n=49 (12.1%), other IVT: n=184 (45.3%). Of these patients, 93 (22.9%) were pT0N0 and an additional 243 (59.8%) were <pT2N0. On multivariable analysis including clinical stage, only prior BCG-based IVT was associated with pT0N0 at RC: BCG (OR 1.94; 95%CI 1.10 - 3.43; p = 0.02) and BCG + IFN (OR 2.47; 95% CI 1.18 - 5.18; p = 0.02) compared to non-BCG based regimens. In evaluating factors associated with <pT2N0, only cTa (OR 6.16; 95% CI 1.81 - 21.01; p<0.01) and cTis (OR 4.17; 95%CI 1.57 -11.04; p<0.01) were identified when compared to cT1 disease in multivariable analysis.

Conclusion: These data indicate that for patients with IVT failure, lower clinical stage and recurrences after a BCG based regimen are associated with a greater odds of pT0N0 or <pT2N0 at the time of RC and may help in clinical decision making for patients at high perioperative risk.

<table>
<thead>
<tr>
<th>Feature</th>
<th>pT0N0 OR (95% CI; p-value)</th>
<th>&lt;pT2N0 OR (95% CI; p-value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.98 (0.96 – 1.01; p=0.14)</td>
<td>0.98 (0.95-1.01; p=0.17)</td>
</tr>
<tr>
<td>Gender (ref: Female)</td>
<td>0.96 (0.86 – 1.05; p=0.62)</td>
<td>0.96 (0.86 – 1.06; p=0.91)</td>
</tr>
<tr>
<td>Time to cystectomy from diagnosis (months)</td>
<td>0.99 (0.97 – 1.00; p=0.84)</td>
<td>0.98 (0.91 – 1.05; p=0.85)</td>
</tr>
<tr>
<td>LVI</td>
<td>3.61 (0.97 – 13.46; p=0.06)</td>
<td>2.84 (0.35 – 23.3; p=0.33)</td>
</tr>
<tr>
<td>Clinical Stage (ref cT1)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>cTa</td>
<td>0.90 (0.43 – 1.86; p=0.77)</td>
<td>6.16 (1.81 – 21.01; p=0.01)</td>
</tr>
<tr>
<td>cTis</td>
<td>1.33 (0.70 – 2.54; p=0.38)</td>
<td>4.17 (1.57 – 11.04; p=0.01)</td>
</tr>
<tr>
<td>Multifocality</td>
<td>0.65 (0.31 – 1.37; p=0.36)</td>
<td>1.66 (0.66 – 3.85; p=0.30)</td>
</tr>
<tr>
<td>Number of prior resections</td>
<td>1.01 (0.96 – 1.05; p=0.41)</td>
<td>1.01 (0.97 – 1.05; p=0.61)</td>
</tr>
<tr>
<td>IVT type (ref non-BCG)</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>BCG</td>
<td>1.94 (1.10 – 3.43; p=0.02)</td>
<td>0.99 (0.53 – 1.84; p=0.97)</td>
</tr>
<tr>
<td>BCG + IFN</td>
<td>2.47 (1.18 – 5.16; p=0.02)</td>
<td>0.86 (0.35 – 2.11; p=0.74)</td>
</tr>
<tr>
<td>2 prior IVT</td>
<td>1.43 (0.83 – 2.46; p=0.16)</td>
<td>0.95 (0.50 – 1.82; p=0.87)</td>
</tr>
</tbody>
</table>
TOP-LINE RESULTS FROM VESIGENURTACEL-L (HS-410) IN COMBINATION WITH BCG FROM A RANDOMIZED, BLINDED PHASE 2 TRIAL IN PATIENTS WITH NON-MUSCLE INVASIVE BLADDER CANCER (NMIBC)

Gary Steinberg, MD; Neal D. Shore, MD; Lawrence Karsh, MD; James L. Bailen, MD; Trinity J. Bivalacqua, MD, PhD; Karim Chamie, MD; James Cochran, MD; Richard David, MD; Robert Grubb, MD; Wael Harb, MD; Jeffrey Holzbeierlein, MD; Ashish M. Kamat, MD; Vijay Kasturi, MD; Edouard J. Trabulsi, MD; Michael Williams, MD; Frederick N. Wolk, MD; Michael E. Woods, MD; Melissa Price, PhD; Brandon Early, MS and Taylor H. Schreiber, MD, PhD

Introduction: Vesigenurtacel-L (HS-410) is a vaccine comprised of an allogeneic cell line, selected for high expression from a series of bladder tumor antigens, which has been transfected with gp96-lg. Cell-secreted gp96-lg delivers these cell-derived antigens directly to a recipient’s own antigen presenting cells, resulting in highly selective activation of CD8+ cytotoxic T cells. Here we present, for the first time, unblinded primary endpoint data (1-year Recurrence-Free Survival (RFS)) from a randomized Phase 2 trial with vesigenurtacel-L in combination with BCG in NMIBC. Trial ID: NCT02010203

Methods: 78 patients with intermediate- (n=5) or high-risk (n=73) NMIBC who are either BCG- naïve or recurrent, with or without carcinoma in situ (CIS), were enrolled 1:1:1 to one of two doses of vesigenurtacel-L (either 10^6 or 10^7 cells/dose) or placebo in combination with 6 weeks of induction BCG, followed by 6 more weeks of vesigenurtacel-L in the induction phase. Maintenance treatment in combination with BCG continued in patients without evidence of disease for 3 courses of 3-weekly treatments at the following timepoints: 3 months, 6 months, 12 months. Concurrently, 16 patients (1 intermediate risk, 15 high-risk) were enrolled in an open-label monotherapy vesigenurtacel-L arm for patients who will not receive BCG. The primary endpoint is 1-year RFS. Secondary efficacy evaluations include recurrence and progression at various timepoints, and analyses of immunologic response in peripheral blood and tumor.

Results: Vesigenurtacel-L treatment was well tolerated with no vaccine-related SAEs; primary AEs were mild, most commonly transient injection site reactions. AE profiles (number and severity of AEs) were similar across the treatment arms indicating that vesigenurtacel-L does not significantly alter the known safety profile of BCG. Composite RFS across all arms (prior to the unblinding event at 1-year) was 84.6%, with a 6-month complete response rate in CIS patients of 87.5%. Vesigenurtacel-L antigen expression showed prominent overlap with patient tumors. Additionally, IHC may define a responder and non-responder phenotype by baseline levels of TIL and PD-L1.

Conclusion: The combination of vesigenurtacel-L and BCG is well-tolerated with preliminary evidence of synergistic effect and immunologic responses that are consistent with vaccine mechanism of action. Vesigenurtacel-L warrants further investigation as a potential treatment for NMIBC.
Poster #22
ROBOT-ASSISTED RADICAL CYSTECTOMY WITH INTRACORPOREAL URINARY DIVERSION IN THE SETTING OF CHALLENGING PATIENT FACTORS
Daniel M. O. Freitas, MD; Toshitaka Shin, PhD; Andre Berger, MD; Mihir Desai, MD; Inderbir Gill, MD, MCh and Monish Aron, MD
USC- Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA
(Presented By: Daniel Melecchi De Oliveira Freitas, MCSS)

Introduction: Although robot-assisted radical cystectomy (RARC) with intracorporeal urinary diversion (ICUD) has become more common over the past decade, the degree of difficulty and acceptability varies based on patient factors. Many centers reserve the robotic approach for relatively straightforward cases, and the challenging cases are still performed open surgically. The objective of this study was to evaluate the feasibility and safety of RARC with ICUD in the setting of challenging patient factors.

Methods: We retrospectively analyzed 195 patients who underwent RARC-ICUD and bilateral pelvic lymph node dissection at our institution from 2010 to 2015. The patients were grouped into two groups, ‘challenging’ (group A) (n=64, 32.8%) or ‘straightforward’ (group B) (n=131, 67.2%) group. Group A includes patients with previous open lower abdominal surgery, pelvic radiation, clinical lymphadenopathy, locally advanced disease (T4) or higher body mass index (BMI >35). We compared perioperative and oncological outcomes between the two groups.

Results: Orthotopic urinary diversion was performed in 26.6% (n=17) of group A and 36.6% (n=48) of group B (p=0.19). There were no differences in median estimated blood loss (250 vs 200ml, p=0.4), operative time (450 vs 432 min, p=0.08) and length of hospitalization after surgery (6.0 vs 6.0 days, p=0.9) between groups A and B, respectively. The proportion of pathological T stages and positive surgical margin rates showed no significant difference between the two groups. Overall, 30-day complication rate was 76.6% (high-grade complication: 18.8%) in group A and 63.4% (high-grade complication: 17.6%) in group B (p=0.06). Moreover, overall 90-day complication rate was 87.5% (high-grade complication: 29.7%) in group A and 77.8% (high-grade complication: 24.4%) in group B (p=0.06). Although there was a significant difference in renal/metabolic complication rates between the 2 groups (A: 17.2% vs B: 6.1%, p=0.014), there were no significant differences in other variables. Analysis of overall and recurrence-free survival demonstrated a trend towards better outcomes in ‘straightforward’ group, but didn’t show a statistical difference (p=0.1 and 0.09).

Conclusion: In experienced hands, RARC-ICUD is safe and feasible even in the setting of challenging patient factors, with acceptable perioperative and oncological outcomes. Reproducibility across multiple centers and surgeons is necessary in order to validate these findings.
Poster #23
ROLE OF POSTCHEMOTHERAPY SURGERY (PCTS) IN PATIENTS (PTS) WITH METASTATIC UROTHELIAL BLADDER CARCINOMA (UBC) WITH PELVIC OR RETROPERITONEAL LYMPH-NODE (LN) SPREAD: A PROPENSITY SCORE-WEIGHTED ANALYSIS
Andrea Necchi, MD¹; Luigi Mariani, MD¹; Salvatore Lo Vullo, MD¹; Evan Yu, MD²; Michael Woods, MD³; Yu-Ning Wong, MD⁴; Lauren Harshman, MD⁵; Ajaj Alva, MD⁵; Cora Sternberg, MD⁷; Aristotelis Bamias, MD⁸; Petros Grivas, MD⁹; Florian Roghmann, MD¹⁰; Jakub Dobruch, MD¹¹; Bernhard Eignl, MD¹²; Matthew Milowsky, MD¹³; Gunter Nieisch, MD¹³; Sumanta Pal, MD¹⁴; Ugo De Giorgi, MD¹⁵; Ulka Vaishampayan, MD¹⁶; Evangelos Xylinas, MD¹⁷; Thomas Powles, MD¹⁸; Jonathan Rosenberg, MD¹⁹; Joaquim Bellmunt, MD⁵; Matthew Galsky, MD²⁰ and Kees Hendriksen, MD²¹
¹Fondazione IRCCS Istituto Nazionale dei Tumori; ²University of Washington, Seattle, WA, USA; ³University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA; ⁴Fox Chase Cancer Center, Philadelphia, PA, USA; ⁵Dana-Farber Cancer Institute, Boston, MA, USA; ⁶University of Michigan, Ann Arbor, MI, USA; ⁷San Camillo Forlanini Hospital, Rome, Italy; ⁸University of Athens, Athens, Greece; ⁹Taussig Cancer Institute, Cleveland Clinic, Cleveland, OH, USA; ¹⁰Ruhr-University Bochum, Marien Hospital Herne, Herne, Germany; ¹¹Centre of Postgraduate Medical Education, European Health Centre Otwock, Poland; ¹²British Columbia Cancer Agency, Vancouver, BC, Canada; ¹³Heinrich-Heine-University, Düsseldorf, Germany; ¹⁴City of Hope Comprehensive Cancer Center, Duarte, CA, USA; ¹⁵IRCCS Istituto Scientifico Romagnolo per lo studio e la Cura dei Tumori, Meldola, Italy; ¹⁶Karmanos Cancer Institute, Detroit, MI, USA; ¹⁷Cochin Hospital, Assistance-Publique Hôpitaux de Paris, Paris Descartes University, Paris, France; ¹⁸Barts Health and the Royal Free NHS Trust, Queen Mary University of London, London, United Kingdom; ¹⁹Memorial Sloan Kettering Cancer Center, New York, NY, USA; ²⁰Mount Sinai School of Medicine, Tisch Cancer Institute, New York, NY, USA; ²¹The Netherlands Cancer Institute, Amsterdam, The Netherlands
(Presented By: Andrea Necchi, MD)

Introduction: Despite recent population-based data suggesting a survival advantage of performing PCTS in pts with cN1-3 UBC, no large individual pt-level comparative data are available, nor is there data on pts presenting with retroperitoneal (RP) LN metastases.

Methods: We conducted an analysis of two joint databases from the EAU-YAU and RISC collaborative groups. Data from 34 centers was collected for a total of 522 pts, treated between 01/2000 and 06/2015. Criteria for pt selection were: bladder primary T, nodal metastases (cN1-3 and/or RP LN) only, 1st-line platinum-based CT given. Fisher's exact tests, χ² tests, and Kruskal-Wallis tests were used to compare the groups. Propensity score-adjusted comparison was done, with doubly robust estimation procedures (DREP, with backward selection of PF), to compare OS of pts who received PCTS and those who did not. Additional analyses included covariate-adjusted comparison with complete case (CAC-CC) sets and CAC with multiple imputation (MI) of missing data.

Results: Overall, 242 (46.4%) pts received PCTS and 280 (53.6%) did not. There were 177 (33.9%) and 345 (66.1%) pts with RP or pelvic LN, respectively. PCTS consisted of cystectomy in all pts plus pelvic lymphadenectomy (LND) in 193 (79.8%) and RPLND in 40 (16.5%) pts (9 pts LND, unknown extent). Significant difference in the distribution of covariates of interest were found between the two groups: age (p<0.001), smoking status (p=0.026), ECOG-PS (p<0.001), ct stage (p<0.001), prior local treatment (LT: cystectomy or radiotherapy: p<0.001), response to CT (p<0.001), type of platinum agent (p<0.001), prior periop-CT (p<0.001), and LN spread (RP vs pelvic, p<0.001). However, DREP-adjusted comparison showed a non-significant trend toward improved OS for PCTS (HR: 0.76, 95%CI: 0.55-1.04, p=0.085). This trend was confirmed with CAC-CC (HR: 0.72, 95%CI: 0.51-1.03, p=0.069) and with CAC-MI (HR: 0.82, 95%CI: 0.61-1.10, p=0.185). Conversely, significant PF in the MI model were ECOG-PS (overall p=0.034), RP-LN (HR: 1.38, 95%CI: 1.06-1.79, p=0.017), and response to CT (overall p<0.001).

Conclusion: When accounting for several major confounders, we report a non-significant OS advantage of PCTS in pts with pelvic or RP metastatic LN from UBC. Although this may be due to underpowered analyses, the optimal management of residual disease in UBC pts remains to be defined, and a risk-driven policy may be obtained from prospective trials.
Introduction: A majority of mUC pts treated with platinum experience progression. In a setting historically associated with toxicity and poor outlook, atezo (anti–PD-L1) is well tolerated with clinical benefit across a wide pt spectrum. Here we present updated OS data to further characterize long-term outcomes with atezo in platinum-treated mUC, including exploratory associations between OS and biomarkers (eg mutation load [ML]).

Methods: Pts with progression during/following platinum received atezo 1200 mg IV q3w until loss of clinical benefit. After atezo discontinuation, pts were followed for survival every 3 mo. Co-primary endpoints were ORR by v1.1 and immune-modified RECIST; OS (Kaplan-Meier estimation) was a key secondary endpoint. The relationship between biomarkers and efficacy was an exploratory endpoint. ML was estimated by genomic profiling using a 315-gene FoundationOne panel.

Results: Evaluable pts had a median age of 66 y. mOS (95% CI; n), longer in pts with higher PD-L1 status, was 7.9 mo (6.7-9.3; N=310) in all pts, 17.8 (9.3-NE; n=43) in pts with lymph node mets only, 7.0 mo (5.9-8.1; n=243) in pts with visceral mets, 8.1 (6.7-9.7; n=244) in pts receiving <3 prior regimens and 7.0 (4.6-10.2; n=66) in pts receiving ≥3 regimens. 37% (95% CI 31-42%) of all pts were alive at 12 mo. In all pts, RECIST v1.1 ORR was 16% (95% CI 12-20%). Responses were durable (71% ongoing; mDOR not reached at Mar 14, 2016 cut off [17.5-mo median follow up]) and occurred in pts with poor prognostic factors and those continuing post PD. Tumor samples from responders showed significantly increased ML (median 13.5/MB) vs nonresponders (median 7.2/MB; P<0.00001); ML also correlated with OS (P=0.00155). Atezo was generally well tolerated (median treatment [Tx] duration 12 wk; range 0-89): 70% had a Tx-related AE (commonly fatigue, nausea, decreased appetite, pruritus); 3% had an AE that led to atezo withdrawal; 6% had a G3-4 immune-mediated AE. No Tx-related G5 AEs were seen. Updated clinical (≈20-mo follow-up)/biomarker data will be presented.

Conclusion: Continued durability, encouraging OS vs historic data and good tolerability were seen in heavily pretreated mUC pts given atezo monotherapy. ML was a genomic correlate of efficacy independent of PD-L1 status. These results confirm atezo as an active new Tx for platinum-treated mUC and suggest further studies to characterize the biology of atezo.

Funding: F. Hoffmann-La Roche Ltd. NCT02108652.
Poster #25
UTILITY OF HIGH THROUGHPUT SCREENING IN IDENTIFYING AND RE-PURPOSING SMALL MOLECULE INHIBITORS FOR UROTHELIAL CARCINOMA
L. Spencer Krane¹, Reema Railkar¹, Thomas Sanford², Benjamin Gibbs¹, Chris Ricketts¹, David Wei¹, Kai Hammerich¹, Abhinav Sidana¹, Brad Scroggins¹, Rajarshi Guha², Kelli Wilson², Xiaohu Zhang², Craig Thomas² and Piyush Agarwal¹
¹National Cancer Institute, Bethesda, MD; ²National Center for Advanced Translational Sciences, Bethesda, MD
(Presented By: Thomas Sanford, MD)

Introduction: In this study we performed the first identified quantitative high throughput screening to identify potential targets in urothelial cancer cell lines. We noted a potential new therapy (bardoxolone methyl) and validated this compound with further in vitro studies in cell lines not included in the screen.

Methods: We screened 8 bladder cancer cell lines against 1,912 oncology-focused drugs using a 48 hr cell proliferation assay with an ATP-based readout (CellTiterGlo), for activity and potency of the compounds in a dose response manner. We identified candidate drugs based on two parameters: 1) more than 70% inhibition at 48 hours 2) a curve class of -1.1/-1.2 indicating curve class with good fit (r2>0.9). Follow up assays in additional cell lines, including viability, spheroid culture, nuclear localization assay, invasion, cell cycle and murine xenograft models were used as confirmation of efficacy and mechanism of bardoxolone methyl.

Results: Ward clustering analysis of the initial cell lines is demonstrated in Figure 1. Among the candidate drugs which were most active in all compounds, bardoxolone methyl was the most attractive based on a favorable IC 50 and previous human safety studies. Invasion assays and pathway activation analysis demonstrated dose dependent success in inhibition of urothelial cancer cell lines and cell cycle arrest. Murine models demonstrated excellent activity in xenograft models.

Conclusion: Quantitative high throughput screening was successful in identifying bardoxolone methyl as a novel treatment of urothelial carcinoma in vitro.
TARGETING PROTEIN KINASE D2 MAY REPRESENT A THERAPEUTIC STRATEGY FOR BLADDER CANCER

Iawen Hsu, Thomas Sanford, Reema Railkar, Quentin Li and Piyush Agarwal
National Cancer Institute, Bethesda, MD
(Presented By: Thomas Sanford, MD)

Introduction: Protein Kinase D (PKD) is downstream of protein kinase C and it can regulate survival, cell proliferation, invasion, and migration. It has been implicated in several cancers and exists in three major isoforms. We sought to investigate the role of PKD2 in bladder cancer.

Methods: PKD2 protein expression was assessed using Oncomine data for normal urothelium and bladder tumors. Several bladder cancer cell lines (T24, T24T, UMUC1, and TCCSUP) were assessed for cell proliferation, growth in low attachment agar (GILA), invasion, and migration with and without stable knock-down of PKD2. The UMUC1 cell line was evaluated in xenografts for tumor growth with and without stable knock-down of PKD2. A flank xenograft experiment was performed with oral gavage in mice using CRT0066101, a pan-PKD inhibitor. Western blot analysis was used to confirm silencing and evaluate downstream targets of PKD2.

Results: Oncomine data confirmed increased mRNA expression of PKD2 in bladder tumors compared with normal urothelium. Selective knock-down of PKD2 in cell lines inhibited cell proliferation, GILA colony formation, invasion, and migration. UMUC1 cells with silenced PKD2 failed to grow tumors in xenografts. Tumor xenografts treated with CRT0066101 had significant tumor growth inhibition compared to tumor controls (p<0.0001). Loss of phosphorylated c-Jun, a key mediator of cell proliferation and apoptosis, is noted with PKD2 silencing and PKD pharmacologic inhibition.

Conclusion: PKD2 is overexpressed in bladder tumors and inhibition of PKD2 either through selective silencing of PKD2 or the use of a pan-PKD inhibitor results in tumor growth inhibition in cell lines and xenografts. Targeting PKD2 results in loss of active c-Jun and may represent a therapeutic strategy in urothelial cancer.
A COMPARISON OF POST-CYSTECTOMY SURVIVAL IN DOWN-STAGED MIBC PATIENTS VS. HIGH-RISK NMIBC PATIENTS
Aaron Brant, BS; Max Kates, MD; Meera Chappidi, BS, MPH; Nikolai Sopko, MD, PhD and Trinity Bivalacqua, MD, PhD
Johns Hopkins School of Medicine, Baltimore, MD
(Presented By: Meera R. Chappidi, BS, MPH)

Introduction: Patients with muscle-invasive bladder cancer (MIBC) who are down-staged after neoadjuvant chemotherapy (NAC) have improved survival over those who remain ≥pT2. It is uncertain whether subgroups of patients with high-risk non-MIBC (NMIBC) would also benefit from NAC. We compared post-surgical outcomes in high-risk NMIBC patients who did not receive NAC with MIBC patients who were down-staged with NAC and without NAC.

Methods: We identified 344 patients with urothelial bladder cancer who were pT0, pTis, pTa, or pT1 and N0 at cystectomy: 111 with cT2 who received NAC (NAC-responsive), 37 with cT2 who did not receive NAC (non-NAC-responsive), and 186 with high-grade cTis, cTa, or cT1 (high-risk NMIBC). Comparisons were made using Kruskal Wallis for continuous and chi-squared for categorical variables. Log-rank and cox-regression analysis were used to evaluate recurrence-free and overall survival.

Results: High-risk NMIBC patients had higher prevalence of intravesical therapy (70.4% vs. 14.1% and 13.5%, p<0.01), pure urothelial histology (92.5% vs. 80.2% and 64.9%, p<0.01), tumor ≥2 cm (19.9% vs. 6.6% and 10.8%, p<0.01), and lower prevalence of pT0 pathology (11.8% vs. 41.3% and 46%, p<0.01) compared to NAC-responsive and non-NAC-responsive patients, respectively. Log-rank comparison showed improved recurrence-free and overall survival in NAC-responsive vs. high-risk NMIBC patients (p<0.02 and p<0.02) but not in non-NAC-responsive vs. high-risk NMIBC patients (p=0.34 and p=0.43). In multivariate regression, age (HR=1.05, p<0.01) and tumor ≥2 cm (HR=2.31, p=0.02) were independently associated with increased cancer recurrence. All groups had similar prevalence of cancer recurrence outside of the pelvis (p=0.53), including 23.5% of recurrences in high-risk NMIBC patients.

Conclusion: Patients with NAC-responsive MIBC had better post-surgical outcomes than patients with high-risk NMIBC. Larger tumor size was independently associated with increased cancer recurrence in all groups. Despite being node negative, almost a quarter of recurrences in patients with high-risk NMIBC occurred distantly. Further work is needed to identify whether patients with unresectable or high volume NMIBC could benefit from NAC.
Whole Exome Assessment of Grade Progression in Low-Grade Non-Invasive Bladder Tumors

Ralf Kittler, PhD; Christine Shiang; Ryan Hutchinson, MD; Payal Kapur, MD and Yair Lotan, MD
UTSW, Dallas, TX

Introduction: Low-grade (LG) urothelial carcinomas of the bladder (UCB) are common malignancies that are costly to surveil and infrequently progress to life threatening, high-grade (HG) malignancies. While LG and HG UCB are distinct genetically it is not clear whether the progression of LG to HG is a result of second primaries or transformation of LG tumors. We sought to examine tumor genetics in patients who progressed from low grade to high grade urothelial carcinoma.

Methods: An institutional cancer database was queried for living patients who progressed from LG to HG UCB. Histologic review was performed by a genitourinary pathologist. Whole exome sequencing with correction for germline mutations by buffy coat subtraction was performed. Mutations were assessed for continuity or novelty between low grade tumors and subsequent same-patient high grade tumors. Individual genes were assessed for potential predictors of risk for progression.

Results: Five patients were identified who were evaluable. Clinicopathologic variables were identified and median time to progression from initial low-grade diagnosis was 57 months. Both true tumor progression and de novo growth of high grade tumors were identified. Preserved and de novo mutations were represented by heat map. Common and independent origin of tumor was determined by relative frequency of common mutations and presented in graphical form. Representative histologic sections were presented.

Conclusion: Both true progression and de novo high-grade tumors from a field defect appear to be pathways for patients with initial low grade urothelial carcinomas to progress to high grade tumors. Validation of identified tumor genes that appeared associated with progression may provide a clinically valuable tool to providers managing patients with low grade urothelial carcinomas.
Poster #29
PRECLINICAL EVALUATION OF A NOVEL INTRAVESICAL CISPLATIN NANOFORMULATION FOR NON–MUSCLE-INVASIVE BLADDER CANCER
Max Kates, MD; Abhijit Date; Nikolai Sopko; Alexander Baras; Takahiro Yoshida; Hotaka Matsui; Justin Hanes; Laura Ensign and Trinity Bivalaqua
(Presented By: Max Kates, MD)

Introduction: For patients with metastatic bladder cancer, systemic cisplatin based chemotherapy is the mainstay treatment. Based on this experience, in 1981 the EORTC initiated a randomized trial to investigate intravesical cisplatin to treat non-muscle invasive bladder cancer (NMIBC) However, 14% of these patients had an anaphylactic reaction attributed to systemic platinum absorption, resulting in hypotensive shock in 3 patients. As a result, the cisplatin arm of EORTC 30782 was dropped in 1983, effectively ending its study in the treatment of NMIBC. However, there is still a need for improved intravesical therapies, and nano-scale cisplatin may be efficacious without the toxicity observed in the past.

Methods: Cisplatin nanoparticles (< 200 nm in size) were developed using biocompatible amino acid (aspartic acid) polymer. Nanoscale and conventional formulations of cisplatin were evaluated for bladder absorption in CF-1 mice and fischer rats 1h and 4h after intravesical (bladder) administration. Platinum levels in plasma and bladder tissue were analyzed by atomic absorption spectroscopy. In vitro cytotoxicity assessed activity of cisplatin nanoparticles and commercial formulations against RT4, 5637, and J82 bladder cancer cell lines. For in vivo efficacy studies, MNU was locally administered to rats 4 times during 0 to 6 weeks, followed by weekly administration (6 doses) during week 8 to 13. On week 15, rats were sacrificed, bladders were sectioned and efficacy was evaluated using histopathology (to stage tumors) and immunohistochemistry (Ki-67+ cells).

Results: Cisplatin nanoparticles showed significantly higher (P< 0.05) drug levels in mice and rat bladders as compared to the commercial formulations 1 h and 4h after intravesical administration. Platinum was detectable in mice serum after conventional therapy but undetectable in the NP formulation (P< 0.05). In vitro cytotoxicity studies showed that cisplatin nanoparticles and commercial formulation had comparable activity against different bladder cancer cell lines. Cisplatin nanformulations demonstrated significantly decreased proliferation compared to untreated controls (P<0.05), a difference that was not observed with conventional cisplatin. The nano-formulation was the only group without evidence of invasive carcinoma.

Conclusion: Rationally designed nano-scale cisplatin can improve the local treatment of NMIBC and may also be useful in reducing side effects by limiting systemic exposure.
Poster #30

THE IMPACT OF PLASMACYTOID VARIANT HISTOLOGY ON SURVIVAL OF PATIENTS WITH UROTHELIAL CARCINOMA OF BLADDER AFTER RADICAL CYSTECTOMY

Qiang Li, MD, PhD¹; Melissa Assel²; Eugene Pietzak¹; Daniel Sjoberg³; Harry Herr¹; Machele Donat¹; Eugene Cha¹; Bernard Bochner¹ and Guido Dalbagni¹

¹Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Department of Epidemiology and Biostatistics, Memorial Sloan Kettering Cancer Center, New York, New York

(Presented By: Qiang Li, MD, PhD)

Introduction: To compare clinical outcomes of patients with any component of plasmacytoid (PC) variant of urothelial carcinoma with that of patients with pure urothelial carcinoma (PU) treated with radical cystectomy (RC).

Methods: We have identified 98 patients who presented with pathologically confirmed plasmacytoid variant urothelial carcinoma on transurethral resection specimen or radical cystectomy and 1312 patients pure urothelial carcinoma without any variant history who underwent RC at MSKCC between January 1995 and December 2014. Univariable Cox proportional hazards regression was used to determine if PC histology was associated with overall survival. We also tested whether this association held after adjusting for age, gender, receipt of neoadjuvant chemotherapy, lymph node status, and pathological stage using multivariable Cox regression.

Results: Patients with PC variant were younger (p=0.01), more likely to have advanced tumor stage (p = 0.002), positive lymph nodes (p = 0.038) and receive neoadjuvant chemotherapy than those with PU (45% versus 21%, p<0.0001). The rate of positive soft tissue surgical margins was over 5 times greater among those with PC histology compared with those with PU (22% versus 4% respectively, p<0.0001). The median overall survival time was 8.0 years in PU patients compared with 3.8 years in patients with PC features. On univariable analysis, PC histology is associated with an increased risk of overall mortality (HR=1.34; 95% CI 1.02, 1.78; p=0.039). However, on multivariable analysis the association between PC variant and overall survival was no longer significant (HR=1.13; 95% CI 0.84, 1.51; p=0.4).

Conclusion: Patients with plasmacytoid variant features have higher disease burden at RC compared to those with pure urothelial carcinoma. However, PC variant was not an independent predictor of survival after RC on multivariable analysis, suggesting PC variant histology cannot be used as a prognostic factor.
Poster #31
DEFECTIVE ERCC2 CONFLICTS INCREASED CISPLATIN AND IONIZING RADIATION (IR) SENSITIVITY IN BLADDER CANCER CELLS
Qiang Li, MD, PhD¹; Andrew Bell²; Emmet Jordan, MD³; Sizhi Gao, MD, PhD³; Jennifer Ma⁴; Eugene Pietzak, MD⁴; Guido Dalbagni, MD⁴; Bernard Bochner, MD⁴; Jonathan Rosenberg, MD⁴; Dean Bajorin, MD⁴; David Solit, MD⁴; Nadeem Riaz, MD⁴; Gopa Iyer, MD⁴
¹Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Department of Radiation Oncology, Memorial Sloan Kettering Cancer Center, New York, New York; ³Marie-Josee and Henry R. Kravis Center for Molecular Oncology, Memorial Sloan Kettering Cancer Center, New York, New York; ⁴Genitourinary Oncology Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York
(Presented By: Qiang Li, MD, PhD)

Introduction: Deleterious DNA damage response (DDR) gene alterations correlate with extraordinary responses to neoadjuvant cisplatin-based chemotherapy and bladder-sparing ionizing radiation (IR) in muscle-invasive bladder cancer (MIBC).¹⁻³ Recurrent somatic mutations in or near conserved helicase domains of ERCC2 comprise the majority of these alterations and are hypothesized to impair ERCC2’s DNA repair function. We sought to characterize the biological significance of these mutations in bladder cancer cells using Clustered Regularly Interspaced Short Palindromic Repeat (CRISPR)/Cas9-mediated ablation of ERCC2 function.

Methods: The ERCC2 T484A/M point mutation was the most common alteration (4 of 36 patients) within a prospectively collected cohort of 299 bladder cancer patients sequenced at our institution. We infected the ERCC2 wild-type KU19-19 bladder cancer cell line with a CRISPR/Cas9 lentivirus targeting residues 481-487 of ERCC2. We identified a mutant cell line harboring an in-frame deletion (M483_T484del) of ERCC2. Cell viability following exposure to cisplatin and IR was examined using Cell-titer Glo and clonogenic assays. Apoptosis was gauged by subG1 cell fraction measurement by flow cytometry.

Results: ERCC2 mutant cells exhibited significantly increased cisplatin sensitivity compared to parental cells (IC50 0.3uM vs 2.0uM, p<0.0001). Cisplatin treatment after 48 hours resulted in increased apoptosis in ERCC2 mutant vs parental cells (sub-G1 fraction 52% vs 16%, p=0.01). ERCC2 mutant cells were more sensitive to combined IR (2 Gy) and cisplatin (1uM) compared to parental cells (SF2Gy (surviving fraction) 17 % vs 60%). Furthermore, exogenous expression of wild-type ERCC2 protein in ERCC2 mutant cells rescued cisplatin sensitivity. In a cohort of 48 patients who underwent trimodality therapy, 6 with ERCC alterations (2 with T484M) were no evidence of disease with bladder intact during a median follow up of 46 months.

Conclusion: The enhanced sensitivity to cisplatin and IR from deleterious mutation in ERCC2 in vitro strongly supports multiple clinical observations that ERCC2 alterations are likely the genetic basis for extraordinary response to cisplatin chemotherapy and IR in MIBC patients. Prospective genetic sequencing to identify ERCC2 and other DDR gene alterations may help select MIBC patients who are most likely to respond to neoadjuvant cisplatin-based chemotherapy or tridomality bladder-sparing therapy.
Poster #32
COMPARISON OF READMISSION AND SHORT-TERM MORTALITY RATES BETWEEN DIFFERENT TYPES OF URINARY DIVERSION IN PATIENTS UNDERGOING RADICAL CYSTECTOMY
Bruno Nahar, MD¹; Tulay Koru-Sengul, PhD²; Nachiketh Soodana Prakash, MD¹; Vivek Venkatramani, MD¹; Feng Miao²; Aliyah Gauri³; David Alonzo, MD¹; Sanjay Swain, MD¹; Murugesan Manoharan, MD¹; Chad Ritch, MD¹; Sanoj Punnen, MD¹; Dipen Parekh, MD¹ and Mark Gonzalgo, MD¹
¹Department of Urology - University of Miami, FL; ²Department of Public Health Sciences, University of Miami, FL
(Presented By: Bruno Nahar, MD)

Introduction: Radical cystectomy (RC) is a complex and morbid procedure primarily because of the urinary diversion required after bladder removal. Choosing the optimal diversion type can be challenging and depends on clinical parameters, as well as the potential morbidity related to each approach. We analyzed a large national oncology outcomes database and compared 30 day readmission rates, as well as 30 and 90 day mortality rates between different types of urinary diversion among patients undergoing RC.

Methods: We identified patients who underwent RC for bladder cancer in the National Cancer Data Base (NCDB) from 2004 to 2013. Patients were grouped based on the type of urinary diversion performed: non-continent (ileal conduit [IC]) or two continent techniques (pouch [CP] or orthotopic neobladder [NB]). We used multivariable logistic regression models to compare 30 day unplanned readmission and 30 and 90 day mortality between the different types of urinary diversion. In order to control for residual confounding we performed a propensity score matching and repeated the analysis.

Results: Among 11,933 patients who underwent RC, we identified 10,197 (85.5%) IC, 1,044 (8.7%) CP, and 692 (5.8%) NB. Patients who received IC were significantly older and had more comorbidities (p<.0001). Continent diversions were more likely to be performed at an academic center (p<.0001). In multivariate analysis, patients undergoing NB had an increased likelihood of being readmitted (OR 1.41, p=.010), but decreased risk of dying within 90 days (OR 0.47, p=.007). However, after propensity score matching there was no significant difference in short-term mortality within groups. Surgery performed at a non-academic center was an independent predictor of readmission within 30 days of discharge (OR: 1.19, p=.010) and death within 30 days of surgery (OR 1.27, p=.043).

Conclusion: Patients undergoing NB had increased rates of readmission compared to IC. Similar short-term mortality rates were observed among the different types of urinary diversion. Surgery performed at a non-academic center was associated with a higher readmission and 30-day mortality rates.

Poster #33
CLINICAL AND PROGNOSTIC RELEVANCE OF DNA REPAIR GENES POLYMORPHISMS IN BLADDER CANCER IN CHINA
Gongjian Zhu, MD; Zhaohui Chen, MS and Zhiping Wang, MD
Lanzhou University
(Presented By: Gongjian Zhu, Sr., MD)

We conducted a follow-up study on 227 patients with bladder cancer to investigate the association of nineteen polymorphisms in seven DNA repair genes with the clinical significance and prognostic value of this disease. A chip-based TaqMan genotyping for the candidate genes was performed on all patients. We discovered susceptibility to the development of bladder cancer among patients who were smokers and consumed alcohol was associated with MUTYH rs3219493 and APEX1 rs1130409. Additionally, we found that some variants of DNA repair genes, PARP1 rs1805415, two SNPs of XRCC1 (rs2293036 and rs3213356), XRCC2 rs3218454, three SNPs of XRCC3 (rs861537, rs861531, rs861530 and rs1799794), two SNPs of MUTYH (rs3219493 and rs3219476) and APEX1 rs3136817 were associated with the pathological T stages as well as the tumor grades of bladder cancer at diagnosis. After stratified by non-muscle invasive baldler cancer subtypes, the variant allele carriers of APEX1 rs3136817 showed significant associations with high risk cancer. Polymorphisms that may be associated with the risk of Lymphovascular invasion and recurrence status include MUTYH rs3219493, APEX1 rs3136817, XRCC2 rs3218454 and XRCC3 rs861537. When combined with clinicopathological factors, XRCC2 rs3218408 genetic variants effectively predicted survival in bladder cancer patients. Several SNPs of DNA repair genes were identified that can influence clinical feature and the prognoses of patients with bladder cancer. Our finding suggests candidate prognostic SNPs that could guide personalised bladder cancer surveillance and treatment.
LESSONS FROM 151 URETERAL REIMPLANTATIONS FOR POST-CYSTECTOMY URETEROENTERIC STRICTURES: A SINGLE CENTER EXPERIENCE OVER A DECADE

Vignesh Packiam, MD; Vijay Agrawal, MD; Andrew Cohen, MD; Joseph Pariser, MD; Scott Johnson, MD; Gregory Bales, MD; Norm Smith, MD and Gary Steinberg, MD
University of Chicago Medicine, Chicago, IL
(Presented By: Vignesh Packiam, MD)

Introduction: Ureteroenteric anastomotic strictures are common following cystectomy with urinary diversion. Endoscopic treatments have poor long-term success while ureteral reimplantation is associated with morbidity. Predictors of successful open repair are poorly defined. Our objective was to characterize outcomes of ureteral reimplantation after cystectomy and identify risk factors for stricture recurrence.

Methods: We performed a retrospective review of 124 consecutive patients with a total of 151 open ureteral reimplantations for post-cystectomy ureteroenteric strictures between January 2006 and December 2015. Predictors for stricture recurrence were assessed by univariable testing and Cox proportional hazards regression.

Results: Most patients underwent preoperative drainage by percutaneous nephrostomy (PCN; 43%) or percutaneous nephroureterostomy (PCNU; 44%). Major iatrogenic injuries included enterotomies requiring bowel anastomosis (3.2%) and major vascular injuries (2.4%). Sixty (48%) patients suffered 90-day complications, of which 15 (12%) patients had high grade complications. Median length of stay was 6 days [5,8] and median follow-up was 21 months [5,43]. The overall success rate per ureter was 93.4%. On univariable analysis, the only significant predictor of stricture recurrence was preoperative PCNU placement compared to PCN placement or no drainage (success rates 85.5% vs 98.9% respectively, p=0.002). Cox proportional hazards regression demonstrated that preoperative PCNU placement yielded a hazard ratio of 10.2 (95% CI: 1.27–82.6, p<0.005) for stricture recurrence. Stricture recurrence was independent of previous endoscopic interventions (p=0.42).

Conclusion: Post-cystectomy ureteral reimplantation was associated with relatively low rates of major iatrogenic injuries and high grade complications. Long-term success was more likely in patients without preoperative PCNU.
Poster #35

ESTABLISHING FEASIBILITY AND FUNCTION OF TUMOR INFILTRATING LYMPHOCYTES IN BLADDER CANCER
Michael Poch, MD; MacLean Hall; Krithika Kodumudi, PhD; Doris Wiener; Charles James; Julie Le; Cortlin Croft; Mayer Fishman, MD, PhD and Shari Pilon-Thomas, PhD
Moffitt Cancer Center
(Presented By: Michael Adam Poch, MD)

Introduction: Despite newer immune based and available cytotoxic chemotherapy regimens patients with locally advanced and metastatic bladder cancer have limited therapeutic options resulting in a median overall survival between 12 and 15 months. In metastatic melanoma, the advent of Adoptive Cell Therapy (ACT) using Tumor Infiltrating Lymphocytes (TIL) has resulted in a durable median OS of 52 months at our institution. Immune-mediated anti-tumor responses have been previously demonstrated in bladder cancer, therefore we investigated the phenotype and function of TIL in bladder tumors to establish feasibility of ACT for the treatment of bladder cancer.

Methods: Between August 2015 and June 2016 patients with bladder tumors of volume sufficient for analysis were enrolled in the study. Tumor specimens were obtained from radical cystectomy specimens, pelvic lymph node tissue and transurethral resection. Demographic and clinical variables including smoking history, clinical and pathologic stage and grade, prior intravesical and systemic therapy were recorded. The tissue was minced into fragments for TIL generation and propagated in high dose IL-2 for four weeks. The remaining tumor material was digested for tumor targets. Cultured TIL were phenotyped by flow cytometry and assessed for autologous tumor reactivity through co-culture with tumor digest and subsequent IFN-gamma ELISA.

Results: Bladder tumors were collected from 22 patients and TIL growth was analyzed for the 20 specimens that completed in vitro expansion. TIL were observed in 101 out of 135 fragments (74.8%). Of these, eight patient samples yielded greater than 2x10^7 total TIL, which were predominantly CD3+ (median 68%, range 5.9-93.5%). Comparatively, those tumors that did not reach this threshold were only 29.7% CD3+ TIL. Within the total CD3+ T cell population, 20% of TIL were CD8+ T cells. Eleven of these specimens were tested for tumor specific reactivity and five contained TIL that secreted IFN-gamma in response to autologous tumor.

Conclusion: Human bladder cancer tissue can be used to isolate and expand CD3+ CD8+ TIL in vitro and half of the specimens demonstrated tumor-specific T cell responses. Future efforts will explore the ability to further expand bladder TIL cultures to clinically meaningful numbers, modulation of growth kinetics and function of bladder TIL, and developing novel therapeutic strategies, particularly ACT, for patients in conjunction with newer immune checkpoint inhibition.
TRENDS IN PATIENT REFUSAL OF NEO-ADJUVANT CHEMOTHERAPY FOR MUSCLE INVASIVE BLADDER CANCER
Pauline Filippou, MD; Allison Deal, MD; Ben McCormick, MD; Gopal Narang, MD; Matthew Nielsen, MD, MS; Raj Pruthi, MD; Eric Wallen, MD; Michael Woods, MD and Angela Smith, MD, MS
Chapel Hill, NC
(Presented By: Pauline Lenore Filippou, MD)

Introduction: While use of neo-adjuvant chemotherapy (NAC) prior to radical cystectomy (RC) for muscle-invasive bladder cancer (MIBC) has been steadily increasing over the last decade, the majority of patients are not receiving NAC. Little is known about the reasons as to why these patients do not receive NAC. Our objective was to evaluate the rate of patient refusal of NAC, and examine descriptive characteristics associated with patient refusal of NAC.

Methods: Using the National Cancer Data Base, patients who underwent RC between 2004-2013 for a diagnosis of cT2 MIBC were included. Among patients who did not receive NAC, patients were categorized as (i) having been recommended NAC but refused, or (ii) not recommended NAC due to patient risk factors. Bivariable analysis was used to determine associations for not receiving NAC between age, gender, race, income level, insurance status, education level, type of facility, distance to oncology provider, and trend over time.

Results: Of 8298 patients who underwent cystectomy, 524 did not receive NAC and had complete data regarding reasons for declining treatment. 58% of those included were recommended NAC but refused (n = 305), while 42% of patients were not recommended NAC due to risk factors (n = 219). Over the defined timeframe, an increasing trend toward patient refusal of NAC was seen (49% over 2004-2007, 59% over 2008-2010, 63% over 2011-2013, p = 0.06). Many patients (58%) seen at academic or comprehensive community cancer programs did not receive NAC due to patient refusal (58% vs. 42%, p=0.06). Patients with lower levels of education were less likely to refuse NAC, however these findings were not statistically significant. Travel distance to provider was also not associated with likelihood of patient refusal of NAC (p = 0.45). No statistically significant association was found between age, gender, race, income or insurance status and the reason why NAC was not administered.

Conclusion: Patient refusal of NAC prior to RC for MIBC is becoming more common. A higher education level and care received at an academic or comprehensive cancer facility was more likely to be associated with refusal of NAC, suggesting that patient counseling affects patient treatment choice prior to RC.
**Introduction:** Nested variant (NV) urothelial cell carcinoma (UCC) is a rare histological subtype of UCC with deceptively benign features. There is limited data on the outcomes and characteristics of patients with this histology (largest study with 52 patients), however it has traditionally been viewed as a more aggressive subtype of UCC and neoadjuvant chemotherapy was not recommended. Our primary interest was to assess whether there is a difference in overall survival (OS) after radical cystectomy (RC) between patients with NV features compared to patients with pure UCC. We were further interested in whether there was difference in demographic, tumor characteristics and response to neoadjuvant chemotherapy between these two groups of patients.

**Methods:** We identified 1949 patients who underwent RC between January 1995 and December 2015 and had pure UCC or NV. To determine whether there were differences in demographics and tumor characteristics between patients with NV and those without, group comparisons were made using Fisher’s exact test for categorical variables and Wilcoxon rank-sum test for continuous variables. To assess a difference in OS between UCC and NV patients we utilized a univariate and multivariate Cox proportional hazards mode and Kaplan-Meier curves. Lastly to evaluate difference in response to neoadjuvant chemotherapy, we utilized the Cochran-Mantel-Haenszel method stratified on histology and applied the Breslow-Day test for homogeneity.

**Results:** We identified 1807 (93%) pure UC patients and 142 (7.3%) patients with nested features. Among our 1949 patients, 919 with pure UCC and the remaining 77 with NV, died from any cause. The median follow up time for survivors was 4.6 years from RC. NV patients at time of RC had more lymph node invasion (p=0.007) and worse pathological tumor stage (p < 0.01) then pure UCC. On univariate analysis NV was associated with poorer OS (HR 1.26; p = 0.049), on multivariable analysis, the association between histology and OS is no longer significant (HR: 0.96 p=0.7). There was no significant difference in response to neoadjuvant chemotherapy between the two histological groups (p = 0.6).

**Conclusion:** NV carcinoma presents at a higher stage than pure UCC at time of RC, but does not necessarily represent a more aggressive variant. It likely only represents a lead time bias, secondary to delay in diagnosis due to NV deceptively benign features. It also responds similarly to neoadjuvant chemotherapy.
Poster #38
FINANCIAL TOXICITY AND DELAYS IN CARE AMONG BLADDER CANCER PATIENTS
Marianne Casilla-Lennon, BS; Seul Ki Choi, BS; Allison Deal, MS; Gopal Narang, MD; Pauline Filippou, MD; Benjamin McCormick, MD; Raj Pruthi, MD; Eric Wallen, MD; Michael Woods, MD; Matthew Nielsen, MD, MS and Angela Smith, MD, MS
Chapel Hill, NC
(Presented By: Marianne M. Casilla-Lennon, BS)

Introduction: Bladder cancer is the sixth most common cancer in the United States, but the most expensive from diagnosis to death. Costly surveillance and treatment can lead to financial toxicity (FT), an adverse financial condition as a consequence of the treatment of a disease. The purpose of this study is to define the prevalence of FT among patients with bladder cancer and identify causes for delay in care.

Methods: Bladder cancer patients were identified from the University of North Carolina Health Registry/Cancer Survivorship Cohort (HR/CSC), which includes patient-reported data on FT. FT was defined as agreement with the following statement “you have to pay more for medical care than you can afford.” Demographic characteristics and factors leading to delayed care were compared using Fisher’s exact tests.

Results: 144 bladder cancer patients were enrolled in HR/CSC, of which 138 completed the baseline questionnaire. Median age was 66.9 years. 75% were male, 89% were white, and 66% had less than a college degree. Half of patients had a stage of cT2 or higher. Thirty-three participants overall (24%) endorsed FT. Participants with FT were more likely to be younger, black, and have less than a college degree (p<0.01). Patients with non-invasive disease were more likely to report FT than those with invasive bladder cancer (15% vs. 30%; p=0.04). Patients who endorsed FT were more likely to report delaying care (35% vs. 20%) although this did not reach statistical significance (p=0.07). Patients reporting FT were more likely to delay care due to inability to take time off work (p=0.04) and inability to afford general expenses (p=0.04).

Conclusion: FT is a major concern among bladder cancer patients, with nearly 25% reporting that healthcare costs are more than they could afford. Younger patients were more likely to experience FT, which may be related to Medicare eligibility at age 65, which increases affordability of care. Higher rates of FT among non-invasive disease may reflect long-term, costly surveillance.
Poster #39
PARTIAL CYSTECTOMY DOES NOT COMPROMISE OVERALL SURVIVAL FOR MUSCLE INVASIVE BLADDER CANCER: RESULTS FROM THE NATIONAL CANCER DATABASE
David Alonzo, MD; Tulay Koru-Sengul, PhD; Feng Miao, PhD; Michael Ahdoot, MD; Nachiketh Soodana Prakash, MD; Bruno Nahar, MD; Katherine Almengo; Amanda Mure, MD; Vivek Venkatramani, MD; Sanjaya Swain, MD; Sanoj Punnen, MD; Dipen Parekh, MD; Mark Gonzalgo, MD, PhD and Chad Ritch, MD, MBA
Miami, FL
(Submitted By: David G. Alonzo, MD)

Introduction: Radical cystectomy (RC) remains the gold standard for the treatment of muscle invasive bladder cancer (MIBC). However partial cystectomy (PC) has been shown to be a non-inferior option for well selected patients. In this study we sought to compare the overall survival (OS) of patients who received PC vs RC for MIBC using the National Cancer Data Base (NCDB).

Methods: We identified 4,650 patients treated with PC (n=410) or RC (n=4,240) who had clinical T2 or T3, N0, M0 urothelial bladder cancer. We also excluded patients diagnosed at autopsy/death, those with other malignancies and those with insufficient follow up. Descriptive statistics were used to compare clinical and demographic variables. A multivariable logistic regression model was developed to determine predictors of OS. Kaplan-Meier (KM) survival analyses compared the effect of PC vs RC on OS. A subgroup KM analysis limited to cT2, N0, age <75 and Charlson Score = 0 was also performed to compare OS between groups.

Results: Median age for RC vs. PC was 67 and 75 (respectively). There was more pT3 disease in the PC group compared to the RC group (22% vs. 15%, p<0.05). Fewer PC patients underwent a lymphadenectomy compared to the RC group (51% vs 94%, p<0.05). There was no significant difference in the use of adjuvant chemotherapy or radiation between groups (33% vs 33%). On multivariate analysis statistically significant predictors of worse overall survival were age >75 (HR 1.56; CI 1.43-1.71, p<0.001), non-academic treatment setting (HR 1.25; CI 1.02-1.20, p=0.019), Charlson score >1 (HR 1.25; CI 1.14-1.38, p<0.001), and >pT2 (HR 2.65; CI 2.43-2.89, p<0.001). There was no significant difference in the 5 year OS for PC vs. RC patients (41.7% vs 46.4%, p=.22). Similarly on subgroup analysis (cT2, N0, age <75, Charlson score = 0) there was no difference in 5 year OS for PC vs. RC (63% vs. 58%, p=.19).

Conclusion: In carefully selected candidates with MIBC, PC does not appear to compromise OS compared to RC. Significant predictors of worse OS in MIBC patients are: age, non-academic treatment setting, comorbidities, and stage >pT2.
**Poster Session – Full Abstracts**

**Poster #40**

**LYNCH SYNDROME - ASSOCIATED UPPER TRACT UROTHELIAL CANCER: ASSESSMENT OF CLINICAL SCREENING CRITERIA AND TISSUE - BASED POINT OF CARE TESTING**

Michael Metcalfe, MD; Priya Rao, MD; Maureen Mork, MD; Lianchun Xiao, MD; Russell Broaddus, MD and Surena Matin, MD University of Texas, MD Anderson Cancer Center

(Presented By: Michael Joseph Metcalfe, MD)

**Introduction:** Lynch Syndrome (LS) is an autosomal dominant inherited cancer syndrome that places patients at risk for upper tract urothelial carcinoma (UTUC). Our goal was to identify the most reliable means of screening for LS in patients with UTUC at the point of care (POC).

**Methods:** Demographic, clinical, pathological and outcome information was retrospectively collected in an IRB-approved protocol on patients treated for UTUC. LS Screening was universally performed on all patients. We evaluated family history (Amsterdam I and II criteria; AMS1 and AMS2, respectively), tumor immunohistochemistry (IHC) for 4 mismatch repair proteins (MMRP), tissue polymerase-chain reaction for microsatellite instability (MSI), and clinical genetic analysis and counseling (GAC).

**Results:** From 1/2013-7/2016, 101 UTUC patients without a history of LS were screened. 15 patients had positive screening. 2/101 (2%) met AMS1 and 7/101 (7%) met AMS2 criteria, and 17/101 (17%) met partial aspects of either AMS1 or AMS2 (Table 1). 4 patients meeting AMS2 criteria had intact MMRP and no MSI instability. 11 (11%) patients had loss of one or more MMRP, of which 4 (4%) had MSI high instability, 6 (6%) had MSI-low or stable, and 1 (1%) had insufficient sample. Insufficient tissue was found in 1/101 (1%) of IHC and 8/88 (9%) of MSI (p=0.0164). There were no cases of MSI-high instability and negative IHC. All patients with any positive screen were referred for GAC, but only 4 followed-up, all confirmed as a germline mutation. The remaining did not follow through with GAC because of financial/insurance barriers.

**Conclusion:** We identified 15% of universally screened UTUC patients to be positive for LS using IHC and AMS2 criteria. IHC and AMS2 criteria outperform AMS1 and MSI. Most patients did not have a personal history of a classic LS-related cancer. MSI is limited by requirement for normal tissue, a greater amount of tumor, and can miss cases of MMRP loss. A 15% rate of LS-related UTUC is consistent with prior laboratory tissue studies and has implications for universal POC testing of UTUC patients for LS.

**Funding:** Monteleone Family Foundation for Research in Bladder and Kidney Cancer, Eleanor and Scott Petty Fund for UTUC Research.

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>MMRP Loss</th>
<th>MSI stability (ds)</th>
<th>AMS1</th>
<th>AMS2</th>
<th>Genetic Screening</th>
<th>Personal History</th>
<th>Family History of Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>MSH6</td>
<td>Stable</td>
<td>None</td>
<td>Partial</td>
<td>Positive</td>
<td>MSH6</td>
<td>Mother Uterine Ca</td>
</tr>
<tr>
<td>45</td>
<td>MSH6</td>
<td>Stable</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>61</td>
<td>MSH1/MSH6</td>
<td>Stable</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>MSH2</td>
<td>Maternal Cousin Colon Ca</td>
</tr>
<tr>
<td>55</td>
<td>MSH1/MSH2</td>
<td>Stable</td>
<td>None</td>
<td>Partial</td>
<td>Partial</td>
<td>MSH2</td>
<td>None</td>
</tr>
<tr>
<td>66</td>
<td>MSH6/MSH2</td>
<td>High (5)</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Colon Ca</td>
<td>Father Colon Ca @ 30; Urothelial Ca; Sister Uterine and Colon Ca; Grandma Breast Ca; Stomach Ca</td>
</tr>
<tr>
<td>52</td>
<td>MSH1/MSH2</td>
<td>High (5)</td>
<td>None</td>
<td>Partial</td>
<td>N/A</td>
<td>None</td>
<td>Father Colon and Bladder Ca</td>
</tr>
<tr>
<td>34</td>
<td>MSH1/MSH3</td>
<td>Insufficient Tissue low (2)</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>MSH3</td>
<td>Mother Pancreatic Ca @ 74; Father Colon Ca; Brother Colon Ca; Son Testis Ca</td>
</tr>
<tr>
<td>55</td>
<td>None</td>
<td>Stable</td>
<td>Partial</td>
<td>N/A</td>
<td>None</td>
<td>MSH2</td>
<td>Uncle Colon Ca @ 30; Father Esophagus Ca</td>
</tr>
<tr>
<td>36</td>
<td>None</td>
<td>Insufficient Tissue</td>
<td>Partial</td>
<td>N/A</td>
<td>None</td>
<td>MSH2</td>
<td>Father Colon Ca; Brother Lung Ca; Sister (Uterine; Sister Lung Ca)</td>
</tr>
</tbody>
</table>

**Table 1:** Patients with a positive screen with positive MMRP loss, MSI-high instability or AMS1 or 2 positive family history.
Introduction: Prostate cancer treatment is a significant source of morbidity and spending. It is widely believed that some men with prostate cancer, particularly those with significant health problems, are unlikely to benefit from treatment. Financial incentives associated with urologist ownership of radiation facilities have the potential to spur utilization despite this understanding about disease biology.

Methods: Using a 20% sample of national Medicare claims between 2010 and 2013, prostate cancer treatment was measured according to urologist practice affiliation (i.e., single specialty groups by size, multispecialty group). Overall treatment, and intensity modulated radiation therapy (IMRT) in particular, was further assessed by urologist ownership of IMRT and patient risk of non-cancer mortality within 10 years of diagnosis. Generalized estimating equations were used to adjust for patient differences.

Results: Among the men with newly diagnosed prostate cancer, use of IMRT ranged from 23.5% in multispecialty groups to 37.4% in large urology groups (p < 0.001). In the cohort, 5,133 patients were managed in urology groups with IMRT ownership. Urologists with ownership interest were more likely to use IMRT compared with non-owners practicing in single specialty groups (42.5% vs. 29.5%, p < 0.001), regardless of group size. Among patients with a very high risk (≥ 75%) of non-cancer death within 10 years of diagnosis, both IMRT use (41.6% vs. 26.3%, p < 0.001, Figure) and overall treatment with curative intent (52.7% vs. 43.5%, p < 0.001) were more likely in urology groups with ownership compared with non-owners, respectively.

Conclusion: Urologists practicing in single-specialty groups with an ownership interest in radiation therapy are more likely to treat men with prostate cancer, including those with a high risk of non-cancer mortality.
A PREDICTIVE RISK STRATIFICATION MODEL FOR DELIRIUM AFTER MAJOR UROLOGIC CANCER SURGERY

Albert Ha, BS¹,²; Ross Krasnow, MD¹,²; Adam Kibel, MD¹,² and Steven Chang, MD, MS¹,²
¹Harvard Medical School, Boston, MA; ²Brigham and Women's Hospital, Boston, MA
(Presented By: Albert S. Ha, BS)

Introduction: Postoperative delirium is a common complication in the elderly and contributes to increased healthcare costs, mortality, cognitive decline, and hospital length of stay. To date, no definitive pre-operative model exists to stratify risk of patients developing postoperative delirium following major urologic cancer surgery.

Methods: Using the Premier Hospital Database, we retrospectively identified patients who underwent radical prostatectomy (RP), radical nephrectomy (RN), partial nephrectomy (PN), and radical cystectomy (RC) from 2003 to 2013. Delirium was defined using International Classification of Disease-9 (ICD-9) codes, as well as post-operative use of antipsychotics, sitters, and restraints. Potential pre-operative delirium risk factors were extrapolated from patient and hospital characteristics, comorbid conditions, and surgical characteristics. A pre-operative risk stratification scoring system was developed using known risk factors of delirium and multivariable logistic regression. Statistically significant pre-operative risk factors for delirium were assigned points based on their respective magnitudes to create a pre-operative risk prediction model for delirium. The performance of this system was quantified using Receiver Operating Characteristic (ROC) analysis. All analyses were survey weighted and clustered by hospitals to achieve estimates generalizable to the US population.

Results: We identified 165,387 patients representing a survey-weighted total of 1,097,355 patients from 490 hospitals. Our model revealed that a wide range of clinical and demographic factors contributed to the risk for postoperative delirium (Figure 1A) with increased probability per unit increase in the score (Odds Ratio: 1.31, 95% CI 1.29-1.33, p <0.001, Figure 1B). Validation using ROC analysis revealed an AUC of 0.75 for all surgery groups (95% CI, 0.75-0.76, Figure 1C).

Conclusion: The preliminary results of the pre-operative risk prediction tool for delirium following major urologic cancer surgery are promising given their consistency with published delirium risk factors and ease of use to identify at-risk patients. Further validation will shed insight about its overall clinical utility.
Introduction: Postoperative delirium is associated with poor outcomes and increased healthcare costs in the elderly. A population-based analysis of incidence, outcomes, and cost of delirium has not been characterized in major urologic cancer surgeries.

Methods: Using the Premier Hospital Database, we retrospectively identified patients who underwent radical prostatectomy (RP), radical nephrectomy (RN), partial nephrectomy (PN), and radical cystectomy (RC) from 2003 to 2013. Delirium was defined using ICD-9 codes, as well as post-operative use of antipsychotics, sitters, and restraints. We constructed regression models to assess for mortality, discharge disposition, length of stay (LOS), and direct hospital costs. Survey weighted adjustment for hospital clustering was used to achieve estimates generalizable to the US population.

Results: We identified 165,387 patients representing a survey weighted 1,097,355 patients from 490 hospitals. 30,063 patients (2.7%) experienced post-operative delirium. The greatest incidence occurred after RC, with 6,268 cases (11%). After adjusting for patient, hospital, and peri-operative characteristics, patients with post-operative delirium had greater odds of in-hospital mortality (OR 3.71; 95% CI 2.58-5.33; p <0.001), 90-d mortality (OR 1.48; 95% CI 1.09-2.02; p = 0.012), discharge with home healthcare (OR 2.39; 95% CI 2.07-2.76; p <0.001), discharge to skilled nursing facilities (OR 4.98; 95% CI, 4.25-5.84; p <0.001), and an increase in median LOS by 0.9 days (95% CI 0.84-0.96; p <0.001). Patients with post-operative delirium also had an increase in direct hospital costs by $2,697 (95% CI, $2,250-$3,144; p <0.001). When stratified by type of surgery, the greatest difference in cost was seen in patients following RC ($30,859 vs. $26,607; p=0.001). The largest driver of costs was in room and board across all surgeries (p<0.001).

Conclusion: Patients with post-operative delirium experienced worse outcomes, prolonged LOS, and increased admission costs following major urologic cancer surgery. In particular, the largest incidence and costs occurred in delirious patients after RC. Further research is warranted in order to identify at risk patients and devise preventive strategies.
Poster #44
NATIONAL UTILIZATION OF ROBOTIC RADICAL NEPHRECTOMY FOR CLINICAL STAGE 1 RENAL CELL CARCINOMA: RESULTS FROM A POPULATION-BASED COHORT
Matthew Bream, MD; John Francis, MD; Robert Abouassaly, MD and Simon Kim, MD, MPH
University Hospitals Case Medical Center, Case Western Reserve University, Cleveland, Ohio
(Presented By: Matthew Bream, MD)

Introduction: Robotic surgery has rapidly disseminated into clinical practice for several common urologic surgeries. However, its use for radical nephrectomy (RN) in the setting of T1 renal masses is largely unknown and could be considered controversial due to the higher costs associated with robotic surgery. Thus, we sought to assess the national use of robotic radical nephrectomy (RRN) and laparoscopic radical nephrectomy (LRN) for T1 renal masses and to compare perioperative quality outcomes.

Methods: We identified patients who underwent RRN or LRN for clinical T1N0M0 renal cell carcinoma (RCC) in the National Cancer Data Base (NCDB) from 2010 to 2013. Surgical outcomes assessed in this study included surgical approach (RRN vs. LRN) and commonly used quality indicators—length of stay, 30-day readmission, and 30-day and 90-day mortality. Multivariable logistic regression was used to identify differences in patient and hospital characteristics for surgical approach and quality indicators.

Results: Among the 15,756 patients undergoing minimally-invasive radical nephrectomy for localized T1 RCC, 25% were treated with RRN with an increase over time from 18% in 2010 to 31% in 2013, p<0.01. On multivariable analysis, patients treated at academic hospitals had higher odds of undergoing RRN compared to community hospitals (OR: 1.29; 95% CI: 1.19-1.40, p<0.01). Patients with tumor size ≤ 4 cm (OR: 1.25; 95% CI: 1.16-1.35, p<0.01) and those who underwent retroperitoneal lymph node dissection (OR: 1.86; 95% CI: 1.62-2.14, p<0.01) also had higher odds of undergoing RRN. The perioperative quality indicators, and rates of conversion to open surgery were similar between the groups.

Conclusion: Radical nephrectomy is being performed robotically in one-quarter of all minimally invasive RNs for stage 1 RCC, and its use has nearly doubled over a 4-year period. With similar perioperative quality outcomes and increased attention to health care costs, RRN may face greater scrutiny as a surgical option for localized RCC.
Poster #45
ACCOUNTABLE CARE ORGANIZATIONS, UROLOGIST PRACTICE AFFILIATION AND PROSTATE CANCER
Amy N. Luckenbaugh, MD¹; Samuel R. Kaufman²; Phyllis Yan²; Tudor Borza²; Lindsey A. Herrel²; David C. Miller²; Vahakn B. Shahinian³ and Brent K. Hollenbeck²
¹University of Michigan Ann Arbor, Michigan; ²University of Michigan - Dow Division for Health Services Research, Department of Urology Ann Arbor, MI; ³University of Michigan - Kidney Epidemiology Cost Center Ann Arbor, MI
(Presented By: Amy Luckenbaugh, MD)

Introduction: Accountable Care Organizations (ACOs) have the potential to improve the value of prostate care through enhanced financial stewardship and focus on population health. How the practice context modifies the effect of ACOs on prostate cancer care, a disease managed by urologists, has implications for the ability of these organizations to achieve their aims with respect to specialty care.

Methods: We performed a retrospective cohort study of newly diagnosed men with prostate cancer between 2012 and 2013 using national Medicare data. Patients were attributed to their urologist's practice context (small single specialty, large single specialty, or multispecialty group practice) and ACOs using Healthcare Relational Spheres and Beneficiary-level alignment datasets, respectively. Generalized linear multivariable models were fitted to derive adjusted rates of treatment and spending for the 12-month period subsequent to diagnosis. We also assessed the relationship of ACO penetration (i.e., the proportion of a practice’s panel of patients aligned to ACOs) with treatment and spending for patients treated by urologists in single specialty groups.

Results: Of 15,640 patients with newly diagnosed prostate cancer, 1,100 (7.0%) were aligned to a Shared Savings Program ACO. Patients in ACOs and had similar adjusted rates of curative treatment to those not in ACOs (71.4% vs. 70.0%, respectively; p=0.33), which did not vary with the practice context (p=0.39). Adjusted spending was higher among patients in ACOs ($20,916 vs. $19,773, p=0.03); however, this relationship was independent of the practice context (p=0.90). Higher ACO penetration was associated with higher spending (p<0.05) but not with treatment (p=0.87) (Figure)

Conclusion: Newly diagnosed men with prostate cancer aligned with ACOs had similar rates of treatment and higher rates of spending in the first two years after implementation. These findings were similar across practice contexts. Greater involvement with ACO patients, at least among single specialty groups, was associated with higher spending. Strong engagement of specialists by ACOs may be necessary to reduce spending for specialty driven conditions, such as prostate cancer.

Figure 3. Adjusted rates of treatment (a) and spending (b) for newly diagnosed prostate cancer patients managed by single specialty groups according to the proportion of the group’s patients aligned with ACOs (i.e., ACO penetration)
Poster #46
TPX2 AS A PROGNOSTIC INDICATOR AND POTENTIAL THERAPEUTIC TARGET IN CLEAR CELL RENAL CELL CARCINOMA

Zachary Glaser¹; Harold Love, PhD¹; Shunhua Guo, BM²; Lan Gellert, MD, PhD²; Chang Sam, MD, MBA¹; S. Duke Herrell, MD¹; Daniel Barocas, MD¹; David Penson, MD, MPH¹; Michael Cookson, MD¹ and Peter Clark, MD
¹Vanderbilt University Medical Center, Department of Urologic Surgery; ²Vanderbilt University Medical Center, Department of Pathology

(Presented By: Zachary A. Glaser)

Development of clear cell renal cell carcinoma(ccRCC) is typically dependent on aberrant function of the von Hippel-Lindau gene(VHL). Mechanisms by which this leads to cellular transformation are not fully understood but may include up-regulation of oncoprotein Aurora-A. This serine/threonine kinase involved in cell cycle progression is correlated with Fuhrman grade, and is a promising therapeutic target in ccRCC. Aurora-A function is dependent on recruitment and activation by targeting protein for Xklp2(TPX2), suggesting TPX2 may play a role in ccRCC. We investigated whether TPX2 is correlated with ccRCC histology and oncologic outcomes using the Cancer Genome Atlas(TCGA), and validated these findings in a tissue microarray(TMA).

Clinicopathological data obtained from the TCGA consisted of 415 samples diagnosed with ccRCC. A TMA was constructed from tumors of 207 patients who underwent radical nephrectomy for histologically confirmed ccRCC, and was immunostained for TPX2 protein. The stained cells were assessed by a genitourinary pathologist. Clinical data was extracted from medical records and linked to TMA cores under IRB protocol.

TPX2 and Aurora-A mRNA coexpression were evaluated in the TCGA cohort. Overall(OS) and recurrence-free survival(RFS) were analyzed using the Kaplan-Meier method and logrank statistics for both cohorts. Uni- and multivariate analyses using Cox proportional hazard models were also performed.

TCGA cohort: Median follow-up time was 3.07 years. Aurora-A and TPX2 mRNA coexpression were significantly correlated (Pearson's correlation 0.918). High TPX2 mRNA expression was associated with advanced T stage, metastasis, poor OS and RFS.

TMA cohort: Median follow-up time was 5.3 years. Elevated TPX2 protein expression, defined as greater than 75th percentile staining intensity, was identified in 47/207 patients. Increased TPX2 immunostaining was associated with poor OS (p=0.0327, 50% five-year mortality) and RFS (p=0.0313, 70% five-year recurrence). High expression was also associated with advanced Fuhrman grade, T stage and metastasis. Multivariate analysis demonstrated elevated expression served as an independent predictor of RFS (HR 3.62 (1.13-11.55), p=0.029) correcting for age, grade, stage and node status.

We show TPX2, a regulator of Aurora-A, is associated with high grade and stage of ccRCC and an independent predictor of recurrence. Future studies are warranted testing its role in ccRCC biology and its potential as a therapeutic target.
**Poster #47**  
**DIFFERENTIAL EFFECT OF BODY MASS INDEX BY GENDER ON ONCOLOGICAL OUTCOMES IN PATIENTS WITH RENAL CELL CARCINOMA**  
Zachary Glaser; Melih Balci, MD; Sam Chang, MD, MBA; S. Duke Herrell, MD; Daniel Barocas, MD; Matthew Resnick, MD, MPH; Joseph Smith, Jr., MD; David Penson, MD, MPH and Peter Clark, MD  
Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN  
(Presented By: Zachary A. Glaser)

**Introduction:** The incidence of renal cell carcinoma (RCC) in the US has increased in the last several decades. While this may be due to widespread use of diagnostic imaging, it may also reflect an increase in the prevalence of risk factors such as obesity. While obesity is associated with an increased risk of RCC, recent studies suggest a higher BMI is paradoxically associated with better overall survival (OS). However, data evaluating the impact of BMI on RCC outcome is limited and variable. The aim of our analysis was to evaluate the influence of BMI stratified by gender on outcomes in patients treated surgically for RCC.

**Methods:** A total of 2,363 patients with histologically confirmed RCC who underwent radical or partial nephrectomy at our institution between 1988 and 2015 were identified. Of these, 1,010 patients with either metastatic disease or less than 24-month follow-up were excluded, leaving 1,353 for analysis. Clinicopathological information was extracted from the electronic medical record under IRB protocol. OS and recurrence free survival (RFS) outcomes were analyzed using the Kaplan-Meier method, and multivariate analyses performed by cox proportional hazards.

**Results:** The median age of patients was 59.4 with a median BMI of 29.4. We separated our cohort by median and quartile BMI (IQR of 7.9). Overall, patients with greater than cohort-defined median BMI had significantly greater OS (p=0.0091) and borderline better RFS (p=0.0545). Furthermore, patients in the lowest BMI quartile (< 25.9) experienced significantly worse OS and RFS (p=0.0003 and p=0.0082). Subgroup analysis stratified by gender revealed similar findings in our male cohort for OS (median p=0.0077, quartile p=0.0010), but not in our female cohort (median p=0.448, quartile p=0.1402). Multivariate analysis of the entire cohort demonstrated lower quartile BMI independently predicts OS (HR 1.604 (95% CI: 1.07-2.408), p=0.022) correcting for age, gender, stage, Fuhrman grade, lymphovascular invasion, sarcomatoid features, tumor necrosis and metastasis.

**Conclusion:** We confirm studies that show increased BMI is associated with improved survival for localized RCC, and suggest using BMI as a prognostic indicator may be most pronounced in male patients. Further studies are warranted to determine if gender-specific hormonal or endocrine characteristics account for this variation.
SERUM ADIPONECTIN LEVEL MAY BE AN INDEPENDENT PREDICTOR OF CLEAR CELL RENAL CELL CARCINOMA
Junlong Wu; Hongkai Wang, MD; Weijie Gu, MD; Beihe Wang, MD; Bo Dai, MD; Hailiang Zhang, MD; Guohai Shi, MD; Yijun Shen, MD; Yiping Zhu, MD; Yao Zhu, MD and Dingwei Ye, MD
Department of Urology, Fudan University Shanghai Cancer Center, Shanghai, China
(Presented By: Junlong Wu, MD)

Introduction: To examine whether serum adiponectin or leptin level has the ability to differentiate clear cell renal cell carcinoma (ccRCC) from other subtypes of renal cell carcinoma (RCC) in a Chinese population.

Methods: We recruited 198 consecutive patients who were treated with radical or partial nephrectomy in our department from September 2011 to June 2013. Their histological types were all malignant, including clear cell, papillary, chromophobe and unclassified RCC. We also enrolled 86 people with no cancer or cancer-related diseases as normal controls. We measured patients’ preoperative blood samples for plasma adiponectin and leptin concentrations using an enzyme-linked immunosorbent assay method. Statistical methods were used to analyze ccRCC and other subtypes as they relate to serum adiponectin/leptin level and other factors such as body mass index or visceral fat area.

Results: In our database, normal controls had significantly higher circulating adiponectin (p < 0.001) and leptin levels (p < 0.001) than patients with RCC. Among the 198 RCC patients, 156 patients had ccRCC while 42 patients had other histological types. Serum adiponectin levels were lower in ccRCC patients than in non-clear-cell RCC patients (p = 0.004). However, the plasma leptin level was not differently distributed between ccRCC and non-ccRCC patients (p = 0.940). In multivariate analysis, we found that serum adiponectin level may be an independent predictor for discriminating ccRCC patients from others (p = 0.004). Furthermore, in the ccRCC subgroup, we observed that men with ccRCC had lower leptin (p < 0.001) and adiponectin (p = 0.002) levels, and diabetic patients had lower plasma adiponectin levels (p = 0.001).

Conclusion: Lower plasma adiponectin concentration was related to an increased incidence of ccRCC and may act as an independent predictor for ccRCC. Our study may help define the process from obesity to adipose tissue, to cytokines and finally to ccRCC.
Poster Session I – Full Abstracts

Poster #49
WHOLE GENOME TRANSCRIPTIONAL ANALYSIS OF CLEAR CELL RENAL CELL CARCINOMA WITH VENOUS TUMOR THROMBUS REVEALS INTRATUMORAL HETEROGENEITY AND GENES ASSOCIATED WITH POOR OUTCOME
Dharam Kaushik, MD¹; Wasim Chowdhury, MS¹; Ping Wu, PhD¹; Teresa Johnson-Pais, PhD¹; Yidong Chen, PhD²; Michael A. Liss, MD¹ and Ronald Rodriguez, MD, PhD¹
¹Department of Urology, UTHSCSA, San Antonio; ²Department of Epidemiology and Biostatistics, UTHSCSA, San Antonio
(Presented By: Dharam Kaushik, MD)

Introduction: Overall, 4–10% of newly diagnosed renal cell carcinoma (RCC) patients have been found to have a venous tumor thrombus (VTT). Intratumoral heterogeneity may contribute to progression of the disease and metastases. Previous studies have focused on studying the heterogeneity of metastases, recurrence and tumor. There has been no study to date evaluating VTT and characterizing its transcriptional profile. We report results of the transcriptional analysis of primary tumor (PT), VTT and adjacent normal parenchyma (NP).

Methods: We performed Whole Transcriptome Sequencing on fresh tissue specimens from 6 patients with clear cell RCC and VTT collected at the time of radical nephrectomy with tumor thrombectomy. We evaluated transcriptional alterations between PT/NP, VTT/NP and VTT/PT. We compared our data set with The Cancer Genome Atlas (TCGA) data. For multiple testing corrections, we utilized false discovery estimation and differential expression criterion.

Results: We surveyed 23,228 genes and identified differential expression in 1455, 1344 and 26 genes between tumor and normal parenchyma (PT/NP), tumor thrombus and normal parenchyma (VTT/NP) and tumor thrombus and primary tumor (VTT/PT) respectively. We identified altered key pathways (cytokine activity, regulation of apoptosis, cytoskeleton organization, immune response). We compared these genes with TCGA data and identified 35 genes, which predicted poor outcome. VTT demonstrated statistically significant differential expression of OSM (2.37 fold), INHBA (1.9 fold), CCL2 (2.3 fold), CCL20 (2.9 fold) and IL1B genes (4.5 fold) compared to primary tumor (TT/T), (Figure1). We identified statistically significant higher expression of OSM, INHBA, CCL20, and IL1B genes in higher tumor thrombus level compared to lower tumor thrombus level.

Conclusion: RNA sequencing of RCC with VTT reveals significant genomic intratumoral heterogeneity. We identified key molecular pathways and differential expression of genes in VTT compared to primary tumor (VTT/PT). Furthermore, these genes were found to be upregulated in higher VTT level compared to lower VTT level. These results will require validation in a larger cohort.
COMPARISON OF SURGICAL MARGINS BETWEEN OPEN, LAPAROSCOPIC AND ROBOTIC PARTIAL NEPHRECTOMIES IN KIDNEY CANCER PATIENTS IN A POPULATION BASED COHORT

Tanya N. Watts, MS4¹; Andrew G. Bachman, MS4¹; Alexander A. Parker, MS4¹; Shane M. Pearce, MD²; Brian W. Cross, MD¹; Michael S. Cookson, MD¹ and Sanjay G. Patel, MD¹

¹University of Oklahoma College of Medicine- Department of Urology, Oklahoma City, OK; ²University of Chicago Pritzker School of Medicine- Department of Urology, Chicago, IL

(Presented By: Tanya Nicole Watts)

Introduction: To determine the impact of surgical approach (robotic, laparoscopic and open) on surgical margins at the time of partial nephrectomy for patients with cN0M0 kidney tumors.

Methods: We queried the National Cancer Database (NCDB) between 2010 and 2013 to perform a retrospective cohort study of patients who underwent partial nephrectomy for kidney cancers less than 8 cm. Surgical approach was stratified by open, laparoscopic and robotic approaches. Patient characteristics, such as age, race, insurance status, and number of comorbidities were abstracted. We controlled for hospital characteristics such as teaching hospital status, volume quartile, region, and location. Pearson chi-square and multivariate logistic regression analysis was used to assess relationships between surgical approach and positive surgical margins.

Results: Of the 30,711 patients that met inclusion criteria, mean age was 58 years with a mean tumor size of 2.42 cm. There were 14,252 robotic-assisted (46.41%), 3,973 laparoscopic (12.94%) and 12,436 open (40.66%) partial nephrectomies. Univariate analysis indicates that positive margins occur in 8.42% of robotic-assisted, 7.61% of laparoscopic-assisted and 5.58% of open partial nephrectomies (p<0.001). On multivariate analysis the laparoscopic (OR:1.49 [95%CI:1.28 -1.73], p<0.001) and robotic approaches (OR: 1.92 [1.46-1.80], p<0.001) were more likely to have a positive margin compared to the open approach. Higher volume centers performing 80 or more partial nephrectomies per year were less likely to have a positive margin.

Conclusion: Minimally invasive approaches for partial nephrectomy have a higher incidence of positive margins than the open approach while controlling for tumor size. Additionally, positive margins occurred less frequently in facilities with higher partial nephrectomy volumes. Careful selection of approach management for small renal masses is critical and must weigh surgeon proficiency, tumor location and morbidity. Further research is needed to elucidate causes of increased positive surgical margins with minimally invasive approaches. The oncological impact of higher positive margin rates among minimally invasive partial nephrectomies will require additional study.
**Poster Session I – Full Abstracts**

**Poster #51**  
**DISCRIMINATION OF MALIGNANT AND BENIGN KIDNEY TISSUE WITH 1064 NM DISPERSIVE RAMAN SPECTROSCOPY**  
Miki Haifler, MD, MSc¹; Isaac Pence, PhD²; Alexander Dumont, MSc³; Benjamin Ristau, MD⁴; Richard Greenberg, MD⁵; David Chen, MD⁴; Alexander Kutikov, MD⁴; Marc Smaldone, MD, MSPH⁴; Rosalia Viterbo, MD⁴; Robert Uzzo, MD⁴; Amnon Zisman, MD, MPH⁵; Anita Mahadevan-Jansen, PhD² and Chetan Patil, PhD³  
¹Philadelphia; ²Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, USA; ³Department of Bioengineering, College of Engineering, Temple University, Philadelphia, PA, USA; ⁴Department of Urology, Fox Chase Cancer Center, Temple Health, Philadelphia, PA, USA; ⁵Department of Urology, Assaf Haroffe, Medical Center, Tzrifin, Beer Yaakov, Israel  
(Presented By: Michael Haifler, MD, MSc)

**Introduction:** Renal cell carcinoma (RCC) affects greater than 65,000 new patients every year in the US. Current imaging cannot confirm malignancy. Annually about 6,000 benign tumors will be radiographically suspected as cancer and resected. Raman spectroscopy (RS) has been examined as an imaging modality to improve on tissue characterization and histologic discrimination; however, assessment with 785 or 830 nm near-infrared excitation has limited utility in normal tissues with intense auto-fluorescence, such as the kidney. Recently, a modified RS system using a 1064 nm light source was described showing greater spectral discrimination of highly auto-fluorescent tissue. We aimed to evaluate this technology in distinguishing normal and malignant renal tissue.

**Methods:** Using a dispersive 1064 nm RS, system, specimens from healthy kidney tissue were compared spectroscopically to RCC. Ex vivo RCC specimens (N = 6) and healthy human kidney (N = 6) were obtained from the Vanderbilt Cooperative Human Tissue Network. Multiple spectra were acquired from at least 5 physical locations across each specimen. A total of 93 measurements were used for the final analysis. The resulting spectra were analyzed with a machine learning algorithm, sparse multinomial logistic regression (SMLR), to predict class membership of healthy and malignant tissues. Posterior probabilities of group classifications were extracted and a quantitative metric called feature importance was defined based on SMLR outputs. This metric is used to guide the association of spectral features with biological indicators of healthy and abnormal tissue.

**Results:** Spectral bands with high feature importance for healthy and malignant kidney specimens are shown in figure 1. Correct classification by the SMLR algorithm was obtained in 85% of the trials with sensitivity and specificity of 82% and 87% respectively.

**Conclusion:** A dispersive 1064 nm RS system can accurately differentiate normal kidney and RCC. This technology may potentially allow for non-invasive optical biopsy to improve pre-treatment diagnosis, and could have application intraoperatively for surgical guidance during nephron sparing surgery.
Introduction: The incidence of Wilms tumor (WT) in adults is rare, with only 0.2 cases per million per year. The purpose of this study was to compare national trends in WT treatment management and outcomes by age group.

Methods: The National Cancer Data Base (NCDB) was queried for patients with WT diagnosed between 2004 and 2013. Patients were grouped by age: pediatrics (<16 years), young adults between 16-35 years, and adults >35 years. Overall survival (OS) was determined using the Kaplan-Meier method. Univariate (UVA) and multivariate (MVA) analyses were performed using Cox proportional hazards regression models.

Results: In total, 3,083 patients were evaluated; the majority were pediatric (n=2,855), followed by adults (n=129), and young adults (n=99). Unadjusted 5-year OS was significant better for pediatrics vs. young adults or adults (91.9%, 78.3%, 53.3% respectively; p<0.001), as was 10-year OS (90.4%, 52.3%, 38.8%; p<0.001) – Figure 1. On MVA, despite a similar disease stage distribution, OS was significantly better for pediatrics (reference) vs. young adults (hazard ratio [HR], 2.97; 95% confidence interval [CI], 1.90-4.64; p<0.001) and adults (HR, 4.19; 95% CI, 2.57-6.83; p<0.001). In addition to age, other variables associated with worse OS included unfavorable histology (HR, 4.10; p<0.001), bilateral disease (HR, 2.15; p<0.001), stage IV disease (HR, 3.57; p=0.002), and positive lymph nodes on dissection (HR, 2.41-4.19; p<0.001). When accounting for patient demographics, patients over 16 years of age more commonly presented with unfavorable histology (odds ratio [OR], 5.86; p<0.001) and positive lymph nodes (OR, 1.78; p=0.049), and were less likely to undergo routine lymph node sampling/dissection (OR, 0.13; p<0.001), radiation therapy (OR, 0.34; p<0.001), or chemotherapy (OR, 0.17; p<0.001).

Conclusion: Adults with WT suffered worse outcomes when compared to children with WT. The survival decrement in adults may be due to higher rates of unfavorable histology and less aggressive treatment including under-utilization of appropriate lymph node sampling, chemotherapy, and adjuvant radiation therapy.
Poster #53
CLINICOPATHOLOGIC CHARACTERIZATION AND OUTCOMES FOR PATIENTS WITH RENAL MEDULLARY CARCINOMA: RESULTS FROM THE NATIONAL CANCER DATABASE
Harras Zaid, MD; R. Houston Thompson, MD; Bradley Leibovich, MD; William Parker, MD; Brian Costello, MD; Lance Pagliaro, MD and Stephen Boorjian, MD
Mayo Clinic, Rochester, MN
(Presented By: Harras Zaid, MD)

Introduction: Renal medullary carcinoma (RMC) is a rare, aggressive malignancy for which relatively limited characterization exists to date. We evaluated clinicopathologic features, treatment patterns, and variables associated with outcomes for patients with RMC.

Methods: We reviewed the National Cancer Database to identify patients diagnosed with RMC between 1998-2012. Overall survival (OS) was estimated using the Kaplan-Meier method. Clinicopathologic features associated with all-cause mortality (ACM) were assessed using Cox regression analysis.

Results: We identified 153 patients with RMC, comprising approximately 0.04% of renal malignancies during this time period. Median age at diagnosis for RMC was 24 years (IQR 20, 31). The majority of RMC patients were black (135; 88%), male (108; 71%), and presented with unilateral, right-sided tumors (101; 66%). Notably, nearly half (72; 48.9%) presented with metastatic disease. A total of 92 (64.3%) patients underwent radical nephrectomy (RN), and 2 (1.3%) were treated with partial nephrectomy. Pathologic stage at nephrectomy was ≤pT2 in 30 patients (32.6%), pT3 in 43 (46.7%), pT4 in 7 (7.6%), and N+ in 50 (55.6%). Of the patients who underwent RN, 60 (65.2%) received multimodal therapy (MMT), including radiation (3; 3.3%), systemic therapy (49; 53.3%), and radiation + systemic therapy (8; 8.7%). Of the 59 patients who did not undergo surgical resection, the majority (46; 77.8%) presented with M1 disease. Median OS was 7.8 months for the entire RMC cohort, with 1- and 3-year OS of 34 % and 11%, respectively. Notably, median OS for patients presenting with M1 and M0 disease was 5.2 months versus 11.2 months, respectively (p< 0.01). On multivariable analysis (Table), treatment with RN (HR 0.40; p=0.003) or RN+MMT (HR 0.44; p<0.001) were associated with decreased ACM, whereas the presence of metastatic disease at diagnosis remained associated with an increased risk of ACM (HR 1.74; p=0.02).

Conclusion: The prognosis for patients with RMC is dismal, with a median OS under 8 months. Further studies, including the development of novel therapies, are needed to establish the optimal multimodal management approach for these patients.

Table. Multivariable analysis of factors associated with all-cause mortality among patients with RMC.

<table>
<thead>
<tr>
<th>Treatments</th>
<th>Hazard Ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.99</td>
<td>0.68, 1.02</td>
<td>0.62</td>
</tr>
<tr>
<td>Female gender</td>
<td>0.69</td>
<td>0.45, 1.06</td>
<td>0.09</td>
</tr>
<tr>
<td>Race (Black vs. Non-Black)</td>
<td>1.35</td>
<td>0.76, 2.43</td>
<td>0.31</td>
</tr>
<tr>
<td>cM status (M1 vs. M0)</td>
<td>1.74</td>
<td>1.10, 2.75</td>
<td>0.02</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No surgery</td>
<td>reference</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RN alone</td>
<td>0.40</td>
<td>0.22, 0.73</td>
<td>0.003</td>
</tr>
<tr>
<td>RN + MMT</td>
<td>0.44</td>
<td>0.28, 0.69</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Introduction: Pre-operative kidney volume is an independent predictor of glomerular filtration rate in renal cell carcinoma patients. Compensatory renal growth (CRG) can ensue prior to nephrectomy in parallel to tumor growth and benign parenchyma loss. We aimed to test whether renal metabolite abundances significantly associate with pre-operative CRG, suggesting a causative relationship.

Methods: Tissue metabolomics data from 49 patients, with a median age of 60 years, were previously collected and the pre-operative fold-change of their contra to ipsi-lateral benign kidney volume served as a surrogate for their CRG. Contra-lateral kidney volume fold-change within a 3.3 +/- 2.1 years follow-up interval was used as a surrogate for long-term CRG. Using a multivariable statistical model we identified metabolites whose abundances significantly associate with CRG (FDR adjusted p < 0.05) as well as pathways enrichment associated with CRG.

Results: In the benign tissue, 13 metabolites were found to have a significant positive association with CRG (e.g. L-urobilin) and in the tumor tissue, 163 variables were found to significantly associate with CRG (e.g. 3-indoxyl sulfate). Benign/tumor fold change in metabolite abundances identified three additional metabolites whose benign versus tumor anti-correlated abundances were significantly associated with CRG (e.g. p-cresol sulfate) (Fig.1). At pathway level, we showed carnitine metabolism, medium-chain fatty acids, and fatty-acid monohydroxyl sub-pathways to be highly enriched with metabolites whose benign tissue abundances strongly associate with CRG, whereas in the tumor tissue this is true for protein degradation and reutilization processes (positive association) and glutathione (negative association). Metabolite abundances in benign tissue associated with long term CRG, further supporting the involvement of fatty-acid metabolism, where sphingolipid, monoaucylglycerol, and long and mid chain fatty acids were found to be significantly enriched.

Conclusion: These data suggest that specific biological processes in the benign as well as in the tumor parenchyma strongly influence compensatory renal growth.

Funding: Sidney Kimmel Center for Prostate and Urologic Cancers
Introduction: The International Metastatic Renal Cell Carcinoma Database (IMDC) Criteria (Heng Criteria) is a validated risk prediction tool for patients with metastatic renal cell carcinoma (mRCC). It provides valuable prognostic data but clinical application can be challenging due to limited available tools. We created an interactive visualization to facilitate clinical application of IMDC Criteria.

Methods: A multi-institutional cohort of 436 patients with mRCC was used to create an interactive visualization depicting IMDC Criteria at the patient level. Usability testing was performed with non-medical lay-users and medical oncology fellows. Subjects used the tool to calculate median survival times based on IMDC Criteria in six increasingly complex clinical scenarios. Confidence using the tool was surveyed and measured along a 5-point Likert scale.

Results: The interactive visualization is available at http://faculty.washington.edu/odisho. 400 lay-users and 15 medical oncology fellows completed clinical scenarios and surveys. Overall, lay-users were able to obtain the exact correct answer in 48% of scenarios, compared to 60% of medical oncology fellows. The proportion of exact correct answers decreased with increasing task complexity, but the proportion of answers within 25% of the expected answer remained stable at 68-78% for lay-users and 73-93% for medical oncology fellows. When surveying usability, 65% of lay-users felt it was easy to use, compared to 80% of fellows, and 83%-87% felt it became intuitive with increasing use, respectively. Among lay-users, 69-77% were confident selecting lab values and drug names, compared to 87-93% of medical oncology fellows. 75% of lay-users felt it helped them better understand survival in mRCC. 68% of lay-users wanted to use a similar tool with their doctor, while 87% of medical oncologists wanted to use this with patients and 93% wanted to incorporate it into their clinical practice in some way.

Conclusion: A graphical method of interacting with a validated nomogram for mRCC outcomes provides real-time individual level data that can be used by untrained nonmedical users and medical oncologists, with potential for use in the clinic setting.

Funding: This work was funded by the Urology Care Foundation Research Scholars Program and the Society of Urologic Oncology.
Poster #56
PREDICTORS OF LONG-TERM CHRONIC KIDNEY DISEASE AND NON-RENAL CANCER MORTALITY AFTER RENAL CANCER SURGERY
Joseph Zabell, MD¹; Sevag Demirjian, MD¹; Brian Lane, MD, PhD²; Ithaar Derweesh, MD³ and Steven C. Campbell, MD, PhD¹
¹Cleveland Clinic, Cleveland, OH; ²Spectrum Health, Grand Rapids, MI; ³University of California, San Diego, San Diego, CA
(Presented By: Joseph Zabell, MD)

Introduction: Renal cancer surgery (RCS) can adversely impact long-term renal function and survival. We evaluate predictors of 5-year risk of chronic kidney disease (CKD) and 10-year risk of non-renal cancer mortality (NRCM) after RCS.

Methods: We analyzed 4,283 patients undergoing RCS at Cleveland Clinic between 1997 and 2008. Radical nephrectomy (RN) was performed in 1,982 patients (46%) and 2,301 (54%) underwent partial nephrectomy (PN). Cumulative probability ordinal modeling was used to predict varying levels of CKD (defined as glomerular filtration rate (GFR) <45, <30, or <15 ml/min/1.73m²) at 5 years after surgery. Multivariable logistic regression was used to develop a separate model predicting NRCM at 10 years postoperatively. Covariates including race, gender, preoperative GFR, new baseline GFR, and relevant clinical comorbidities were included in the models. Preoperative GFR, new baseline GFR, and GFR loss following surgery were included, rather than PN/RN, to reduce potential selection biases associated with choice of surgical procedure. Median follow-up was 9.4 years (IQR=7.3-11.0)

Results: Median age was 62 years (IQR=52–71). Significant predictors for 5-year CKD were preoperative GFR, GFR loss at 6 weeks post-op, male gender, age, and African-American race (all p<0.05). A predictive nomogram was created from the multivariable model (Spearman rho of 0.779) demonstrating preoperative GFR and GFR loss at 6 weeks post-op as the most important predictive factors. 10-year overall risk of NRCM was 29%. Significant predictors of NRCM were preoperative GFR, new baseline GFR, age, diabetes, and hypertension (all p<0.05). A predictive nomogram for 10-year NRCM was created with a c-index 0.71, demonstrating age and preoperative GFR as the most important predictive factors. GFR loss with surgery, as would be seen with typical PN vs. RN, only changed absolute mortality risk by 1–3% in nomogram-based examples (see Figure).

Conclusion: GFR loss with RCS, which is directly related to choice of PN vs RN, strongly influences risk of developing CKD, but has much less impact on long-term survival. In contrast, age and preoperative GFR are much more robust predictors of 10-year NRCM.

![Figure - Nomogram-Based Examples](image-url)
**Poster #57**

ASSOCIATION BETWEEN LYMPH NODE YIELD AND SURVIVAL AMONG PATIENTS UNDERGOING RADICAL NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA

Piotr Zareba, MD, MPH; Barak Rosenzweig, MD and Jonathan Coleman, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Piotr Zareba, MD, MPH)

**Introduction:** Prior studies examining the value of lymph node dissection (LND) in patients with urothelial carcinoma of the upper urinary tract (UTUC) have produced conflicting results. The objective of this study was to assess the relationship between lymph node (LN) yield and survival among patients undergoing radical nephroureterectomy (RNU).

**Methods:** The National Cancer Data Base was used to identify patients with non-metastatic UTUC who were treated with RNU between 2004 and 2012. The association between LN yield and overall survival (OS) was assessed using Cox proportional hazards regression, with adjustment for patient, tumor and facility characteristics.

**Results:** Of the 14,472 patients eligible for the survival analysis, 2,926 underwent LND. Median yield was three LN (IQR 1, 7). Among the entire cohort and the LN-negative (pN0) subgroup, higher LN yield was associated with lower all-cause mortality (HR 0.95 per five LN removed, 95% CI 0.90, 1.00, p=0.042 for the entire cohort; HR 0.87, 95% CI 0.79, 0.94, p=0.001 for the pN0 subgroup). Among LN-positive (pN+) patients, there was no association between total LN yield and OS; however, the number of positive and negative LN were independent predictors of OS (HR 1.25 per five positive LN, 95% CI 1.15, 1.37, p<0.001; HR 0.90 per five negative LN, 95% CI 0.82, 1.00, p=0.044).

**Conclusion:** In this large, contemporary cohort of patients with UTUC, LND was found to be underutilized despite evidence suggesting that higher LN yield was associated with longer survival.

**Funding:** This work was supported by NIH/NCI Cancer Center Support Grant P30 CA008748 and the Sidney Kimmel Center for Prostate and Urologic Cancers.
Poster #57

ASSOCIATION BETWEEN LYMPH NODE YIELD AND SURVIVAL AMONG PATIENTS UNDERGOING RADICAL NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA

Piotr Zareba, MD, MPH; Barak Rosenzweig, MD and Jonathan Coleman, MD

Memorial Sloan Kettering Cancer Center, New York, NY

(Presented By: Piotr Zareba, MD, MPH)

Introduction: Prior studies examining the value of lymph node dissection (LND) in patients with urothelial carcinoma of the upper urinary tract (UTUC) have produced conflicting results. The objective of this study was to assess the relationship between lymph node (LN) yield and survival among patients undergoing radical nephroureterectomy (RNU).

Methods: The National Cancer Data Base was used to identify patients with non-metastatic UTUC who were treated with RNU between 2004 and 2012. The association between LN yield and overall survival (OS) was assessed using Cox proportional hazards regression, with adjustment for patient, tumor and facility characteristics.

Results: Of the 14,472 patients eligible for the survival analysis, 2,926 underwent LND. Median yield was three LN (IQR 1, 7). Among the entire cohort and the LN-negative (pN0) subgroup, higher LN yield was associated with lower all-cause mortality (HR 0.95 per five LN removed, 95% CI 0.90, 1.00, p=0.042 for the entire cohort; HR 0.87, 95% CI 0.79, 0.94, p=0.001 for the pN0 subgroup). Among LN-positive (pN+) patients, there was no association between total LN yield and OS; however, the number of positive and negative LN were independent predictors of OS (HR 1.25 per five positive LN, 95% CI 1.15, 1.37, p<0.001; HR 0.90 per five negative LN, 95% CI 0.82, 1.00, p=0.044).

Conclusion: In this large, contemporary cohort of patients with UTUC, LND was found to be underutilized despite evidence suggesting that higher LN yield was associated with longer survival.

Funding: This work was supported by NIH/NCI Cancer Center Support Grant P30 CA008748 and the Sidney Kimmel Center for Prostate and Urologic Cancers.

Poster #58

IMPACT OF PERIOPERATIVE INFECTION ON CANCER-SPECIFIC SURVIVAL AFTER NEPHRECTOMY FOR RENAL CELL CARCINOMA

Jacob E. Tallman, BA¹; Shane M. Pearce, MD¹; Kristine Kuchta, MS²; Brian T. Helfand, MD, PhD² and Scott E. Eggener, MD¹

¹University of Chicago, Chicago, IL; ²NorthShore University Health System, Evanston, IL

(Presented By: Jacob Tallman, BA)

Introduction: Numerous case series have documented very rare spontaneous tumor regression following infection. Immune-related targeted therapies are now available for many cancers, including renal cell carcinoma (RCC). We hypothesized that perioperative infection following nephrectomy for RCC will improve long-term cancer-specific survival (CSS).

Methods: We performed a retrospective cohort study using SEER-Medicare claims data from 2004-2011. ICD-9/CPT codes were used to identify patients >65 years old receiving nephrectomy for RCC. From this cohort we identified patients hospitalized with an infection within 30 days of surgery. Exclusion criteria included death within 90 days of surgery, immunodeficiency, and metastatic disease at diagnosis. Kaplan-Meier (KM) curves were used to evaluate CSS between infection vs. no infection groups. Cox proportional hazards model assessed survival controlling for age, sex, race, Elixhauser index, tumor grade, tumor size, histologic subtype, AJCC stage, use of immuno-/chemotherapy, and geographic region. High risk tumors were defined as >5cm and low-risk <5cm.

Results: Of 8,967 patients, 493 (5.5%) patients were hospitalized for infection. Median age 74 (IQR: 69-79), mean Elixhauser index 4.9 (SD: 7.3) and median follow-up 42 months (IQR: 22-67). Following nephrectomy for high risk (>5cm) RCC, univariate KM showed significant improvement in CSS for patients hospitalized with a serious infection (p=0.039; Fig. 1). Cox multivariable regression confirmed an improvement in CSS for patients hospitalized with serious infection (HR 0.75, 95% CI 0.57-0.98, p=0.034). This effect was observed primarily among patients with high risk tumors (HR 0.662, 95% CI 0.47-0.93, p=0.019), with no impact observed among low risk patients (HR 0.95, 95% CI 0.62-1.48, p=0.83). Stratification by type of infection (eg. skin/soft-tissue, respiratory, genitourinary, etc.) revealed no significant differences in CSS (all p>0.05).

Conclusion: In patients with higher-risk RCC tumors (>5cm) undergoing nephrectomy, perioperative infection appears to improve CSS.

Funding: Funded by the 2016 Urology Care Foundation/Herbert Brendler, MD Summer Medical Student Fellowship
Poster Session I – Full Abstracts

Poster #59
CAN LOOKS DECEIVE? NOT ALL CLINICALLY “CYSTIC” RENAL MASSES HARBOR INDOLENT BIOLOGY
Benjamin Ristau, MD¹; Lyudmilla DeMora, PhD¹; Eric Ross, PhD, ScM¹; Randall Lee, BS²; Michael Haifler, MD³; Andres Correa, MD¹; Shreyas Joshi, MD¹; David Chen, MD¹; Richard Greenberg, MD¹; Marc Smaldone, MD, MSHP¹; Rosalia Viterbo, MD¹; Robert Uzzo, MD¹ and Alexander Kutikov, MD¹
¹Fox Chase Cancer Center, Temple University Health System, Philadelphia, PA; ²Drexel University Medical School, Philadelphia, PA
(Presented By: Benjamin T Ristau, MD)

Introduction: Cystic renal cell carcinomas (RCC) are suggested to be clinically indolent. As such, a distinct pathologic staging category for these lesions was recently proposed. While not without merit, these recommendations fail to account for limitations in the ability of modern imaging to differentiate cystic RCC from biologically more aggressive mimics. We evaluated the frequency of high grade kidney cancer in surgically resected renal masses having cystic appearance on pre-operative radiographic imaging.

Methods: A prospectively maintained institutional database was queried for all clinically cystic renal masses that underwent surgery from January 2000 – June 2016 (n=2,729 kidney surgeries). Patient and tumor characteristics including age at surgery, smoking history, Charlson comorbidity index (CCI), gender, race, BMI, surgery date, laterality, Bosniak classification, histology, grade, size, and nearness to the collecting system were tabulated. Associations between tumor grade and patient/tumor characteristics were evaluated using chi square and t-test for categorical and continuous variables, respectively.

Results: Ninety patients (n=101 cystic lesions) met strict inclusion criteria; the majority (77%) were older than 50 years of age and the mean CCI was 1.02 (SD +/- 0.67) (Table 1). Of the 101 clinically cystic renal masses, 23% were confirmed pathologically as high grade RCC while 77% were benign (n=22), or low grade RCC (n=56). CCI was associated with risk of high grade RCC on final pathology (OR 1.71, 95% CI 1.07-2.35, p = 0.04). There was no association between tumor grade and the remainder of patient/tumor characteristics analyzed.

Conclusion: Recently proposed changes to the kidney cancer staging system define a mass’s cystic nature based on pathologic examination; yet nearly a quarter of radiographically “cystic” renal masses selected for resection harbor high grade pathology. Before making further changes to the clinical RCC staging system, a better understanding of limitations in radiographic determination of the low malignant potential cystic renal mass is necessary.
ASSOCIATION OF SINGLE NUCLEOTIDE POLYMORPHISMS WITH RENAL CELL CARCINOMA METASTASES IN PATIENTS WITH DUAL DIAGNOSES OF RENAL CELL CARCINOMA AND MELANOMA

Justin Gregg, MD¹; Zack Glaser, BS¹; Curran Emeruwa, MD²; Johnson Wong, MD²; Christopher Johnson, BS²; Arturo Holmes, BS²; Darrel Ellis, MD³; Loren Lipworth, ScD⁴; Todd Edwards, PhD⁴ and Peter Clark, MD¹

¹Vanderbilt University Medical Center, Department of Urologic Surgery, Nashville, TN; ²Meharry Medical College, Nashville, TN; ³Vanderbilt University Medical Center, Department of Medicine, Division of Dermatology; ⁴Vanderbilt University Medical Center, Department of Medicine, Division of Epidemiology

(Presented By: Justin Gregg, MD)

Introduction: Patients with renal cell carcinoma (RCC) are at increased risk of melanoma diagnosis, and vice versa. Studies indicate that genetic predispositions partially explain this relationship. RCC diagnosed in patients with melanoma is frequently asymptomatic, although little is known about RCC aggression in this patient population. We aimed to test the hypotheses that dual diagnoses would be associated with metastatic RCC and that single nucleotide polymorphisms (SNPs) associated with factors related to RCC diagnosis (such as body mass index [BMI] and hypertension) would be associated with dual diagnoses in patients with and without metastatic RCC.

Methods: Patients were included if genotyped in our institutional biorepository and if they had confirmed RCC or dual diagnoses of RCC and melanoma on chart review. Incidence of metastatic disease was determined in patients with and without dual diagnoses of RCC and melanoma and investigated for association using Fisher’s exact test. Available SNPs known to be associated with conditions related to RCC diagnosis or outcomes were then examined for association with dual diagnoses of RCC and melanoma in patients with and without metastatic RCC.

Results: A total of 385 patients were included. Of these, 84 (21.3%) had metastatic RCC at diagnosis or during follow-up. Twenty-three patients (5.8%) had dual diagnoses of RCC and melanoma. Nine of 23 patients (39%) with dual diagnoses had metastatic RCC, while 75 out of 372 patients with RCC only (20%) had metastatic disease (p=0.03). Among 45 SNPs tested, none was associated with dual diagnoses in the group of patients diagnosed with metastatic RCC. However, a SNP associated with BMI, rs11030104-G, was associated with dual diagnoses in patients who did not have metastatic RCC.

Conclusion: Patients with dual diagnoses of RCC and melanoma may have an increased risk of metastatic disease compared to those with RCC alone. A SNP related to the BDNF gene that is associated with BMI, rs11030104-G, may be associated with dual diagnoses in patients with non-metastatic RCC. Further studies are needed to validate this finding and determine the clinical utility of this SNP.
Poster #61
INITIAL EXPERIENCE WITH SYNCHRONOUS BILATERAL RENAL CRYOABLATION FOR MULTIFOCAL RENAL MASSES
Ross Mason, MD; Thomas Atwell, MD; Bimal Bhindi, MD; Grant Schmit, MD; John Schmitz, MD; Bradley Leibovich, MD; Stephen Boorjian, MD and R. Houston Thompson, MD
Mayo Clinic, Rochester, MN
(Presented By: Ross J. Mason, MD, FRCSC)

Introduction: Patients with synchronous bilateral renal masses pose a unique management problem. Previous observations support the use of bilateral partial nephrectomy, but data on bilateral synchronous renal mass ablation is sparse. Herein we report our institutional experience with same day bilateral cryoablation in patients with synchronous bilateral renal masses.

Methods: We retrospectively reviewed our institutional renal mass ablation database to identify patients with synchronous bilateral renal masses who underwent bilateral renal mass cryoablation on the same day. Descriptive statistics were used to report on peri-operative and renal functional outcomes.

Results: Between 2006 and 2015, 12 patients were identified who underwent bilateral renal mass ablation on the same day with a total of 30 renal masses ablated. Two patients had more than 2 renal masses ablated on the same day (3 renal masses for each) and two had same day bilateral renal mass cryoablation on two separate occasions. The median age at ablation was 65 (range 27-89) and 11 (91.7%) patients were male. Pathologic diagnosis was available for 21 (70%) renal masses of which 15 (71.4%) were renal cell carcinoma (RCC) and 6 (28.5%) were oncocytoma. One patient had pathologic discordance with an oncocytoma in the right kidney and clear cell RCC in the left kidney. The median hospital stay was 1 night (range 1-10). One (8.3%) patient required angioembolization for post-intervention bleeding and one (8.3%) patient required a blood transfusion for a drop in hemoglobin. One (8.3%) patient with multiple co-morbidities died 20 days after cryoablation from sepsis. The mean post-intervention decrease in estimated glomerular filtration rate as measured before discharge from hospital was 13 ml/min/1.73m2 and one (8.3%) patient developed acute renal failure (GFR <30 ml/min/1.73m2). Follow-up imaging was available for 11 patients and none of these experienced a local recurrence at a median follow-up of 14 months (range 3-53).

Conclusion: Our initial experience suggests that synchronous bilateral cryoablation is a reasonable treatment option for patients with bilateral and multifocal renal masses. Morbidity appears acceptable, and there is minimal impact on renal function.
DISTINGUISHING PEDIATRIC AND ADOLESCENT RENAL CELL CARCINOMA FROM OTHER RENAL MALIGNANCIES

Jamil Syed¹; Kevin Nguyen¹; Charlotte Wu, MD²; Minhaj Siddiqui, MD³; Adam Hittelman, MD¹; Nicholas Cost, MD⁴ and Brian Shuch, MD²
¹New Haven; ²New Haven Ct; ³Baltimore Maryland; ⁴Aurora Colorado
(Presented By: Jamil Syed)

Introduction: Renal cell carcinoma (RCC) represents a small proportion of renal malignancies early in life. Distinguishing RCC from other malignancies is important as treatment strategies may differ. We analyze the Surveillance Epidemiology and End Results (SEER) database to identify predictive factors of RCC in the pediatric population with renal tumors.

Methods: We queried SEER to identify patients from ages 0 to 19 diagnosed with a renal malignancy between 1973-2013. Cases were sorted using histology and site codes. Age-adjusted standardized incidence rates (SIR) were calculated. We compared differences in characteristics between cancer types. A logistic regression model and a nomogram was created to identify predictors of RCC.

Results: A total of 3,670 patients were identified, of which 281 (7.7%) were diagnosed with RCC. The SIR of RCC increased with age. After age 12, RCC was found in > 50% of all newly diagnosed cases. On multivariate analysis, RCC was associated with smaller tumor size (p<0.001), increasing age (p<0.001), black race (p<0.001), and localized stage (p<0.001). The nomogram predicted RCC pathology with a concordance index of 0.965.

Conclusion: RCC in childhood and adolescence is relatively uncommon, however it accounts for >50% of renal malignancies after age 12. For every year of increasing age, the odds of having an RCC diagnosis is increased by 50%. The odds of a renal tumor being RCC is increased in black children, those with localized disease, and for smaller tumors. In these specific populations, RCC should be considered in the differential diagnosis for a renal mass.
**Poster #63**

**IMPLEMENTATION OF VENOUS TUMOR THROMBECTOMY PATHWAY AND QUALITY CONTROL METRICS AT A HIGH VOLUME CENTER**

Deepak Pruthi, MD, FRCSC¹; Arpan Satsangi, BSc¹; Kevan Iffrig, MD¹; Miguel Cajipe, MD¹; Wasim Chowdhury, MS¹; Hanzhang Wang, MD, MPH¹; Georges Haidar, MD²; Edward Sako, MD, PhD³; Michael Liss, MD¹; Ronald Rodriguez, MD, PhD¹ and Dharam Kaushik, MD¹

¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Vascular/Endovascular Surgery, University of Texas Health Sciences Center, San Antonio, Texas; ³Department of Cardiothoracic Surgery, University of Texas Health Sciences Center, San Antonio, Texas

(Presented By: Deepak K. Pruthi, MD, FRCSC)

**Introduction:** Presence of venous tumor thrombus (VTT) has significant effects on morbidity and mortality. We have developed an integrated surgical pathway including obtaining high-quality imaging preoperatively; intraoperative real-time evaluation using Doppler ultrasound and transesophageal echocardiography; multidisciplinary approach and standardized postoperative care. We report our surgical outcomes.

**Methods:** We conducted a review of a prospectively maintained database of all patients undergoing radical nephrectomy (RN) with venous tumor thrombectomy (TT) from January 1, 2013 - Jun 30, 2016. We have established RN with TT pathway at our institution: all patients undergo preoperative renal protocol CT scan, CT chest, lower extremity Doppler ultrasound, transthoracic echocardiogram, and cardiology consultation. Multidisciplinary imaging review includes urology, vascular and cardiac surgery to examine the full extent of thrombus. All patients undergo intra-operative color Doppler ultrasound to precisely locate the extent of TT and guide cavotomy. We report major complications (Clavien-Dindo >3), 30 day readmission rates, and surgical outcomes. Multivariate (MV) linear regression modeling and logistic regression modeling was used to predict health outcome quality metrics.

**Results:** In total 57 patients underwent RN with TT, majority were Hispanics (58%), smokers (42%), and symptomatic (24% weight loss, 22% fatigue, 35% hematuria). The median age, BMI, ASA score, and tumor size were 57, 28 kg/m2, 3, and 9 cm, respectively. Node positive disease or metastatic disease was present in 18% and 33% cases, respectively. Twenty-six (46%) cases were Level 3 or 4; nineteen patients required veno-venous bypass (n=13) or cardiopulmonary bypass (n=6); only 2 cases required patch grafting. Median length of stay (LOS) was 8 days; 30-day readmission rate was 18%, with 60% admitted within one week of discharge. The thirty-day mortality rate was 5.3% and there were 12 major complications. In univariate analysis LOS was associated with T stage (p=0.037) however, MV analysis demonstrated no significant predictors for any outcome.

**Conclusion:** Our well established tumor thrombus protocol has limited the morbidity and mortality despite the high VTT level and significant patient comorbidities. Furthermore, the intra-operative Doppler ultrasound facilitated caval preservation as demonstrated by the low graft rate.
Introduction: Conflicting data exists on the clinical outcomes of ablative procedures compared to partial nephrectomy (PN) for cT1 renal masses regarding oncological endpoints. We sought to perform a comprehensive assessment of All-cause mortality (ACM), Cancer-specific mortality (CSM), Disease recurrence rate (DRR), treatment related complication rates and changes in the eGFR between PN and ablative therapies.

Methods: Six major databases were searched for studies comparing cryoablation (CA), radiofrequency ablation (RFA), and partial nephrectomy (PN) for small renal tumors. 15 retrospective reviews including 3,974 patients with cT1 renal tumors whom underwent cryoablation, RFA, or partial nephrectomy were included. We conducted meta-analyses using Dersimonian and Laird random effects models evaluating ACM, CSM, Local recurrence with hazard ratios (HR) and 95% confidence intervals (CI). Statistical heterogeneity among studies was evaluated using the I² statistic. Risk of bias was assessed using the Newcastle-Ottawa Scale.

Results: Of the patient population, 37% (1,477/3,974) had an ablative procedure (CA or RFA) & 63% (2,519/3,974) underwent a partial nephrectomy. ACM, CSM were increased in ablative procedures compared to partial nephrectomy; HR, 2.11; 95% CI, 1.54- 2.87; P < 0.05, HR, 3.84; 95% CI, 1.66- 8.88; P < 0.05 and HR, 3.23; 95% CI, 1.77- 5.92; P < 0.05 respectively. A statistically significant difference was not seen in local recurrence rate and metastasis risk between the ablation group and partial nephrectomy HR, 1.32; 95% CI, 0.79- 2.22.; P 0.228 and HR, 1.83; 95% CI, 0.67- 5.01; P 0.239. Complication rates were less in patients undergoing ablation compared to PN (13% versus 17.6%, OR, 0.49; 95% CI, 0.25- 0.94; P < 0.05). The overall difference of reduction in eGFR between ablation vs PN was -7.42 95%(-12.48,-2.36, p=0.04).

Conclusion: Compared to PN, ablations had higher likelihood of ACM and CSM. However ablative therapies were associated with fewer complications and less reduction in eGFR. Ablative therapies are viable treatment options for T1 renal tumors when compared to PN especially in those with medical comorbidities when renal preservation is vital.
Poster #65
PATHOLOGICAL DETERMINANTS OF ONCOLOGIC OUTCOMES IN STAGE II RENAL CELL CARCINOMA: AN INTERNATIONAL MULTICENTER ANALYSIS

Daniel Han, MD; Alp Tuna Beksc, MD; Zachary Hamilton, MD; Sean Berquist; Abd-el Rahman Hassan; Charles Field; Aaron Bloch; Conrad Tobert, MD; Fang Wan; James Proudfoot; Reza Mehrazin, MD; Anthony Patterson, MD; Bulent Akdogan, MD; Haluk Ozen, MD; Brian Lane, MD; and Ithaar Derweesh, MD

1Ankara, Turkey; 2San Diego, CA; 3Grand Rapids, MI; 4Memphis, TN
(Presented By: Daniel Han, MD)

Introduction: Clinical Stage II Renal Cell Carcinoma (RCC) is a heterogeneous disease characterized by disparate oncological outcomes. The risk of progression and recurrence can vary widely. We analyzed risk factors associated with oncological outcomes in a contemporary cohort.

Methods: Retrospective multicenter analysis of patients who underwent surgical excision of clinical stage 2 (T2) renal mass between 1998-2015. Patients with tumors amenable to nephron-sparing surgery, baseline chronic kidney disease, or bilateral renal masses were provided an option for partial nephrectomy (PN), otherwise radical nephrectomy (RN) was performed. Lymphadenectomy (LND) was performed at the discretion of the surgeon due to concern for lymphadenopathy on preoperative imaging or at time of surgery. Patients with pN+ disease and pathological pT upstaging/downstaging were excluded. Primary endpoint was Recurrence Free Survival (RFS). Univariable linear regression, Kaplan-Meier Analysis (KMA) log-rank test, and multivariable analysis (MVA) for factors related to RFS and overall survival (OS) were performed.

Results: 695 patients were analyzed (mean age 59.3 years, median follow up 49.6 months, 61.4% male/38.6% female, 545 RN/150 PN, 193 LND/502 no LND). MVA for factors associated with worsened RFS revealed lymphovascular invasion (LVI, HR 2.27, p=0.002), positive margins (HR 2.67, p=0.008), and tumor grade 3/4 (HR 2.04, p<0.008). MVA for decreased OS revealed LVI (HR 2.58, p=0.003), positive margins (HR 2.34, p=0.044), and tumor grade 3/4 (HR 2.08, p=0.023) as risk factors. KMA revealed 5 year RFS of 76.1% for LVI negative and 46% for LVI positive patients (p<0.001), and 5 year RFS of 78.1% for Tumor Grade I/II and 53.7% for Tumor Grade III/IV (p<0.001). KMA revealed 5 year OS of 79.2% for LVI negative and 60.6% for LVI positive patients (p<0.001, Figure).

Conclusion: For Stage II RCC, LVI, positive margin, and tumor grade III/IV are independently associated with worsened RFS and OS. Further investigation is requisite and may add weight to consider these specific stage II RCC patients as a higher risk subgroup with implications for staging revision and clinical trial design.
Introduction: It is well recognized that the patient’s immune response plays an important role in the pathogenesis of renal cell carcinoma (RCC). We aim to characterize the total immune and specific T-cell populations in the tumor microenvironment in a cohort of clear cell RCC tumors (ccRCC).

Methods: Tumor and normal kidney tissue from 37 patients who underwent surgical excision from 6/2015-6/2016 was prospectively collected for analysis. Immune cell phenotyping was performed by immune cell staining of single cell suspensions. Analysis of immune cell populations were determined by +CD45 staining and corresponding proportions of different T-cell populations, including CD3, CD4, regulatory T cell (CD4Treg) and CD8. Staining for CD4Treg was not available for two patients. Student T-Test was utilized to compare these immune populations between tumor and normal kidney tissue in 27 patients with ccRCC. Secondary analysis of these populations was conducted by stratifying patients who presented with localized and metastatic disease.

Results: There were 12(44%) patients who presented with metastatic disease. Median tumor pathological size was 8.6cm (2.9–18), and 24 (89%) had pT3a–pT3b disease. An enrichment of +CD45 cells was identified in 22/27 (81%) of the tumors that were analyzed compared to their corresponding normal tissue. Interestingly, among the five who did not have this finding, one had advanced (pT3b) localized disease that became metastatic six months post-operatively, and four presented with metastatic disease. Comparison of immune cell populations of tumor and normal kidney tissue is shown in table 1 for all patients. We found no statistical significance in immune T-cell response in tumor or normal kidney when stratifying patients with localized and metastatic disease.

Conclusion: Our data shows a higher proportion of immune cells (+CD45) in tumor tissue compared to normal kidney among patients with ccRCC. The use of these results could help elucidate a quantitative immune cell infiltration signature that may correlate with clinical outcomes, especially in those who have or plan to receive systemic or immunotherapy.

Funding: Ruth L. Kirschstein National Research Service Award T32CA082088

<table>
<thead>
<tr>
<th>Markers*</th>
<th>Normal Kidney</th>
<th>Renal Cell Carcinoma</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (Range)</td>
<td>Median</td>
<td>Mean (Range)</td>
</tr>
<tr>
<td>+CD45</td>
<td>21.09 (3.71-54.30)</td>
<td>16.1</td>
<td>52.84 (0.88-85.30)</td>
</tr>
<tr>
<td>+CD3</td>
<td>22.82 (8.42-48.82)</td>
<td>19.5</td>
<td>43.98 (13.72-76.84)</td>
</tr>
<tr>
<td>+CD4</td>
<td>10.14 (2.25-31.63)</td>
<td>6.39</td>
<td>16.27 (2.14-67.43)</td>
</tr>
<tr>
<td>+CD4Treg</td>
<td>0.79 (0.09-7.42)</td>
<td>0.4</td>
<td>1.47 (0.12-4.81)</td>
</tr>
<tr>
<td>+CD8</td>
<td>10.55 (2.91-37.27)</td>
<td>9.97</td>
<td>23.77 (4.62-47.34)</td>
</tr>
</tbody>
</table>

*Proportion of cells with positive CD45 staining reflecting total immune cell population and corresponding breakdown by T cell subtype
Poster #67  
**PRACTICE PATTERNS IN THE BIOPSY OF LOCALIZED RENAL MASSES IN THE NATIONAL CANCER DATABASE**  
Vidit Sharma, MD; Mary Beth Westerman, MD; Bradley C. Leibovich, MD and Matthew K. Tollefson, MD  
Mayo Clinic, Rochester, MN  
(Presented By: Vidit Sharma, MD)

**Introduction:** The practice of renal mass biopsy remains widely debated in the urologic literature. Yet, utilization rates and factors that influence the decision to pursue renal mass biopsy have not been described. Here we utilize the National Cancer Database (NCDB), a large database that aims to capture ~70% of newly diagnosed cancers in the United States, to evaluate practice patterns in renal mass biopsy.

**Methods:** We evaluated patients diagnosed with clinically localized renal parenchymal tumors from 2004-2013 in the NCDB. Standard descriptive statistics were used to compare the population of patients who underwent biopsy to those who did not. Multivariate forward stepwise (p=0.10 for entry and exclusion) logistic regression modeling was used to identify significant independent associations between renal mass biopsy and patient, provider, and tumor characteristics.

**Results:** We identified 373,880 patients with clinically localized renal parenchymal neoplasms of whom 54,716 (14.6%) underwent a diagnostic renal mass biopsy. Biopsy was more common in 2013 than in 2004 (17.4% vs 11.6%, p<0.001). There was significant geographic variability between the region with the lowest and highest biopsy rate (12.8% vs 16.7%, p<0.001). The rate of biopsy increased with age (10.2% for 50yrs or younger vs 20.3% for 80yrs or older, p<0.001). Rate of biopsy was highest for masses 4cm or less (15.6%) compared to 4.1-7cm (12.0%), 7.1-10cm (10.6%) and 10.1cm+ (12.0%) masses (p<0.001). Patients undergoing ablation had a higher biopsy rate (43.1%) compared to those undergoing no treatment (28.3%), radical nephrectomy (10.3%), and partial nephrectomy (7.6%), p<0.001. All of the above factors were independently associated with a renal biopsy on forward stepwise multivariate logistic regression (p<0.05 for each of the above factors).

**Conclusion:** The rate of renal mass biopsy has increased overtime in the NCDB. Older patients, masses < 4cm, and those masses that were untreated or treated with ablation regimens had a higher biopsy rate. However, there is still room to improve adherence to AUA and EAU guidelines, which maintain that all masses undergoing ablative therapy should undergo biopsy, yet 57% of patients undergoing ablation treatments were not biopsied. Furthermore, the utility of biopsy for masses (>10cm) remains to be defined, even though 12% of these patients in our dataset underwent biopsy.
**Poster Session I – Full Abstracts**

**Poster #67**
**PRACTICE PATTERNS IN THE BIOPSY OF LOCALIZED RENAL MASSES IN THE NATIONAL CANCER DATABASE**
Vidit Sharma, MD; Mary Beth Westerman, MD; Bradley C. Leibovich, MD; Matthew K. Tollefson, MD
Mayo Clinic, Rochester, MN
(Presented By: Vidit Sharma, MD)

Introduction: The practice of renal mass biopsy remains widely debated in the urologic literature. Yet, utilization rates and factors that influence the decision to pursue renal mass biopsy have not been described. Here we utilize the National Cancer Database (NCDB), a large database that aims to capture ~70% of newly diagnosed cancers in the United States, to evaluate practice patterns in renal mass biopsy.

Methods: We evaluated patients diagnosed with clinically localized renal parenchymal tumors from 2004 -2013 in the NCDB. Standard descriptive statistics were used to compare the population of patients who underwent biopsy to those who did not. Multivariate forward stepwise (p=0.10 for entry and exclusion) logistic regression modeling was used to identify significant independent associations between renal mass biopsy and patient, provider, and tumor characteristics.

Results: We identified 373,880 patients with clinically localized renal parenchymal neoplasms of whom 54,716 (14.6%) underwent a diagnostic renal mass biopsy. Biopsy was more common in 2013 than in 2004 (17.4% vs 11.6%, p<0.001). There was significant geographic variability between the region with the lowest and highest biopsy rate (12.8% vs 16.7%, p<0.001). The rate of biopsy increased with age (10.2% for 50yrs or younger vs 20.3% for 80yrs or older, p<0.001). Rate of biopsy was highest for masses 4cm or less (15.6%) compared to 4.1 -7cm (12.0%), 7.1 -10cm (10.6%) and 10.1cm+ (12.0%) masses (p<0.001).

Patients undergoing ablation had a higher biopsy rate (43.1%) compared to those undergoing no treatment (28.3%), radical nephrectomy (10.3%), and partial nephrectomy (7.6%), p<0.001. All of the above factors were independently associated with a renal biopsy on forward stepwise multivariate logistic regression (p<0.05 for each of the above factors).

Conclusion: The rate of renal mass biopsy has increased overtime in the NCDB. Older patients, masses < 4cm, and those masses that were untreated or treated with ablation regimens had a higher biopsy rate. However, there is still room to improve adherence to AUA and EAU guidelines, which maintain that all masses undergoing ablative therapy should undergo biopsy, yet 57% of patients undergoing ablation treatments were not biopsied. Furthermore, the utility of biopsy for masses (>10cm) remains to be defined, even though 12% of these patients in our dataset underwent biopsy.

**Poster #68**
**OUTCOMES AND PROGNOSTIC FACTORS OF PRIMARY URETHRAL CANCER**
Wilson Sui¹; Arindam Roy Choudry, PhD²; Sven Wenske, MD¹; G. Joel DeCastro, MD¹; James McKiernan, MD¹ and Christopher Anderson, MD¹
¹Department of Urology, Columbia University Medical Center, New York, NY; ²Department of Biostatistics, Mailman School of Public Health, Columbia University
(Presented By: Wilson Sui)

Introduction: Primary urethral cancer is a rare and heterogeneous disease that accounts for <1% of all malignancies. As such, there is limited data on prognostic and treatment factors. We sought to identify predictors of overall survival using a nationwide database.

Methods: The National Cancer Database (NCDB) was queried for all cases of primary urethral cancer from 2004-2013. Patients with other cancer diagnoses, metastasis or diagnosis on autopsy we excluded. Proportional hazards regression was used to identify independent predictors of overall survival in patients with primary urethral cancer. Because we hypothesized that predictors may vary by sex, we also performed regression analysis stratified by sex.

Results: We identified 1,268 males and 869 females with primary urethral cancer. Women tended to have more advanced tumors and adenocarcinoma histology. Median survival for the entire cohort was 49 months (43 – 55) with 5 and 10-year survival rates of 46% and 31%, respectively. On multivariate analysis, age, race, stage, grade, and Charlson comorbidity index were independent predictors of overall survival. Histology was not a predictor of overall survival in the combined model however adenocarcinoma histology in women increased hazards of death while it decreased hazards of death in men when compared to squamous cell histology.

Conclusion: Men and women with primary urethral cancer had significant differences in histology, grade and nodal status. In addition to several expected disease-related factors, black race was associated with increased mortality for patients with primary urethral cancer.
Introduction: Neoadjuvant (NAC) and adjuvant (AC) chemotherapy for upper tract urothelial cell carcinoma (UTUC) have been associated with increased overall and disease-free survival, but utilization remains inconsistent. Our objective was to characterize trends in chemotherapy use for UTUC over a 10-year period using the National Cancer Data Base (NCDB).

Methods: We identified patients in the NCDB who underwent nephroureterectomy for UTUC between 2004 and 2013. Patient characteristics, clinical and treatment variables, and year of treatment were evaluated for associations with use of NAC or AC. For those patients who did not receive chemotherapy, we examined whether the decision was related to patient risk factors or patient refusal. Statistical analysis was performed using the chi-squared and Kruskal-Wallis tests.

Results: Of 6,435 patients with UTUC, 2,018 underwent nephroureterectomy between 2004-07, 2,118 between 2008-10, and 2,320 between 2011-13. In the same respective time periods, 13 (0.6%), 31 (1.5%), and 62 (2.7%) patients received NAC. Black patients were more likely to receive NAC compared to white patients (2.3% v 1.6%), and NAC use did not differ between men and women. Those with clinical T0,Ta,Tis, or T1 received NAC at a rate of 0.9%, whereas 3.0% with cT2 -4 received NAC. Likewise, patients with high-grade tumors were more likely to receive NAC than those with low-grade tumors (1.7% v 0.4%). Patients who did not receive chemo lived a median 11 miles from their treatment center compared to 19.5 miles for patients receiving NAC and 40.4 miles for patients receiving both NAC and AC (p<0.0001). When evaluating whether treatment was omitted due to patient refusal or patient risk factors, males were more likely to forgo treatment due to patient risk factors (49.0% vs 39.2%, p=0.037). In contrast, women were more likely to refuse treatment (60.8% vs 51.0%). Year of treatment, age, race, comorbidities, tumor stage, and treatment center were not associated with the reason for foregoing chemotherapy.

Conclusion: Neoadjuvant and adjuvant chemotherapy use in patients with UTUC are increasing, but use remains uncommon and inconsistent among differing treatment centers and patient populations.
NATIONAL TRENDS IN NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA: AN ANALYSIS OF THE NSQIP DATABASE, 2005-2014

Andrew Lenis, MD, MS¹; Nicholas Donin, MD¹; William Meeks, MS²; Scott Gulig, MS²; Karim Chamie, MD, MSHS¹ and Marc Bjurlin, DO³

¹Department of Urology, UCLA, Los Angeles, California; ²Data Management and Statistical Analysis Department, American Urological Association, Linthicum, Maryland; ³Department of Urology, NYU, New York, New York
(Presented By: Andrew Thomas Lenis, MD, MS)

Introduction: Upper tract urothelial carcinoma (UTUC) is a rare malignancy, and as such, published practice patterns and perioperative outcomes following surgical treatment are generally single-institution series and may not be reflective of national patterns or outcomes. We sought to characterize perioperative trends in patients undergoing nephroureterectomy (NU) for UTUC in a national database. We also examined the use of neoadjuvant chemotherapy (NAC) in an attempt to ascertain whether the use of NAC influenced perioperative outcomes.

Methods: We queried the National Surgery Quality Improvement Project (NSQIP) database from 2005–2014 for patients who underwent NU (CPT 50234, 50236, 50248) for UTUC (ICD 189, 189.0-5). Continuous and categorical variables were reported as mean (standard deviation) and number (frequency), respectively. Stratified analysis based on the receipt of chemotherapy within 30 days of surgery was performed and intergroup comparisons were made using a t-test or chi squared analysis as appropriate.

Results: A total of 1106 patients underwent NU for UTUC. The majority of patients were Caucasian (80.1%) men (65.6%) and the mean age was 71. While greater than 96% of patients were independent on functional health evaluation, a significant portion of the population suffered from diabetes mellitus (19.3%), hypertension (70.7%), COPD (8.5%), or were current smokers (25.8%). The most common complications were perioperative transfusion (13.2%), urinary tract infection (3.8%), pneumonia (2.0%), and progressive renal insufficiency (1.5%). Only 15 patients (1.4%) received NAC in the 30 days prior to NU. Patients who received NAC had longer operative times (278 vs. 228 minutes, p=0.01) and higher transfusion rates (53.3 vs 12.6%, p<0.01). Hospital length of stay was similar (4.3 vs 5.1 days, p=0.09) compared with those without NAC.

Conclusion: Patients who underwent NU for UTUC have a significant number of pre-existing comorbid conditions. Transfusion was the most common perioperative complication. As captured by the NSQIP database, NAC was infrequently used (1.4%) 30 days prior to NU. While the small number of patients who received NAC limits our conclusions, operative times and transfusion rates were higher in those patients who received NAC. However, length of stay was similar between these two groups. Data from randomized clinical trials will help inform this area of investigation.
Poster #72
MINIMALLY INVASIVE INGUINAL LYMPHADENECTOMY IN THE MANAGEMENT OF PENILE CARCINOMA
Christopher M. Russell, MD; Simpa S. Salami, MD, MPH; Adam Niemann, BS; Alon Z. Weizer, MD; Todd M. Morgan, MD and Jeffery S. Montgomery, MD, MHS
Department of Urology, University of Michigan, Ann Arbor, Michigan
(Presented By: Christopher M. Russell, MD)

Introduction: Given the historically high morbidity of open inguinal lymph node dissection (ILND), endoscopic ILND (E-ILND) including video endoscopic ILND (VEIL) and more recently robotic-assisted ILND (RAIL) have been proposed as alternative surgical options for the management of cN+ or high-risk cN0 penile cancer. Herein, we report the largest available series of E-ILND and RAIL procedures in an effort to further characterize the perioperative morbidity and outcomes associated with these novel treatment modalities.

Methods: Peri-operative parameters including operative time, estimated blood loss (EBL), length of stay (LOS), time to drain removal, and complication rates were reviewed. Node count was assessed as a measure of oncologic efficacy and completeness of dissection. Subset analysis of complications by tumor and operative characteristics was performed to determine the impact of these variables on complication rates.

Results: A total of 34 E-ILND, comprising 7 VEIL and 27 RAIL limbs, were identified on retrospective chart review. Median node count was 10.0 (IQR 6.0-12.5) in E-ILND limbs and 8.0 (IQR 6.0-12.0) in RAIL limbs. Median LOS was 1 (range 1-3) day following both E-ILND and RAIL procedures. Median time to drain removal was 36.0 (IQR 24.0-52.8) days in E-ILND limbs and 36.0 (IQR 24.5-48.5) days in RAIL limbs. The saphenous vein was spared in 57% (4/7) of VEIL limbs and 100% (27/27) of RAIL limbs. A comparison of intraoperative parameters, resection templates, and nodal pathology stratified by RAIL, VEIL and E-ILND limbs is provided in Table 1. Post-operative complications occurred in 18% (6/34) of E-ILND and 11% (3/27) of RAIL limbs and consisted of 3 (9%) cutaneous complications, 2 (6%) lymphatic complications and 1 (3%) DVT. Higher complication rates were observed in those requiring saphenous vein ligation (100% vs. 10%, p<0.01). No other parameters were significantly associated with complication rates.

Conclusion: E-ILND is feasible from a technical standpoint and our results demonstrate that lymph node counts are comparable to an open approach. Importantly, E-ILND has the potential to reduce complication rates and time to convalescence when compared to open ILND.

Table 2. Comparison of Intraoperative Parameters and Nodal Pathology

<table>
<thead>
<tr>
<th>Parameter</th>
<th>E-ILND (n=34)</th>
<th>RAIL (n=27)</th>
<th>VEIL (n=7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laterality of ILND, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unilateral</td>
<td>2 (11)</td>
<td>1 (7)</td>
<td>1 (25)</td>
</tr>
<tr>
<td>Bilateral</td>
<td>16 (89)</td>
<td>13 (33)</td>
<td>3 (75)</td>
</tr>
<tr>
<td>Depth of Dissection, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superficial</td>
<td>19 (56)</td>
<td>16 (59)</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Superficial and Deep</td>
<td>16 (44)</td>
<td>11 (41)</td>
<td>4 (57)</td>
</tr>
<tr>
<td>Nodes Resected/Limb, Median [IQR]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10.0 [8.0-12.5]</td>
<td>8.0 [6.0-12.0]</td>
<td>10.0 [7.5-12.0]</td>
</tr>
<tr>
<td>Superficial</td>
<td>9.0 [5.0-11.0]</td>
<td>8.0 [5.0-11.0]</td>
<td>10.0 [7.5-10.5]</td>
</tr>
<tr>
<td>Deep</td>
<td>3.0 [2.0-4.0]</td>
<td>2.0 [2.0-2.6]</td>
<td>2.5 [2.3-3.0]</td>
</tr>
<tr>
<td>Positive Nodes Identified, Median [IQR]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superficial</td>
<td>1.0 [1.0-2.0]</td>
<td>1.0 [1.0-1.5]</td>
<td>1.0 [1.0-1.5]</td>
</tr>
<tr>
<td>Deep</td>
<td>1.0 [1.0-1.5]</td>
<td>1.5 [1.25-1.75]</td>
<td>1.0 [N/A]</td>
</tr>
<tr>
<td>Pathologic Nodal Status, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pN0</td>
<td>12 (67)</td>
<td>0 (60)</td>
<td>2 (60)</td>
</tr>
<tr>
<td>pN1</td>
<td>3 (17)</td>
<td>1 (8)</td>
<td>2 (50)</td>
</tr>
<tr>
<td>pN2</td>
<td>2 (11)</td>
<td>2 (15)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>pN3</td>
<td>1 (6)</td>
<td>1 (8)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Estimated Blood Loss, Median [IQR]</td>
<td>50.0 [15.0-50.0]</td>
<td>50.0 [15.0-50.0]</td>
<td>50.0 [37.5-75.0]</td>
</tr>
<tr>
<td>Time to Drain Removal, Median [IQR]</td>
<td>36.0 [24.5-48.5]</td>
<td>36.0 [24.5-48.5]</td>
<td>42.5 [32.5-53.8]</td>
</tr>
<tr>
<td>Saphenous Vein Sparing</td>
<td>21 (91)</td>
<td>27 (100)</td>
<td>4 (57)</td>
</tr>
</tbody>
</table>

*Median positive nodes identified calculated only for those found to have positive nodes; †Percent limbs with positive lymph node(s); ‡Mean time presented to ease comparison with the literature.

Abbreviations: E-ILND – Endoscopic inguinal lymph node dissection; RAIL – robotic assisted inguinal lymphadenectomy; VEIL – video endoscopic inguinal lymphadenectomy; and pN – pathologic nodal status.
Poster #73
OUTCOMES OF PERI-OPERATIVE CHEMOTHERAPY (PO-CT) FOR LOCALLY ADVANCED PENILE SQUAMOUS CELL CARCINOMA (LA-PSCC): RESULTS FROM A MULTICENTER ANALYSIS

Andrea Necchi, MD¹; Gregory Pond, PhD, PStat²; Daniele Raggì, MD¹; Sarah Ottenhof, MD³; Simon Horenblas, MD³; Vincent Khoo, MD⁴; Oliver Hakenberg, MD⁴; Axel Heidenreich, MD⁵; Bernhard Eigl, MD⁶; Lucia Nappi, MD⁷; Kazumasa Matsumoto, MD⁸; Ulkka Vaishampayan, MD⁹; Michael Woods, MD¹⁰; Patrizia Giannatempo, MD¹¹; Daniel Geynisman, MD¹²; Mirko Prieto, MD¹³; Evangelos Xylinas, MD¹³; Matthew Milowsky, MD¹⁴; Giuseppe Di Lorenzo, MD¹⁴ and Guru Sonpavde, MD¹⁵

¹Fondazione IRCCS Istituto Nazionale dei Tumori; ²McMaster University, Hamilton, Ontario, Canada; ³The Netherlands Cancer Institute, Amsterdam, The Netherlands; ⁴The Royal Marsden Hospital, London, United Kingdom; ⁵University Hospital Rostock, Rostock, Germany; ⁶Universitätsklinikum Köln, Köln, Germany; ⁷British Columbia Cancer Agency, Vancouver, BC, Canada; ⁸Kitasato University School of Medicine, Sagamihara, Japan; ⁹Karmanos Cancer Institute, Detroit, MI, USA; ¹⁰University of North Carolina at Chapel Hill, Lineberger Comprehensive Cancer Center, NC, USA; ¹¹Fox Chase Cancer Center Temple Health, Philadelphia, PA, USA; ¹²Università degli Studi di Torino, Ospedale Molinette, Torino, Italy; ¹³Cochin Hospital, APHP, Paris Descartes University, Paris, France; ¹⁴Università Federico II, Napoli, Italy; ¹⁵UAB Comprehensive Cancer Center, Birmingham, AL, USA

(Presented By: Andrea Necchi, MD)

Introduction: Patients (pts) with LA-PSCC have a poor prognosis, primarily related to extent of nodal disease, and surgery alone is suboptimal in most cases. Information on patient outcomes with PO-CT still relies on small numbers.

Methods: A retrospective, multicenter, individual patient-level analysis was performed. A total of 12 centers contributed data for pts who received neoadjuvant (NA) or adjuvant (A) CT in addition to surgery from 1991 to 2016. Cox regression models investigated potential prognostic factors (PF) for relapse-free (RFS) and overall survival (OS). Multivariable (MVA) models were constructed to evaluate treatment effects. Treatment center was used as a stratification factor.

Results: 201 pts were analyzed. At clinical staging, 20 (10%) had cT3-4N0 disease, 68 (33.8%) cN3, 42 (20.9%) pelvic nodes and 76 (37.8%) a bilateral involvement. 70 (34.8%) had recurrence after prior lymphadenectomy (LAD). 94 pts received NA-CT, 78 A-CT, and 21 NA and A-CT (8 unknown). Taxanes were more frequently used in NA (75%) than in A setting, with taxane-CDDP-5FU being the most frequent NA CT regimen (n=65). 43 pts (21.4%) received concomitant radiotherapy (RT). The 2-year OS (95%CI) for all pts was 43.7% (35.8-51.3), however among pelvic cN+ and bilateral cN+ subgroups it was 37.4% (20.5-54.4) and 38.1% (25.9-50.1). On MVA for OS (n=166), bilateral disease (HR: 1.93, 95%CI: 1.04-3.56, p=0.037) was a negative PF, while pelvic cN+ trended toward significance (HR: 2.26, 95%CI: 0.96-5.36, p=0.063). 50 pts (53.2%) had an objective response to NA-CT, and 13 (13.8%) achieved a pathologic CR. Timing of CT (NA vs A vs NA>A) was significantly associated with RFS (NA: HR: 4.55, 95%CI: 1.35-15.36, p=0.012) in univariable analysis, but not with OS (p=0.45). No significant difference was observed in any outcome related to CT type or CT±RT.

Conclusion: The survival benefit from PO-CT, either pre- or post-LAD, remained uncertain for PSCC pts at highest risk (pelvic cN+ or bilateral lymph-node disease). These results may be useful to inform pts and provide a benchmark for prospective studies. Further research should identify more active drugs in PSCC and evaluate the role of RT.
Poster #74
INCREASED USE OF ALVIMOPAN IS ASSOCIATED WITH DECREASED POSTOPERATIVE ILEUS IN RADICAL CYSTECTOMY PATIENTS
Aydin Pooli, MD; Joshua D. Belle, MBBS; Dmitry Oleynikov, MD, FACS and Christopher M. Deibert, MD, MPH
University of Nebraska Medical Center
(Presented By: Aydin Pooli, MD)

Introduction: Alvimopan (Entereg), a peripherally acting opioid receptor antagonist, has been previously shown to be effective in reducing the rate of postoperative ileus and length of hospital stay in patients undergoing colorectal surgery. Using data from the University Healthcare Consortium (UHC), we explored the rate of alvimopan use since FDA approval for radical cystectomy. The rate of ileus was also reported as well as all cause mortality and morbidity.

Methods: Data from the UHC database, contributed by over 200 academic hospitals, was evaluated for the years 2012 to 2015. Patients who underwent radical cystectomy for bladder cancer selected by CPT codes from the International Classification of Disease, 9th Edition were included. First, all hospitals in the database were queried to determine the percentage of hospitals over time prescribing Alvimopan to post-cystectomy patients. Then, using only hospitals prescribing alvimopan, the rate of ileus, all cause mortality and morbidity between users and non-users were compared.

Results: The number of UHC hospitals using Alvimopan increased over the time period examined, from 10% to 30%. Of hospitals prescribing Alvimopan, the percentage of post cystectomy patients receiving the medication increased from 50% (2013) to 78% (2015). Overall, 4090 patients underwent cystectomy in the 4 years examined, with 2705 (66%) patients receiving Alvimopan over this time period. Patients receiving Alvimopan had a significant reduction in the rate of ileus (19.6% vs. 31.5%, p=0.0012). The rate of all cause mortality was also significantly lower with the use of Alvimopan compared to non users (0.95% versus 1.6%, P=0.018) as well as any morbidities (12.9% versus 20.1%, P<0.001).

Conclusion: Alvimopan significantly reduced the incidence of postoperative ileus in patients undergoing cystectomy. Based on a review of the UHC data, both the use of Alvimopan in hospitals that currently prescribe the medication and the overall number of hospitals prescribing it increased since FDA approval. Safe regular Alvimopan use in cystectomy patients is likely to continue to increase as part of the standard of care.
Poster #75
DECIPHER TEST IMPACTS ADJUVANT TREATMENT DECISION-MAKING AMONG PATIENTS WITH HIGH-RISK PATHOLOGY AT RADICAL PROSTATECTOMY: RESULTS FROM THE MULTICENTER PROSPECTIVE PRO-IMPACT STUDY

John Gore, MD, MS¹; Marguerite du Plessis, BSc²; Maria Santiago-Jimenez, MS²; Kasra Yousefi, MS³; Darby Thompson, PhD⁴; Mark Bandyk, MD⁵; Fernando Bianco, MD⁶; Gordon Brown, MD⁷; David Chen, MD⁸; William Clark, MD⁹; Michael Franks, MD⁹; Lawrence Karsh, MD¹⁰; Adam Kibel, MD¹¹; Hyung Kim, MD¹²; Brian Lane, MD¹²; Yair Lotan, MD¹³; William Lowrance, MD¹⁵; Murugesan Manoharan, MD¹⁵; Paul Maroni, MD¹⁵; Scott Perrapato, MD¹⁵; Paul Sieber, MD¹⁶; Edouard Trabulsi, MD¹⁵; Robert Waterhouse, MD²⁰; Elai Davicioni, PhD² and Daniel Lin, MD¹

¹University of Washington, Seattle, WA; ²GenomeDx Biosciences Inc., Vancouver, BC, Canada; ³EMMES Canada, Burnaby, BC, Canada; ⁴Lakeland Regional Cancer Center; ⁵Urological Research Network, Columbia University Dept of Urology, Miami, FL; ⁶Delaware Valley Urology, LLC, Voorhees, NJ; ⁷Fox Chase Cancer Center, Philadelphia, PA; ⁸Alaska Clinical Research Center, Anchorage, AK; ⁹Virginia Urology, Richmond, VA; ¹⁰The Urology Center of Colorado, Denver, CO; ¹¹Brigham and Women’s Hospital, Boston, MA; ¹²Cedars-Sinai Medical Center, Los Angeles, CA; ¹³Spectrum Health Medical Group, Grand Rapids, MI; ¹⁴UT Southwestern Medical Center, Dallas, TX; ¹⁵Huntsman Cancer Hospital, Institute, University of Utah, Salt Lake City, UT; ¹⁶University of Miami Miller, Miami, FL; ¹⁷University of Colorado, Denver Medical Campus, Denver, CO; ¹⁸Lancaster Urology, Lancaster, PA; ¹⁹Thomas Jefferson University, Philadelphia, PA; ²⁰Carolina Urology Partners, Gastonia, NC

(Presented By: John L. Gore, MD, MS)

Introduction: The decision to provide adjuvant therapy to men with high risk pathology after radical prostatectomy (RP) is confounded by tremendous uncertainty. We prospectively evaluated the impact of the Decipher test (GenomeDx Biosciences Inc., Vancouver), which predicts metastases after RP, on patient and provider decision quality.

Methods: 150 adjuvant patients were enrolled by 43 urologists from 19 community and academic practices. Patients with pathologic T3 stage classification (pT3) or positive surgical margins (SM+) after RP were included. Participating physicians provided a management recommendation before and after exposure to Decipher test results. Patients completed validated surveys on health-related quality of life, decisional conflict, and prostate cancer-related anxiety.

Results: Median patient age at RP was 64 years; 67% and 50% had pT3 and SM+ pathology, respectively. Decipher classified 46%, 22% and 32% of men as low-, intermediate- and high-risk, respectively. Pre-Decipher, observation was recommended for 89%. Post-Decipher, 18% (95% CI 12-25%) of treatment recommendations changed, including 9% of low-risk and 31% of high-risk Decipher patients. Patients’ Decisional Conflict Scale (DCS) scores decreased (indicating higher decision quality) after exposure to Decipher results (median DCS pre-Decipher 25 [IQR 8-44], median DCS post-Decipher 19 [IQR 2-30], p<0.001), with greatest decreases in the subdomains of decision uncertainty and decision support. Patients with low-risk Decipher results experienced a trend toward decreased general prostate cancer-specific anxiety (p=0.13) and a significant reduction in fear of prostate cancer recurrence (p=0.02). Physicians’ median DCS scores decreased from 32 [IQR 28-36] to 28 [IQR 12-42] (p<0.001). Decipher results were associated with the decision to pursue ART in multivariable logistic regression (OR 1.48; 95% CI 1.19-1.85, p<0.001).

Conclusion: Observation is the predominantly prescribed management strategy for patients with high risk features at RP. Knowledge of Decipher results was associated with treatment decision-making among these patients: patients at low risk for metastasis had higher rates of observation recommendations and patients at high risk had higher rates of ART recommendations. Decision quality was improved and prostate cancer-specific anxiety was decreased for patients exposed to Decipher results.

Funding: GenomeDx Biosciences Inc.
DECIPHER TEST IMPACTS TREATMENT DECISION-MAKING AMONG PATIENTS WITH BIOCHEMICAL RECURRENCE AFTER RADICAL PROSTATECTOMY: RESULTS FROM THE MULTICENTER PROSPECTIVE PRO-IMPACT STUDY

John Gore, MD, MS¹; Marguerite du Plessis, BSc²; Maria Santiago-Jimenez, MS²; Kasra Yousefi, MS²; Darby Thompson, PhD³; Mark Bandyk, MD⁴; Fernando Bianco, MD⁵; Gordon Brown, MD⁵; David Chen, MD⁷; William Clark, MD⁸; Michael Franks, MD⁹; Lawrence Karsh, MD¹⁰; Adam Kibel, MD¹¹; Hyung Kim, MD¹²; Brian Lane, MD¹³; Yair Lotan, MD¹⁴; William Lowrance, MD¹⁵; Murugesan Manoharan, MD¹⁶; Paul Maroni, MD¹⁷; Scott Perrapato, MD¹⁸; Paul Sieber, MD¹⁹; Edouard Trabulsi, MD¹⁹; Robert Waterhouse, MD²⁰; Elai Davicioni, PhD² and Daniel Lin, MD¹

¹University of Washington, Seattle, WA; ²GenomeDx Biosciences Inc., Vancouver, BC, Canada; ³EMMES Canada, Burnaby, BC, Canada; ⁴Lakeland Regional Cancer Center; ⁵Urological Research Network, Columbia University Dept of Urology, Miami, FL; ⁶Delaware Valley Urology, LLC, Voorhees, NJ; ⁷Fox Chase Cancer Center, Philadelphia, PA; ⁸Alaska Clinical Research Center, Anchorage, AK; ⁹Virginia Urology, Richmond, VA; ¹⁰The Urology Center of Colorado, Denver, CO; ¹¹Brigham and Women's Hospital, Boston, MA; ¹²Cedars-Sinai Medical Center, Los Angeles, CA; ¹³Spectrum Health Medical Group, Grand Rapids, MI; ¹⁴UT Southwestern Medical Center, Dallas, TX; ¹⁵Huntsman Cancer Hospital, Institute, University of Utah, Salt Lake City, UT; ¹⁶University of Miami Miller, Miami, FL; ¹⁷University of Colorado, Denver Medical Campus, Denver, CO; ¹⁸Lancaster Urology, Lancaster, PA; ¹⁹Thomas Jefferson University, Philadelphia, PA; ²⁰Carolina Urology Partners, Gastonia, NC

(Presented By: John L. Gore, MD, MS)

Introduction: Patients and providers have tremendous uncertainty as they decide on the appropriate timing for intervention with salvage radiation therapy (SRT) for suspected local recurrence after radical prostatectomy (RP). We prospectively evaluated the impact of the Decipher test (GenomeDx Biosciences Inc., Vancouver), which predicts metastases after RP, on patient and provider decision quality.

Methods: 115 salvage patients were enrolled by 43 urologists from 19 community and academic practices. We included patients with rising PSA after RP. Participating physicians provided a management recommendation before and after exposure to Decipher test results. Patients completed validated surveys on health-related quality of life, decisional conflict, and prostate cancer-related anxiety.

Results: Median patient age at enrollment was 63 years; 43% had pathologic T3 stage classification and 49% had positive surgical margins at RP. Decipher classified 33%, 25%, and 42% as low-, intermediate-, and high-risk, respectively. Pre-Decipher, 58.3%, 32.2% and 9.6% of patients were recommended for observation, SRT, and other treatments, respectively. 32% (95% CI 24-42%) of management recommendations changed post-Decipher, including 18% of Decipher low-risk patients and 50% of Decipher high-risk patients. Patients’ Decisional Conflict Scale (DCS) scores decreased (indicating higher decision quality) after exposure to Decipher test results (median DCS pre-Decipher 27 [IQR 16-41], post-Decipher DCS 23 [IQR 4-30], p<0.001), with greatest decreases in the subdomains of decision uncertainty and decision support. Decipher low-risk patients experienced a significant reduction in prostate cancer anxiety (p=0.05). Among physicians, median DCS scores decreased from 33 [IQR 26-36] to 29 [IQR 22-34] (p<0.001). Decipher results were associated with the decision to pursue SRT and other treatments in multivariable logistic regression (OR 1.41; 95% CI 1.09-1.81, p=0.01).

Conclusion: Knowledge of Decipher results was associated with treatment decision-making among patients with recurrence after RP. Decipher low-risk patients had higher rates of observation recommendations and patients at high risk had higher rates of additional treatment recommendations including SRT. Decision quality was improved and prostate cancer-specific anxiety was decreased among patients considering SRT after RP exposed to Decipher results.

Funding: GenomeDx Biosciences Inc.
Poster #77
THE IMPACT OF GENETIC VARIATION IN SOLUTE CARRIER ORGANIC ANION (SLCO) ENCODED MEMBRANE TRANSPORTERS ON PROSTATE CANCER RECURRENCE POST RADICAL PROSTATECTOMY
Mazen Alsinnawi, MBBCh, FRCS¹; Eunpi Cho, MD²; Brandy E. Olin, MSc²; Christopher R. Porter, MD¹ and Elahe A. Mostaghel, MD²
¹Virginia Mason Medical Center, Seattle, Washington; ²Fred Hutchinson Cancer Research Center, Seattle, WA
(Presented by: Mazen Alsinnawi, MBBCh, FRCS)

Introduction: Androgens play a major role in prostate cancer (PCa). Solute carrier organic anion (SLCO) encoded membrane transporters may facilitate androgen uptake into PCa cells. Genetic variation in SLCO genes has been linked to clinical outcomes. There is a need for novel biomarkers to identify patients at a higher risk for PCa recurrence post radical prostatectomy (RP). We hypothesized that genetic variants in SLCO genes associated with more efficient transporter uptake of intracellular androgens in residual cells may be associated with a higher risk of relapse in men with localized PCa undergoing RP.

Methods: 12 single nucleotide polymorphisms (SNPs) in 7 SLCO genes were genotyped using TaqMan SNP assays. We also evaluated 5 SNPs in steroid-5α reductase genes (SRD5A1 & A2) with a previously published role in PCa. Binary recurrence within 10 years was compared across different genotypes using Fisher’s Exact Test. Unadjusted Kaplan-Meier curves for time to recurrence within 10 years were produced. Cox proportional hazards models were used to compare time to recurrence within 10 years by genotype, adjusted for Tumor Volume, Staging, Pre-RP PSA, Gleason grade, and whether surgical margins were positive.

Results: DNA was obtained from 147 patients with PCa who had RP (1995-2010) at University of Washington. Longitudinal clinical follow up (median 60 mos) yielded 67 patients with and 80 without evidence of BCR. We found a significant lower BCR risk in carriers of minor allele A versus major allele G homogenous carriers in SLCO2B1, SNP rs949069 (HR 0.46, 95% CI 0.21-0.99; p= 0.021), and in major allele A versus homogenous minor allele G in SRD5A1, SNP rs166050 (HR 0.34, 95% CI 0.17-0.69; p=0.008).

Conclusion: SLCO2B1 rs949069 (GG vs A allele) and SLCO6A1 rs10055840 (C allele vs. GG) were associated with risk of BCR post RP. We did not observe associations with the SLCO1B3 or SLCO2B1 SNPs associated with time to CRPC on ADT including the SLCO1B3 SNP associated with testosterone transport (rs4149117), or the SLCO2B1 SNPs associated with DHEAS uptake or 2B1 expression (rs12422149, rs1077858, respectively). SLCO-mediated androgen uptake may be more significant in determining progression in the castrate state, and may not necessarily impact relapse in the eugonadal state. This is consistent with the observation that testosterone inhibits DHEAS uptake by SLCO2B1, which would abrogate a clinical impact of this transporter on tissue androgen uptake in eugonadal men.
INTRODUCTION: Contemporary patterns of care for high-risk localized prostate cancer (PCa) and the role of socio-demographic variables on management strategy are unknown. Multiple non-randomized comparative studies have demonstrated a survival benefit for men with high-risk PCa patient who received RP compared to radiation-based therapies. We hypothesized the use of radical prostatectomy (RP) has steadily increased in more recent years.

METHODS: Using the National Cancer Data Base for 2004-2013, all men diagnosed with high-risk localized PCa were identified. Our primary outcome was initial treatment defined as the first treatment performed in the first year following diagnosis. Multivariable logistic regression was used to evaluate socio-demographic and clinical factors associated with undergoing RP.

RESULTS: In total, 127,391 men were identified. Use of RP increased from 26% in 2004 to 42% in 2013 (adjusted OR 2.08, 95% CI 1.86-2.32) while external beam radiation therapy (EBRT) with or without androgen deprivation decreased from 49% to 42% (p<0.001). Brachytherapy with or without EBRT fell from 16% in 2004 to 6% in 2013. Monotherapy with androgen deprivation was stable over time, albeit low (8% in 2004 and 6% in 2013). Black men had lower odds of undergoing RP (unadjusted rate of 28%, adjusted OR 0.49, 95% CI 0.47-0.51) compared to White men. Increasing age groups had decreasing odds of receiving RP. Only 3% of men age 75 and old received RP while 61% received EBRT with or without androgen deprivation and 14% received monotherapy with androgen deprivation. Having private insurance was significantly associated with increased use of RP (vs. Medicare, adjusted OR 1.36, 95% CI 1.28-1.44). Biopsy Gleason scores 8-10 with and without any primary Gleason 5 pattern were associated with decreased odds of RP (vs Gleason score ≤6, both p<0.001).

CONCLUSION: The likelihood of receiving RP for high-risk PCa increased by more then 50% from 2004 to 2013. In 2013, the use of RP and EBRT were similar. Black men and elderly men were significantly less likely to receive RP.
Introduction: In the present era of targeted prostate biopsy precise sampling of the region of interest is critical. Our objective is to measure in real-time the needle tip deflection during TRUS prostate biopsy and evaluate predictors for needle tip deflection. The design, setting, and participants were an analysis of 568 prostate biopsies obtained from 51 consecutive patients who underwent a standard 12-core TRUS guided prostate biopsy. TRUS guided prostate biopsies were performed using BK flex500, with a side-fire biplane probe. Each biopsy core image was captured. And clinical data were recorded prospectively. Intervention: The angle between the expected trajectory of the needle and actual needle course was measured using the longitudinal view of the captured image. Needle deflection was then calculated assuming a 90 degree triangulation. Outcome measurements and statistical analysis: median and interquartile needle deflection measurement stratified by side and location (apex, midgland, base) are reported. Univariable and multivariable linear regressions analysis were performed.

Results: The overall median needle tip deflection was 1.77 mm (IQR 1.35-2.47). Location did not significantly alter needle deflection measurements. On multivariable linear regression analysis higher prostate volume (0.07 95%CI 0.04 -0.011 ; p < 0.001) and the right sided biopsy (0.11 95%CI 0.05- 0.34; p = 0.010) emerged as predictors of higher needle tip deflection.

Conclusion: To the best of our knowledge this is the first study to measure needle tip deflection during TRUS guided prostate biopsies. We demonstrated that larger prostate size and side may affect the accuracy of biopsies. These results may have clinical implication to those performing targeted biopsies.
VASCULAR-TARGETED PHOTODYNAMIC THERAPY WITH TOOKAD® SOLUBLE IN LOCALIZED PROSTATE CANCER: MOVING FROM HEMI-ABLATION TO TARGETED TREATMENT

David Margel, MD, PhD²; Abdel-Rahmene Azzouzi, MD, PhD²; Yaara Ber, PhD³; Rachel Ozalbo³; Sivan Sela³ and Jack Baniel, MD³

¹Department of Urology, Rabin Medical Center & Ramat-Aviv Medical Center, Israel; ²Department of Urology, Angers, France; ³Division of Urology, Rabin Medical Center, Petah-Tikva, Israel

(Presented By: David Margel, MD, PhD)

Introduction: Vascular-targeted photodynamic therapy with TOOKAD® (VTP-TOOKAD) is a novel treatment for prostate cancer. Former reports focused on using this technology for hemiablation. Our objective is to evaluate the feasibility of focal VTP-TOOKAD using a transperineal MRI-US fusion system. The design, setting and participants are a pilot-study of 7 consecutive men with a visible discrete focus on mpMRI, correlating with positive histology, who underwent focal VTP-TOOKAD in 2016. A MRI-US fusion system (Biojet, DK technologies) was used to transfer data on the location of the tumor. A 0.5cm margin was contoured to insure maximal ablation of tumor. Intervention: Focal treatment with VTP-TOOKAD guided by a MRI-US fusion system. We measured the following outcomes: feasibility of focal treatment, ablative precision (using 2 week post treatment MRI), amount of optical fibers and functional outcome.

Results: All treatments were completed successfully with no intra or postoperative complications. All MRI images were fused successfully to the real time us and allowed focal treatment localization. We used a median of 6 (range 4-8) fiber optic needles compared to 13 (7-15) needles needed for a formal hemiablation (p<0.05). Post-treatment MRI demonstrated that focal ablation was achieved with precision (Figure 1). At 30-days post-treatment all patients returned to baseline urinary and erectile function. As these are early results post-treatment biopsies are not yet performed.

Conclusion: MR-US registration is feasible, efficient and can locate lesions during TOOKAD treatment. Ablation using MRI-US can be conformal and accurate thus reducing the need for hemiablation. Biopsy confirmation is still needed to assess oncological outcome.

Funding: The author declares that the research was partially funded by Steba biotech.
Poster #81  
PROSPECTIVE STUDY OF HEALTH RELATED QUALITY OF LIFE IN MEN WITH HIGH AND INTERMEDIATE RISK PROSTATE CANCER  
Mazen Alsinnawi, MBBCh, FRCS¹; Jennifer Cullen, PhD²; Lauren M. Hurwitz, MHS²; John S. Banerji, MD¹; Katherine E. Levy, CCRP¹; Erika M. Wolff, PhD¹; Inger L. Rosner, MD²; John Massman III, PhD¹; Timothy C. Brand, MD²; Joseph R. Sterbis, MD²; April E. Slee, MS³ and Christopher R. Porter, MD¹  
¹Virginia Mason Medical Center, Seattle, Washington; ²CPDR, Rockville, Maryland; ³Axio, Seattle, Washington  
(Presented by: Mazen Alsinnawi)

Introduction: Men with high risk and intermediate risk prostate cancer (CaP) are eligible for definitive therapy and may require secondary therapy after primary treatment. Study aims were to assess the impact of receiving primary treatment and/or secondary therapy on Health Related Quality of Life (HRQoL) in high and intermediate risk CaP patients.

Methods: A prospective cohort study was initiated in 2007 at Center for Prostate Disease Research Multicenter National Database sites. Longitudinal patterns in HRQoL were examined for patients with high and intermediate risk CaP, treated by: radical prostatectomy (RP) only, External beam radiotherapy (EBRT) only, EBRT + antiandrogen therapy (ADT), or RP with secondary therapy within 12 months of CaP diagnosis. HRQoL trends were examined as annual change from pre-treatment baseline to 5 yrs post baseline using the Expanded Prostate Cancer Index Composite (EPIC) & Medical Outcomes Study Short Form (SF36). HRQoL change over time was modeled using generalized estimating equations for repeated measures outcomes, adjusting for baseline HRQoL & clinical characteristics.

Results: Of 445 men with high and intermediate risk CaP: 228 underwent RP, 79 EBRT only, 64 EBRT + ADT. Thirty five men post RP received secondary therapy -within 12 months from diagnosis- and were considered for this analysis. All treatment groups showed 5-year declines in HRQoL. Sexual function (SF) analysis: secondary therapy in the RP group showed the most significant drop in SF and sexual bother (SB) (36 pt. drop vs 23 in RP only group at 48 mos). The EBRT & ADT group showed evidence of SF recovery starting at 24 mos and achieved scores close to EBRT only group at 60 mos (21 pt. decline vs 18 for EBRT only group). Urinary Function (UF) analysis: secondary therapy group (post RP) was the only group to show significant drop in urinary bother (UB) from 36 mos onwards. Changes in bowel function were minor amongst all groups exposed to EBRT including men post RP receiving secondary therapy.

Conclusion: CaP patients suffer significant declines in HRQoL after primary treatment. The impact of secondary therapy in RP group on HRQoL was significant and greater than other treatment modalities. These results have implications for treatment decision making for patients with high and intermediate risk CaP.
Introduction: Skeletal related events (SREs) are a common complication of bone metastatic castration-resistant prostate cancer (mCRPC). There is a paucity of data regarding which factors predict the development of SREs. The objective of this study was to assess the risk of SREs in men with bone mCRPC using characteristics commonly available in the medical record.

Methods: Data from patients with non-metastatic CRPC (n=454) were identified from the San Diego, CA and Durham, NC Veteran Affairs Medical Centers from 2000-2013. Among these men, 233 (51%) developed bone metastases during follow-up and were included in the final study cohort. First occurrence of a SRE (pathologic fracture, spinal cord compression, radiation to bone, or surgery to bone) was abstracted from the medical records. Univariable hazard ratios (HR) were estimated for each predictor using Cox proportional hazards models, and forward selection with α=0.2 was used to select the strongest predictors of time to SRE. The area under the curve (AUC) was calculated to assess the accuracy of the final multivariable model.

Results: The median age at diagnosis of bone mCRPC was 75 years (IQR: 68-81), and there were 80 (34%) black patients and 153 (66%) non-black patients. During follow-up (median 7.8 months, IQR: 2.9-18.3 months), 88 patients (38%) had a SRE. On univariable analysis, earlier year of metastasis (HR 0.91), PSADT ≥9 vs. <9 months (HR 0.50), and bone pain (HR 3.34) were all associated with increased risk of SRE. Among men with vs. without bone pain, 54% vs. 28% developed an SRE. On multivariable analysis, earlier year of metastasis (HR 0.93), biopsy Gleason score of 7 vs. ≤6 (HR 1.74), radiation as primary localized treatment vs. none (HR 2.33), and bone pain (HR 3.64) were associated with increased risk of SRE. The AUC of this model was 0.744.

Conclusion: We identified several significant predictors of the development of SRE among men with mCRPC. In particular men with bone pain are at high risk of an SRE. If confirmed, future trials should focus on not only prolonging life, but reducing SRE risk in men with mCRPC. These men should be assessed for early, aggressive and combination multimodal treatment for preventing SREs.
Poster #83
IMPACT OF PROXIMITY TO NCI- AND NCCN-DESIGNATED CANCER CENTERS ON OUTCOMES FOR PATIENTS WITH PROSTATE CANCER UNDERGOING RADICAL PROSTATECTOMY USING BIG DATA: A SEER-MEDICARE ANALYSIS
Cameron Ghaffary, MD¹; Zhigang Duan, MD²; Brian Chapin, MD³; Tamer Dafashy, MS¹; Christopher Kosarek, MD¹; Karim Chamie, MD⁴; Simon Kim, MD⁵; Karen Hoffman, MD⁶; Sharon Giorando, MD⁷ and Stephen Williams, MD¹
¹The Department of Surgery, Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²The Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ³Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁴Department of Urology, David Geffen School of Medicine at UCLA, Los Angeles, CA; ⁵Department of Urology, Case Western Reserve University; ⁶Department of Radiation Oncology, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁷Houston Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Cameron Ghaffary, MD)

Introduction: National Cancer Institute (NCI) and National Comprehensive Cancer Network (NCCN)-designated cancer centers (CCs) offer patients state-of-the-art treatment. However, their impact on survival for prostate cancer patients undergoing radical prostatectomy (RP) has not been evaluated. We sought to identify whether proximity to NCI/NCCN CCs was associated with survival outcomes for prostate cancer patients who undergo RP.

Methods: Analysis consisted of 12,478 total patients aged 66 years or older diagnosed with clinical stage T1 or T2 prostate cancer between 2004–2011 using linked Surveillance, Epidemiology, and End Results (SEER)-Medicare data. We conducted univariate and multivariable regression analyses to quantify the association of RP to the overall survival for patients with prostate cancer and effective access to NCI/NCCN CCs. Cox proportional hazards models were used to quantify the association between survival outcomes and access to NCI/NCCN cancer centers.

Results: Patients with access to NCI/NCCN CCs had significantly different sociodemographics—age, marital status, education, income, clinical stage, and comorbidity (all p<0.001)—than patients without access. Patients with access to ≥2 NCI centers and those diagnosed in 2011 enjoyed a statistically significant overall survival advantage when compared with those with no access to an NCI center (Hazard Ratio (HR) 0.72; 95% confidence interval (CI) 0.57–0.92, p<0.01) or those diagnosed in 2004 (HR 0.40; 95% CI 0.18–0.96, p<0.05). Access to an NCCN CC, when compared with men who did not have access, was associated with improved overall survival (HR 0.76; 95% CI 0.61–0.95, p=0.015).

Conclusion: Patients who undergo RP with access to an NCI/NCCN CCs experienced improved overall survival. Given the need for improved health quality measures in cancer care, these findings may support health policy implementation and regionalization of care to these centers.
Introduction: To compare overall survival of patients who underwent radical prostatectomy or radiotherapy versus non-cancer controls in order to discern if there is a survival advantage according to prostate cancer treatment.

Methods: A matched cohort study was performed using the Surveillance, Epidemiology, and End Results (SEER)-Medicare linked database. We identified 34,473 patients age 66 to 75 years without significant comorbidity from who were diagnosed with localized prostate cancer treated with surgery or radiotherapy between 2004 and 2011. These patients were matched to a non-cancer control cohort. We compared the rates of all-cause mortality that occurred within the study period. We used Cox Proportional Hazards Regression analysis to identify determinants associated with overall survival.

Results: Of the total 34,473 patients who were included in the analysis, 21,740 (63%) received radiation therapy and 12,733 (37%) received surgery. When compared to the non-cancer control, there was no significant difference between the prostate cancer cohort and the non-cancer control group with exception of race/ethnicity (p<0.001). There was improved survival in patients treated with surgery (hazard ratio [HR], 0.35; 95% CI, 0.32-0.38) as well as with radiotherapy (HR, 0.72; 95% CI, 0.68-0.75) when compared to non-cancer controls. There was significantly improved overall survival among both treatment groups with most benefit observed among patients who underwent surgery (log rank p<0.001).

Conclusion: Using population based data, treatment with either surgery or radiotherapy demonstrated improved overall survival when compared to a cohort of matched non-cancer controls. Treatment with surgery resulted in longer overall survival compared to those receiving radiation therapy. These results suggest inherent selection-bias due to unmeasured confounding variables when using cancer registry data.
Introduction: There is an increased risk of various cancers, and especially prostate cancer, among men with germline mutations in BRCA genes. However, thus far, there are no cancer screening guidelines for this population. We report cancer rate and type in a prospectively screened cohort of patients enrolled to a dedicated male BRCA clinic.

Methods: Between February 2014 and July 2016 we evaluated 207 men at our male BRCA clinic: 146 known BRCA mutation carriers and 61 men who underwent genetic counselling, 8 of whom were found to be BRCA carriers. Patients ≥ 40 years of age were screened for prostate, breast, colorectal, pancreatic and skin malignancies using a standard protocol. We report patient characteristics, type and prevalence of tumors identified upon enrollment to the clinic and during the initial screening.

Results: A total of 154 BRCA mutation carriers comprised the study cohort; 92 men (60%) had a BRCA1 mutation and 61 (40%) a BRCA2 mutation. One patient had a mutation in both BRCA types. Common mutations were 185delAG in BRCA1 (69/93, 74%) and 6174delIT in BRCA2 (51/62, 82%). Median age at enrollment was 50 years (IQR 42, 63). All patients had a family history of cancer (1-10 cases per family). A total of 24 patients (16%) were diagnosed with cancer upon enrollment or during initial screening. Median age at cancer diagnosis was 55 years (IQR 44, 64). Four patients had multiple malignancies (2-4 cases per patient). Figure 1 summarizes cancer type and rate stratified by mutation type. The most common malignancy was prostatic adenocarcinoma identified in 7/93 patients with BRCA1 mutation (8%), and 3/62 patients with BRCA2 (5%). Overall, 16/24 patients (67%) were surgically treated for their cancer.

Conclusion: Malignancy rates in male BRCA mutation carriers are substantially higher than those reported for the general population in corresponding age groups. Prostate cancer is the most prevalent cancer apparent in up to 8% of patients at a median age of 50 years. Unlike other reports, prostate cancer was prevalent among BRCA1 carriers and not restricted to BRCA2.

Funding: The study was funded by the ASCO career development award, Israel Cancer Association, and German Israeli Foundation.
Short-term outcomes of active surveillance for prostate cancer in minority populations

Introduction: Despite the widespread adoption of active surveillance (AS) in the management of low-risk prostate cancer, the safety and efficacy of AS in minority patients has not been established. We describe outcomes for African American (AA) and Hispanic patients managed with AS at our institution.

Methods: We retrospectively analyzed AA and Hispanic men with prostate cancer diagnosed between 08/2013 and 05/2016 managed with AS. AS eligibility criteria included patients with D’Amico low- or selective intermediate-risk disease. Patients with disease reclassification or concerning genomic testing results were recommended to undergo treatment. Patients who failed to follow-up within 9 months of their last office visit were deemed lost to follow-up.

Results: Of 64 patients enrolled in AS at our institution, 44 (68.8%) were AA and 10 (15.6%) Hispanic. Median follow-up for patients on AS was 12.2 months. Demographic and disease characteristics at the time of diagnosis are shown in Table 1. 12 men (11 AA and 1 Hispanic, 22.2% of cohort) underwent delayed treatment (radical prostatectomy (RP) in 6, radiation therapy in 6). Reasons for delayed treatment included: Gleason upgrading in 5 patients, volume reclassification in 1, Gleason upgrading and volume reclassification in 2, unfavorable genomic testing in 3, and lack of compliance in 1. 5 patients (9.3%) were lost to follow-up. A Kaplan-Meier curve showing rates of AS discontinuation is shown in Figure 1. Pathologic data were available for 5 of 6 patients who underwent RP. Pathologic stage was pT2c in 4 men (80%) and pT3b in 1 (20%), Gleason score was 3+3 in 1 (20%) and 3+4 in 4 (80%), and surgical margins and lymph nodes were negative in all patients.

Conclusion: We characterized outcomes for AA and Hispanic patients managed with AS for prostate cancer. In this minority population, we identified high rates of disease reclassification and delayed treatment with relatively short-term follow-up. Furthermore, we found high rates of poor compliance with surveillance visits. These findings suggest that stricter eligibility criteria may be needed to identify minority patients for AS, and additional research is needed to confirm the safety of AS in minority populations.

Table 1. Demographic and Disease Characteristics at Diagnosis.

| Race          | African American | Hispanic | N  | %
|---------------|------------------|----------|----|-----
| Age at Diagnosis | 44               | 10       | 100% | 18.5
| Clinical Stage |                  |          |     |     |
|               | cT1c             | 52       | 96.3 |
|               | cT2a             | 2        | 3.7  |
| Biopsy Gleason Score |      |          |     |     |
|               | 3+3              | 48       | 88.9 |
|               | 3+4              | 6        | 11.1 |
| PSA           | Not Recorded*    | 1        | 1.8  |
|               | <4               | 11       | 20.4 |
|               | 4-10             | 39       | 72.2 |
|               | >10              | 3        | 5.8  |
| Number of positive biopsy cores |      |          |     |     |
|               | >2               | 13       | 24.0 |
| CAFRA Score   | Not Recorded*    | 1        | 1.8  |
|               | 0                | 1        | 1.8  |
|               | 1                | 30       | 55.6 |
|               | 2                | 15       | 27.8 |
|               | 3                | 7        | 13.0 |

*Patient underwent initial biopsy at an outside institution and does not have an initial PSA record on file.

Figure 1. Kaplan-Meier Curve showing the rate of Active Surveillance discontinuation in minority patients.
**Poster #87**

**PROXIMITY OF POSITIVE PROSTATE BIOPSY CORE TO CAPSULAR MARGIN MAY HELP PREDICT EXTRACAPSULAR EXTENSION AND POSITIVE MARGIN AT PROSTATECTOMY**

Nirmish Singla, MD; Jordon Walker; Niccolo Passoni, MD; Karen de la Fuente and Claus Roehrborn, MD

UTSW, Dallas, TX

(Presented By: Nirmish Singla, MD)

**Introduction:** We sought to determine whether a novel technique of staining prostate biopsy cores may aid in identifying patients at risk for extracapsular extension (ECE) and positive margins (PM) at the time of radical prostatectomy (RP) based on proximity of stain to capsular margin.

**Methods:** We reviewed a single surgeon experience of transrectal ultrasound-guided prostate biopsies using a novel staining technique between 2010 and 2014. Biopsy needles were dipped in either blue (lateral cores) or orange (medial cores) dye prior to standard 12-core biopsy template, and proximity of positive cores to capsular margin was measured. Primary outcome was ECE or PM at RP. Patient demographics, PSA at diagnosis, digital rectal exam (DRE) findings, prostate volume, Gleason score, core location, % core involvement, pathologic data of RP specimen, and performance of nerve-sparing (NS) techniques were recorded. Logistic regression was used to assess predictors of ECE or PM.

**Results:** 429 patients underwent prostate biopsy using our staining technique, of whom 101 underwent RP and had pathologic and staining data available. 33 patients had ECE and 34 had PM at RP. 76 patients underwent a NS approach (57 bilateral, 6 left-, and 13 right-sided), with ECE found in 11 cases in which ipsilateral NS approaches were utilized. There were a total of 343 positive stained biopsy cores, with proximity to capsule reported in 308 samples. Mean proximity of stain to capsule was 4.7mm (range 0-20), with 60 cores <1mm from capsule and 248 cores >1mm from capsule. On logistic regression, proximity of positive core <1mm to capsule was predictive of both ECE (OR 1.92, p=0.026) and PM (OR 2.27, p=0.006). Other predictors of ECE included positive DRE (OR 4.10, p<0.001), PSA (OR 1.08, p=0.010), Gleason score on biopsy (OR 4.24, p<0.001), % core involvement (OR 1.02, p<0.001), and age (OR 1.04, p=0.009). Other predictors of PM included prostate volume (OR 1.02, p=0.001), Gleason score on biopsy (OR 1.42, p=0.029), and % core involvement (OR 1.01, p=0.006). Utilization of NS techniques did not predict PM (OR 1.16, p=0.531).

**Conclusion:** Our data suggests that proximity of positive biopsy core to capsular margin may be useful in predicting both ECE and PM at RP. Given the prognostic role of ECE and PM on oncologic outcomes, implementation of a staining technique at the time of biopsy may be helpful in counseling patients and determining utility of NS approaches.
Poster #88

ATYPICAL SMALL ACINAR PROLIFERATION: PROGRESSION TO CLINICALLY SIGNIFICANT PROSTATE CANCER?

Leslie Ynalvez¹; Christopher Kosarek, MD¹; Preston Kerr, MD¹; Justin Fang, MD¹; Eduardo Eyzaguirre, MD²; Eduardo Orihuela, MD¹ and Stephen Williams, MD¹

¹The Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²The Department of Pathology, The University of Texas Medical Branch, Galveston, TX

(Presented By: Christopher D. Kosarek, MD)

Introduction: Guideline recommendation for atypical small acinar proliferation (ASAP) identified on prostate biopsy recommends repeat biopsy diagnosis 3-6 months after initial diagnosis. We wanted to discern the rate of detecting clinically significant prostate cancer (Gleason grade group ≥2) on subsequent biopsy as well as any predictors associated with progression using the 5 tier Gleason grade grouping system (GGGS).

Methods: We performed a retrospective chart review of patients who underwent prostate biopsy at the University of Texas Medical Branch at Galveston from 2008 to 2015. A total of 593 patients underwent prostate biopsy. GGGS and D’Amico risk stratification were used to report pathology and prostate cancer risk stratification, respectively. Regression analyses and mean comparisons were performed.

Results: A total of 593 patients underwent prostate needle biopsy were identified, of which 27 had the diagnosis of ASAP. Of these, 11 (41%) had repeat prostate needle biopsies. Median time from initial ASAP diagnosis to repeat prostate needle biopsy was 147 days (IQR: 83.5-247.0). Of the 11 patients diagnosed with ASAP, distribution across the GGGS on follow-up biopsy is as follows: 7 (63.6%) benign, 3 (27.3%) GG1, and 1 (9.1%) GG2 prostate cancer. In a logistic regression analysis, ASAP was not associated with subsequent diagnosis of prostate cancer (OR=0.46, 95% CI: 0.064 to 3.247, p=0.432). In a linear regression analysis, there was no association between ASAP and classification of cancer risk (ASAP: β=-0.12; p=0.204). Advanced age was significantly associated with lower risk prostate cancer identified at repeat biopsy (age: β=-0.06; p<0.01).

Conclusion: We found that patients diagnosed with ASAP on index biopsy managed according to NCCN recommendations are more likely diagnosed with benign pathology and clinically insignificant prostate cancer upon repeat biopsy. These findings support further external validation of the results in a large cohort of patients in order to discern the appropriateness of repeat biopsy among patients diagnosed with ASAP.
Poster #89
CLINICAL USE OF THE PROSTATE HEALTH INDEX FOR THE DETECTION OF PROSTATE CANCER: PROSPECTIVE RESULTS FROM A LARGE ACADEMIC PRACTICE
Jeffrey Tosoian, MD, MPH¹; Sasha Druskin, MD¹; Darian Andreas¹,²; Patrick Mullane¹; Meera Chappidi¹; Sarah Joo¹; Kamyar Ghabili, MD¹; Joseph Agostino¹; Katarzyna Macura, MD, PhD³; H. Ballentine Carter, MD¹; Edward Schaeffer, MD, PhD⁴; Alan Partin, MD, PhD¹; Lori Sokoll, PhD⁵ and Ashley Ross, MD, PhD⁵
¹The James Buchanan Brady Urological Institute and Department of Urology at the Johns Hopkins University School of Medicine, Baltimore, MD, USA; ²Virginia Commonwealth University School of Medicine, Richmond, VA, USA; ³Department of Radiology and Radiological Sciences at the Johns Hopkins University School of Medicine, Baltimore, MD, USA; ⁴The Department of Urology at the Northwestern University Feinberg School of Medicine, Chicago, IL, USA; ⁵The James Buchanan Brady Urological Institute and Department of Urology, Department of Pathology, and Sidney Kimmel Comprehensive Cancer Center at the Johns Hopkins University School of Medicine, Baltimore, MD, USA
(Presented By: Sasha Courand Druskin, MD)

Introduction: To prospectively evaluate the Prostate Health Index (phi) test for the diagnosis of prostate cancer in a real-world clinical setting.

Methods: Serum phi was measured in 345 patients presenting with suspicion of prostate cancer. Findings on prostate biopsy, magnetic resonance imaging (MRI), and radical prostatectomy (RP) were prospectively recorded. The association of phi with clinical outcomes was assessed. Biopsy rates and outcomes were compared to a similar cohort that did not undergo phi testing (n=1318).

Results: Overall, 39% of men with phi testing underwent prostate biopsy. No men with phi<19.6 were diagnosed with prostate cancer, and only 3 men with phi<27 had cancer of grade group ≥2. There were 121 men who underwent MRI in addition to phi. No men with phi<27 and PI-RADS≤3 had grade group ≥2 cancer. Among men who underwent RP, increasing phi was associated with higher pathologic grade group (p=0.002) and stage (p=0.001). Compared to a contemporaneous cohort of patients that did not undergo phi testing, the use of phi was associated with a 9% reduction in the rate of biopsy (39% vs. 48%; p<0.001). Importantly, the reduction in biopsy among the phi population was secondary to a decreased proportion of negative (8%) and grade group 1 (1%) biopsies, while the proportion of grade groups 2-5 cancers detected remained unchanged.

Conclusion: In a prospective clinical experience, increased phi was associated with higher-grade cancer and appears useful in combination with MRI. Clinical use of phi was associated with a reduction in unnecessary biopsies.

Funding: A.E.R. is supported by a DOD PRTA award (W81XWH-13-1-0445) as well as a PCF Young Investigator Award and Patrick C. Walsh Investigator Grant. E.M.S. is supported by NIH U01CA196390-01.
Poster #90
TRENDS IN THE UTILIZATION OF ACTIVE SURVEILLANCE FOR STAGE I PROSTATE CANCER BASED ON TYPE OF TREATING INSTITUTION: RESULTS FROM NATIONAL CANCER DATABASE
Johar Syed, MD and Sameer Siddiqui, MD
St Louis University Hospital, MO
(Presented By: Johar Syed)

Introduction: Active surveillance (AS) is well advocated for management of localized prostate cancer. It is being increasingly incorporated into clinical practice, however data on trends among type of institutions is limited. National cancer database (NCDB) records data from cancer centers and stratifies into community cancer program (CCP), comprehensive community cancer program (CCCP) and academic cancer program (ACP). This study aims to determine trends in use of AS among various cancer programs contributing to the NCDB.

Methods: Using the NCDB, patients with first treatment were identified from 2009 to 2013. Based on the clinical stage at diagnosis, stage I patients were selected for comparative analysis. Treatment trends for surgery, radiation and AS were compared for the overall cohort, and sub-stratified based on the type of treating institution.

Results: A total of 604749 patients received treatment for prostate cancer, of which 105704 patients were diagnosed with stage I. The data was contributed by 1465 hospitals. In the selected cohort 35.8%, 28.9% and 14.6% patients received surgery, radiation and AS, respectively as first treatment. Overall, a steady rise in use of AS was noted (3.1% in 2009 to 20.9% in 2013) which persisted among all institutions after stratification. CCP used AS at lowest rate of 1.7% in 2009, compared to CCCP (3.2%) and ACP (3.3%). Overtime the rates increased, however CCCPs recorded lowest rates for AS (Figure 1). Similar results were noted, when stratified according to age group and race.

Conclusion: There is an increasing trend in utilization of AS, however distinctly less use is noted for CCCP, when compared to other cancer programs.

![Graph showing trend of AS among institutions](image.png)

Figure 1 Trend of AS among institutions. (CCP= community cancer program, CCCP= comprehensive community cancer program, ACP= academic cancer program)
Poster #91
MRI AXIAL ORIENTATION MAY AFFECT THE RESULTS OF MRI-US FUSION BIOPSIES
David Margel, MD, PhD¹; Michael Oren, MD²; Yaara Ber, PhD³; Philip Rosen⁴ and Ofer Benjaminov, MD⁴
¹Department of Urology, Rabin Medical Center & Ramat-Aviv Medical Center, Israel.; ²Department of Urology, HaEmek Medical Center, Afula, Israel; ³Division of Urology, Rabin Medical Center, Petah-Tikva, Israel; ⁴Department of Imaging, Rabin Medical Center, Petah-Tikva, Israel
(Presented By: David Margel, MD, PhD)

Introduction: MRI-US fusion prostate biopsies are dependent on an accurate fusion between MRI & real-time US images. Fusion software packages differ in the method of fusion. "Image-based" fusion relies on accurate alignment between individual MRI images and a corresponding axial US images e.g. Biojet (Dk technologies, Germany) and BiopSee (Pi Medical, Greece). "Shape-based" fusion relies on 3D model fitting between a set of MRI and US, e.g. Navigo (UC-Care) and UroNav (InVivo, USA). However, it is not clear what factors reduce the accuracy of the fusion process. Aim—to test if MRI axial orientation affects MRI-US fusion, and compare between "shape" and "image" based software.

Methods: We used MRI prostate phantoms with isochic lesions visible on MRI only. We performed an MRI scan in two axial orientations: true axial and 200. The Images were segmented by an expert uro-oncologist. Contours of the prostate and regions of interest (ROI) were marked using two packages; Biojet to simulate "image" based fusion, and Navigo to simulate "shape" based fusion. Real time US was performed and MRI-US fusion was achieved using both systems. MRI lesions not visible on US were depicted using the two fusion packages. Fiducial markers were inserted in the ROI. The same was repeated for true axial and the 200 MRI scans. Accuracy was determined by MRI and US fit on the fusion software, and by a repeat MRI of the phantom after insertion of fiducial markers.

Results: The MRI and US model fit was perfect for Navigo and Biojet on the true-axial MRI scan. However, fusion of the 200 MRI scan resulted in a shift between MRI and US in the "image" based BioJet system, but not in the "shape" based Navigo system (Fig 1). The MRI demonstrated fiducial markers were positioned accurately in the ROI in both systems in the true axial images. In the 200 rotation images, a correction was needed in the BioJet system to compensate for the shift by inserting the fiducial markers outside the ROI by 3mm.

Conclusion: A simple orientation change may affect MRI-US fusion accuracy. It is imperative that physicians performing fusion biopsies will be familiar with the fusion technology they use and be able to adjust accordingly.
**Poster #92**  
**ANTIBIOGRAM DIRECTED PROPHYLAXIS FOR TRANSRECTAL PROSTATE BIOPSY: AN APPLICATION OF AUA RECOMMENDATIONS IN THE SETTING OF HIGH FLUOROQUINOLONE E. COLI RESISTANCE**  
Yifan Meng; Jimena Cubillos, MD; Edward Messing, MD and Janet Kukreja, MD, MPH  
University of Rochester Medical Center, Rochester, NY  
(Presented By: Yifan Meng)

**Introduction:** To investigate using local resistance patterns to guide antibiotics for prevention of transrectal prostate biopsy with ultrasound guidance (TRUSBx) associated infections.

**Methods:** Per the American Urologic Association recommendations (2014 and 2016) for TRUSBx prophylaxis, local antibiogram resistance was reviewed. E. coli fluoroquinolone resistance was between 20% and 28%. Thus, antibiotics chosen were a single dose of oral ciprofloxacin and intramuscular ceftriaxone at least 30 minutes prior to TRUSBx. Data were reviewed retrospectively between July 2012 and December 2015. There was no standard prophylaxis prior to protocol implementation in August 2014. Univariable analyses were performed with appropriate testing followed by multivariable logistic regression.

**Results:** Of 2351 biopsies, 799 were protocol patients. Prior to protocol implementation there were 26 different antibiotic regimens used. The protocol group had significantly more patients with chronic kidney disease, history of cancer, larger prostate volumes, and greater number of biopsies during TRUSBx. The overall post-TRUSBx admission was 1.35% for non-protocol and 0.4% for protocol patients, (p= 0.026). Blood and urine organisms with antimicrobial resistance incidence decreased from 20.7% (n=23) in non-protocol and 7.1% (n=4) protocol patients, (p=0.030). All positive blood cultures occurred in the non-protocol group, and all were ciprofloxacin resistant E. coli. After multivariable logistic regression, patients requiring admission were 12.9 (95% CI 2.81-58.96) times more likely to have resistant organisms cultured (p=0.001).

**Conclusion:** TRUSBx antibiotic prophylaxis protocol decreased unwanted variations, which ultimately is associated with improved quality. Antibiogram directed prophylaxis where there is high fluoroquinolone resistance maintains low post-TRUSBx infections and admissions.
Poster #93
ASSESSING DECIPHER FOR PREDICTING LYMPH NODE POSITIVE DISEASE AMONG MEN DIAGNOSED WITH INTERMEDIATE RISK DISEASE TREATED WITH PROSTATECTOMY AND EPLND
Mary Achim¹, Surena Matin¹, Brian Chapin¹, Patricia Troncoso², Elsa Li Ning Tapia², Mireya Guerrero², Ina Prokhorova², Anders Olson³, Zaid Haddad³, Lucia Lam³, Kasra Yousefi³, Christine Buerki³, Elai Davicioni³ and John W. Davis, MD, FACS¹
¹Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ²Department of Pathology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ³GenomeDx Biosciences, Inc., Vancouver, British Columbia, Canada
(Presented By: John W. Davis, MD, FACS)

Introduction: Radical prostatectomy (RP) is a primary treatment option for men with intermediate risk (IR) prostate cancer (PCa). Though many will be effectively cured with local therapy alone, these men are by definition at higher risk of disease recurrence. In this study, we evaluated whether a genomic signature of metastasis risk (Decipher PCa classifier) could improve pre-operative staging for predicting lymph node invasion (LNI).

Methods: We examined 263 NCCN intermediate men treated with RP and extended template pelvic lymph node dissection (ePLND) from 2007-2015 at MD Anderson Cancer Center, Houston, Texas. Patients were categorized into three risk groups: 1) men with N1 disease (N1), 2) men without N0, but who had either ≥pT3 stage, RP Gleason score ≥8, lymphovascular invasion or tertiary Gleason 5 pattern (N0 high-risk [HR]) and 3) men with no high-risk features at RP (N0IR). Decipher scores were obtained from 263 RP specimens and 25 matching biopsy specimens. Fisher’s exact test was used to compare the difference in patient risk groups. Logistic regression analysis was used to evaluate performance of Decipher for prediction of LNI. Discrimination of the Partin tables (≥2%) and combined model of Partin tables (≥2%) and Decipher (>0.6) was assessed using c-index. Concordance of biopsy and RP Decipher (low- and intermediate- vs high-risk) was also assessed.

Results: Of the 263 men, 42 (16.0%), 98 (37.2%) and 123 (46.8%) men were categorized as N1, N0HR and N0IR risk groups, respectively. Partin tables classified 34/42 (81%) N1, 70/98 (71%) N0HR and 66/123 (54%) N0IR men as high clinical risk (≥2%) for LNI (p=0.0012). Decipher classified 23/42 (55%) N0, 34/98 (35%) N0HR and 35/123 (29%) N0IR as high genomic risk (>0.6) for metastasis (p=0.013). After adjusting for Partin Tables, Decipher high genomic risk had an odds ratio of 2.3 (95% CI 1.2-4.5) as a predictor of LNI (p=0.02). Addition of Decipher to Partin Tables improved the c-index from 0.60 (95%CI 0.53-0.67) to 0.66 (95%CI 0.57-0.75). The concordance of Decipher risk groups between matched biopsy and RP specimens was 84%.

Conclusion: Decipher may be an important adjunct tool to improve preoperative staging that may be useful for prioritizing intermediate risk patients to ePLND. Further investigation of Decipher biopsy specimens is required to validate these findings.
Poster #94
INDIVIDUAL PATIENT LEVEL META-ANALYSIS OF THE PERFORMANCE OF THE DECIPHER GENOMIC CLASSIFIER IN HIGH RISK MEN POST-PROSTATECTOMY TO PREDICT DEVELOPMENT OF METASTATIC DISEASE

Daniel E. Spratt¹, Kasra Yousefi², Samineh Deheshi², Ashley E. Ross³, Edward M. Schaeffer⁴, Bruce J. Trock⁵, R. Jeffrey Karnes⁵, Andrew G. Glass⁶, Robert B. Den⁷, Adam P. Dicker², Stephen J. Freedland⁸, Shuang G. Zhao¹, Lucia L. C. La², Marguerite du Plessis², Voleak Choeurng², Zaid Haddad², Christine Buerki², Elai Davicioni², Sheila Weinmann⁶, Eric A. Klein³ and Felix Y. Feng, MD⁸

¹Department of Radiation Oncology, Michigan Center for Translational Pathology, Comprehensive Cancer Center, University of Michigan, Ann Arbor, MI, USA; ²GenomeDx Biosciences, Vancouver, British Columbia, Canada; ³James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, MD, USA; ⁴Department of Urology, Northwestern University IL, USA; ⁵Department of Urology, Mayo Clinic, Rochester, MN, USA; ⁶Center for Health Research, Kaiser Permanente Northwest, Portland, OR, USA; ⁷Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA; ⁸Department of Surgery, Division of Urology, Center for Integrated Research on Cancer and Lifestyle, Samuel Oschin Comprehensive Cancer Center, Cedars Sinai Medical Center, Los Angeles, CA, USA; ⁹Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA

(Presented By: Felix Feng, MD)

Introduction: The genomic classifier, Decipher, has been validated to predict risk of metastasis after radical prostatectomy (RP). However, the cohort size and event rate in previous studies did not allow for a thorough investigation into performance within individual clinicopathologic, demographic, or treatment subgroups. In this study, we present the first meta-analysis of the performance of the 22-marker genomic classifier in men with prostate cancer post-RP.

Methods: MEDLINE, EMBASE, and the Decipher genomic resource information database were searched for published reports of men with prostate cancer treated by RP between 2010 and 2016 where the benefit of the Decipher genomic classifier test was assessed. The primary end point was the ability of Decipher to independently improve prognostication of regional or distant metastasis over routine clinicopathologic factors. Meta-analysis was performed with random-effects modeling, and extent of heterogeneity between studies was determined with the I² test.

Results: Five studies (975 total patients, and 855 with individual patient genomic and clinicopathologic data) were eligible for analysis. The median follow-up was 8 years. Patients primarily had clinical high-risk disease, yet 60.9%, 22.6%, and 16.5% of patients were classified as low, intermediate, and high-risk, respectively by Decipher and had 10-year cumulative incidence rates of metastases of 5.5%, 15.0% and 26.7% (p<0.001), respectively. Adjusting for standard clinicopathologic variables, on multivariable analysis Decipher remained a statistically significant independent predictor of metastasis (hazard ratio [HR] 1.30 per 0.1 unit, 95% confidence interval [CI] 1.14 -1.47, p<0.001), and the summary HR for metastasis of Decipher across the 5 studies was 1.52 (95% CI 1.39-1.67, I²=0%) per 0.1 unit.

Conclusion: The genomic classifier test, Decipher, has the ability to independently improve prognostication of men post-RP, as well as within nearly all clinicopathologic, demographic, and treatment subgroups. Strong consideration should be given to incorporating the use of genomic testing in clinical decision making and clinical trials to better individualize treatment.
CONFIRMATORY MRI-GUIDED PROSTATE BIOPSY INFORMS CLINICAL CARE IN AN ACTIVE SURVEILLANCE POPULATION

Zachary Hamilton, MD; Unwanaobong Nseoyo, MD; Britney Cotta, MD; Natalie Schenker-Ahmed, PhD; A. Karim Kader, MD; Christopher J. Kane, MD; David Karow, MD and J. Kellogg Parsons, MD
University of California, San Diego
(Presented By: Zachary A. Hamilton, MD)

**Introduction:** The role of magnetic resonance imaging (MRI)-guided prostate biopsy in active surveillance (AS) remains unclear. We determined if MRI-guided prostate biopsy informs clinical care in an AS population.

**Methods:** In an AS cohort at a single institution from 2004-2015, we compared outcomes of patients undergoing MRI-guided and standard systematic biopsy for confirmatory purposes using multivariable (MV) logistic regression. Primary outcome was progression to definitive therapy with surgery or radiation. Secondary outcomes included upgrading or downgrading of disease defined by change in Gleason sum.

**Results:** Of 157 eligible AS patients, 103 underwent systematic ultrasound-guided and 54 combined confirmatory MRI-guided and systematic biopsy. Patients in the systematic biopsy group had lower PSA (3.5 vs. 5.3 ng/mL, p<0.001), and more Gleason 6 disease (100.0% vs. 85.2%, p<0.001). No significant between-group differences in age (0.27), BMI (p=0.27), family history (p=0.82), comorbid diseases (p=0.09-1.0), number of prior biopsies (p=0.72), prostate volume (p=0.25) or years of cancer diagnosis (p=0.3). In unadjusted analysis, patients with MRI-guided biopsy were less likely to undergo definitive therapy (20.4% vs. 36.9%, p=0.046). There were no significant differences for Gleason upgrading (38.9% vs. 29.1%, p=0.28) or downgrading (33.3% vs. 35.0%, p=0.86). On MV regression, MRI-guidance was associated with a 76% decreased probability of undergoing definitive therapy (OR 0.24, 95% CI 0.08-0.7, p=0.009). Disease upgrading was associated with a 7-fold increased probability of therapy (OR 6.59, 95% CI 2.64-16.5, p<0.001). Sensitivity analyses in a sub-group of 91 patients (61 systematic, 30 confirmatory MRI) with initial Gleason 6 and 2 biopsies only (initial diagnosis and confirmatory) produced similar outcomes. On unadjusted analysis, patients with MRI-guided biopsy were less likely to undergo definitive therapy (13.3% vs. 49.2%, p=0.01). On MV regression, MRI-guidance was associated with 88.6% decreased probability of undergoing definitive therapy (OR 0.116, 95% CI 0.02-0.61, p=0.01). Disease upgrading was associated with 7-fold increased probability of therapy (OR 7.19, 95% CI 2.03-25.55, p=0.002).

**Conclusion:** MRI-guided biopsy is associated with decreased probability of progression to definitive therapy in AS patients. MRI-guidance may inform clinical care by identifying those patients who may avoid or defer definitive treatment.
NUMBER NEEDED TO TREAT TO ACHIEVE ONE ADDITIONAL PATIENT FREE OF CLINICAL EVENT: COMPARISON OF ENZALUTAMIDE AND BICALUTAMIDE IN PATIENTS WITH METASTATIC CASTRATION-RESISTANT PROSTATE CANCER

Raoul S. Concepcion¹, David F. Penson², Lawrence Karsh³, Hongbo Yang⁴, Neil M. Schultz⁵, Bruce A. Brown⁵, Arie Barlev⁶ and Scott C. Flanders⁵

¹Urology Associates; ²Vanderbilt University Medical Center; ³The Urology Center of Colorado; ⁴Analysis Group, Inc; ⁵Astellas Pharma, Inc.; ⁶Medivation, Inc.

(Presented By: Raoul S. Concepcion, MD, FACS)

Introduction: Enzalutamide (ENZ), a 2nd-generation androgen receptor inhibitor (ARI), and bicalutamide (BIC), a 1st-generation ARI, are metastatic castration-resistant prostate cancer (mCRPC) treatments. The randomized, double-blind, Phase 2 STRIVE trial (NCT01664923; Penson et al 2016) is the first head-to-head trial that compared ENZ with BIC in CRPC patients, including mCRPC patients and CRPC patients without metastasis. The STRIVE study demonstrated significant clinical benefits of ENZ vs BIC in progression-free survival (PFS) [measured as a progression event or all-cause death], radiographic PFS (rPFS), and free of prostate-specific antigen (PSA) progression. Based on these results, the current study estimated the number needed to treat (NNT) with ENZ, compared with BIC, to obtain a clinical benefit. NNT is an established and easily interpretable measure for effectiveness of healthcare interventions. Our objective is to compare ENZ with BIC on the NNT to achieve one additional mCRPC patient with PFS, rPFS, or free of PSA progression at 1 year and 2 years.

Methods: The 1-year and 2-year rates of PFS, rPFS, and free of PSA progression among ENZ- and BIC-treated mCRPC patients were obtained from STRIVE. The NNT is calculated as the inverse of the absolute rate difference between the event rates of ENZ and BIC at a time point. Positive NNT values represent treatment benefit. The 95% confidence interval (CI) of the NNT was derived from the 95% CI of the event rate difference.

Results: The NNT to achieve one additional patient with PFS at 1 year, comparing ENZ with BIC, was 2.0 (95% CI: 1.6, 2.5), suggesting that treating two patients with ENZ instead of BIC would result in one additional patient free of progression or death after 1 year. The NNT to achieve one additional patient with PFS at 2 years was 2.8 (95% CI: 2.1, 4.3). With respect to rPFS, the NNTs comparing ENZ with BIC were 2.6 (95% CI: 1.9, 4.0) and 3.0 (95% CI: 1.9, 7.2) at 1 year and 2 years, respectively, and for being free of PSA progression, the NNTs were 1.8 (95% CI: 1.5, 2.2) and 2.4 (95% CI: 1.7, 3.7) at 1 year and 2 years, respectively.

Conclusion: The results demonstrate that treating mCRPC patients with ENZ compared with BIC lead to more patients with PFS, rPFS, and free of PSA progression at both 1 year and 2 years. This NNT analysis supports the superior clinical benefit of ENZ vs BIC in mCRPC patients.

Funding: Astellas Pharma, Inc.; Medivation, Inc.
Poster #97
CAN FREQUENCY OF PROSTATE BIOPSY ON ACTIVE SURVEILLANCE BE REDUCED WITHOUT SIGNIFICANTLY INCREASING RISK?
Gregory Auffenberg, MD, MS¹; Christine Barnett¹; Zian Cheng¹; Fan Yang¹; Jiachen Wang¹; David Miller, MD, MPH¹; James Montie, MD¹; Mufaddal Mamawala, MBBS, MPH, CPH² and Brian Denton, PhD¹
¹University of Michigan, Ann Arbor, MI; ²Johns Hopkins University, Baltimore, MD
(Presented By: Gregory B. Auffenberg, MD, MS)

Introduction: Active surveillance (AS) for prostate cancer (CaP) involves close follow-up, often with serial prostate biopsies, to evaluate for changes in risk over time. The frequency with which biopsies are recommended varies. The goal of this investigation is to use longitudinal AS data to identify whether biopsies could be eliminated from a 10-year AS plan calling for annual biopsy without substantially prolonging the time to detection of cancer grade progression.

Methods: With data from 1,500 men with very-low or low-risk CaP enrolled in AS at Johns Hopkins, we developed a hidden Markov model to estimate the annual probability of grade progression to Gleason 7 or higher and the 10-year cumulative probability of progression. We then simulated all potential AS biopsy strategies where it was assumed biopsy would be performed no more often than annually and either would or would not be performed each year after diagnosis. For every possible strategy the model was used to predict the average time from occurrence to the detection of grade progression. The time to detecting progression was compared across strategies to identify potential alternatives to annual biopsy.

Results: The model estimated 10 year probability of grade progression was 40.0% and the annual probability was 4.0%. Within these parameters, simulation of an annual biopsy strategy estimated that for men who experience grade progression the mean time from occurrence to detection would be 14.1 months. Alternative strategies that reduced the number of biopsies received over 10 years increased the time to detecting grade progression; however several strategies eliminated biopsies with only small increases in the time to detecting grade progression (Figure). For instance, the strategy corresponding to point D would call for 6 biopsies over 10 years (biopsies in years 1-3,5,7, and 8) and while eliminating 4 biopsies would only increase the average time to detecting grade progression by 4.6 months.

Conclusion: While annual biopsy for low-risk men on AS is associated with the shortest interval to detecting grade progression, several alternative strategies may allow for less frequent biopsy without sizable increases in time to detecting grade progression.

![Graph showing simulated incremental increase in time to detecting grade progression based on number of biopsies eliminated from annual biopsy routine.](image-url)
Introduction: In 2008 and 2012, the US Preventive Services Task Force (USPSTF) issued guidelines stating there was insufficient evidence to support prostate cancer screening. Using the Surveillance, Epidemiology and End Result (SEER) database, we sought to determine the effect of the USPSTF recommendations on prostate cancer incidence based on Gleason score, and race.

Methods: The SEER database (SEER 18) was analyzed from 2008 to 2013. Patients were divided based on recorded race. Gleason scores were stratified as low (2–6), intermediate (7) or high (8–10). Incidence was compared between 2008 and 2013, by determining incidence rate ratio (IRR) and annual percentage change (APC). The confidence interval was set at 95%, with p<0.05 as significant. Tabulation of SEER data and statistical analysis was performed using Microsoft Excel© 2010.

Results: A total of 337,504 patients diagnosed with prostate cancer between 2008 and 2013 were included in the analysis. The mean age range was 65–74 years. Majority (68.1%) patients were Caucasian, followed by 14.6% African Americans. Low Gleason score was recorded for 41.8%, followed by intermediate (36.2%), and high in 15.9% of patients. Cumulative incidence of low Gleason score over the 6 year period was noted to be highest for African American (AA) followed by Caucasian (W) at 76.2 and 52.9 per 100,000, respectively. High Gleason score was reported at 37.5 and 21.0 per 100,000 for AA and W, respectively. The IRR demonstrated significant decline in incidence across races and Gleason scores. APC significantly declined among all races for low Gleason score (−8.56 AA and −8.87 W) and intermediate Gleason score (−6.54 AA and −8.56 W). Additionally APC significantly declined for AA and Hispanic (H) patients for high Gleason score, -3.51 and -4.39, respectively. APC of incidence for high Gleason score showed no statistically significant increase or decline for Caucasians and Asian/Pacific islander (API).

Conclusion: The SEER analysis demonstrates decline in incidence of prostate cancer among all races. Notably, there was a decline noted for AA and H in high Gleason score prostate cancer rate and no change for W and API, suggesting the USPSTF recommendations have been limited in their effect on the diagnosis of aggressive prostate cancer.
Poster #99

DECIPHER CORRELATION PATTERNS ON BIOPSY: INITIAL EXPERIENCE FROM 738 PROSPECTIVE PATIENTS

Ashley Ross, MD, PhD¹; Stacy Loeb²; Maria Santiago-Jiménez³; Zaid Haddad³; Lucia L. C. Lam³; Kasra Yousefi³; Elai Davicioni³; Eric A. Klein⁴; Robert B. Den⁵ and Daniel E. Spratt⁶

¹James Buchanan Brady Urological Institute, Johns Hopkins Hospital, Baltimore, MD, USA; ²Department of Urology and Population Health, New York University and Manhattan Veterans Affairs Medical Center, NY, USA; ³GenomeDx Biosciences Inc. Vancouver, BC, Canada; ⁴Glickman Urological and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA; ⁵Department of Radiation Oncology, Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia, PA, USA; ⁶Department of Radiation Oncology, Michigan Center for Translational Pathology, Comprehensive Cancer Center, University of Michigan, Ann Arbor, MI, USA

(Presented By: Ashley Ross, MD, PhD)

Introduction: The 22-marker test (Decipher) developed for post-prostatectomy patients, has recently been evaluated on biopsy specimens to predict metastasis. Here, we examined the relationship between the Decipher scores and clinicopathologic characteristics.

Methods: De-identified Decipher test results (including Decipher risk scores and clinical data) from 738 consecutive biopsy specimens tested between February and May 2016 were analyzed. Decipher scores were calculated based on a previously locked model. Spearman’s rank correlation and Fisher’s exact were used to test the association between biopsy Decipher and clinical variables and risk models.

Results: Overall, 40.5%, 32%, 14%, 8.5% and 5% of patients were categorized as biopsy grade group (GG) 1, 2, 3, 4 and 5, respectively. Sixty-eight percent of patients had <50% positive cores; 78% had cT1c. Among patients with known NCCN risk group, 26%, 52% and 22% were categorized as NCCN low, intermediate and high risk. Biopsy Decipher classified 37%, 25%, and 38% of patients as low, intermediate and high-risk. Decipher had a moderate correlation of 0.41 (95% confidence interval [CI] 0.35-0.47) and 0.39 (95% CI 0.31-0.46) with GG and NCCN risk, respectively. Among patients with GG1 and GG5, 21% and 82% of patients were classified as high-risk by Decipher, respectively (p<0.001). Among NCCN intermediate risk patients, Decipher showed a significant risk differential between favorable and unfavorable sub-groups with 43% and 26% as Decipher low-risk (Figure, p=0.001).

Conclusion: In the first prospective analysis of biopsy Decipher in over 700 patients, Decipher showed moderate correlation with clinical variables but led to differences in the classification of disease aggressiveness determined by clinical variables alone. Additional studies are required to evaluate the utility of biopsy Decipher as an aid in treatment decisions.
INTRODUCTION: A decline in incidence of prostate cancer was reported after USPSTF recommendations in 2008 and 2012. It is unknown if this decline is uniformly present among various education and socioeconomic levels within the US population.

METHODS: Age–adjusted prostate cancer incidence from Surveillance, Epidemiology, and End Results 18 Registry (SEER) database were studied between 2008 and 2013. US counties (3142) were stratified by education (percentage county population ≥ 25 years with ≥ high school degree or equivalent), poverty (percentage county population living above the ≥ 200% federal poverty line), and urbanization (percentage county population living in an urban area) categories to set national quintile cut points. SEER 18 registries county incidence data were matched to corresponding national education, poverty, and urbanization quintiles. Incidence rates were compared using incidence rate ratio (IRR) and absolute disparity (AD; defined by the highest and lowest quintile range difference), and percentage change in absolute disparity (PCAD). Analysis was performed to 95% confidence intervals (CI) using the Tiwari method.

RESULTS: Counties with highest education, economic, and urbanization levels had the highest incidence, 112.7, 108.7, and 108.1 per 100,000 respectively. Counties with the lowest education, economic, and urbanization levels had the lowest incidence, 97.9, 104.0, 97.2 per 100,000 respectively. The AD demonstrated an absolute convergence in incidence rate between highest and lowest quintiles. PCAD declined -39.2%, -34.3%, -46.2%, for education, economic, and urbanization categories respectively. IRR declined equally across all quintiles within each category ranging from 0.69 – 0.71. The tight overlap of IRR CIs among quintiles indicated a homogenous decline across counties and not weighted to any specific county educational, poverty, or urbanization level.

CONCLUSION: Incidence rate is positively correlated with higher county education, wealth, and urbanization levels. After USPSTF recommendations, relative disparity remained unchanged. Statistically equivalent IRRs support that prostate cancer incidence declined uniformly among counties with varying education, poverty, and urbanization levels.
DIRECT PHARMACOKINETIC AND PHARMACODYNAMIC COMPARISON OF SUBCUTANEOUS VERSUS INTRAMUSCULAR LEUPRORELIN ACETATE FORMULATIONS IN MALE SUBJECTS

Daniel Saltzstein, MD¹; Jack McLane, MD²; Stuart Atkinson, MB, ChB, Medicine³ and Clifton Vestal, MD⁴

¹Urology San Antonio, San Antonio, TX; ²TOLMAR, Inc., Fort Collins, CO; ³TOLMAR Pharmaceuticals, Inc., Lincolnshire, IL; ⁴Urology Associates of North Texas, Arlington, TX

(Presented By: Daniel Robin Saltzstein, MD)

Introduction: Leuprolide acetate (LA) is the standard-of-care LHRH agonist used to suppress serum testosterone (T) in the treatment of advanced prostate cancer. There are currently two LA formulations available: a controlled-release implant injected subcutaneously (SC) or a microsphere intra-muscular (IM) injection. The study compared the pharmacokinetics/pharmacodynamics of both formulations at the same dose.

Methods: Thirty-two healthy men were randomized to receive a single 7.5 mg injection of SC-LA (n=16) or IM-LA (n=16) in this phase 1, open-label, parallel-group study. Serum LA, T, and luteinizing hormone (LH) were assessed.

Results: The initial surge of LA was higher for IM-LA than SC-LA (Cmax 27±4.9 vs. 19±8.0 ng/mL, respectively), with a shorter tmax (1.0±0.4 vs. 2.1±0.8 hrs). The duration of quantifiable serum LA detection ranged from 14-35 days in IM-LA subjects compared with 42-56 days in SC-LA subjects. SC-LA demonstrated a longer duration of LH suppression, with median levels remaining below 1.0 IU/L through Day 56 compared to IM-LA where LH started to rise by Day 35. Consequently, serum T began to increase by Day 42 in the IM-LA group. By Day 56, 13 SC-LA subjects maintained serum T levels ≤50 ng/dL vs. 0 in the IM-LA group. Both SC-LA and IM-LA were well tolerated, however SC-LA subjects experienced more mild injection site disorders compared to IM-LA.

Conclusion: Both formulations offered consistent drug delivery over the 1-month dosing period. SC-LA demonstrated a longer duration of action compared to IM-LA, despite the same dosing of active drug. As a result, subjects treated with SC-LA experienced a longer period of suppression of serum LH and T, up to 56 days post-injection.

Funding: Study funded by Mayne Pharma Pty Ltd, Australia. Abstract preparation funded by TOLMAR, Inc.
Poster #102
THE EFFECT OF PROSTATE CANCER TREATMENT ON PATIENT REPORTED URINARY AND SEXUAL FUNCTION VARIES BY DISEASE SEVERITY: 3-YEAR RESULTS FROM THE CEASAR STUDY
Mark Tyson MD, JoAnn Rudd-Alvarez MA, Tatsuki Koyama PhD, Matthew Resnick MD, MPH, David Penson MD, MPH and Dan Barocas MD, MPH
Vanderbilt University
(Presented By: Mark D. Tyson, MD)

Introduction: Disease severity may modulate the effects of prostate cancer treatment on patient-reported functional outcomes. However, very little is known about how the effects of treatment on function vary by disease severity.

Methods: The Comparative Effectiveness Analysis of Surgery and Radiation (CEASAR) study is a prospective, population-based, observational study which enrolled men with localized prostate cancer in 2011 and 2012. Patient-reported function was measured using the 26-item Expanded Prostate Index Composite (EPIC) at baseline, 6, 12, and 36 months after treatment. To identify differences in the effect of treatment on EPIC domain scores by disease risk, we fit a set of longitudinal models with interactions between disease risk and treatment type (radical prostatectomy [RP] or external beam radiotherapy [EBRT]) with adjustments for the following factors: time since treatment, pre-treatment function, age, race, comorbidity, educational attainment, insurance type, employment, marital status, physical function score, social support, depression score, participatory decision-making score, and study site.

Results: Among the 2544 participants, 1144 (45%) had low-risk, 983 (39%) had intermediate-risk, and 417 (16%) had high-risk disease. Among low-risk patients, RP causes more severe decreases in sexual function compared to EBRT at 3 years (mean difference in EPIC score: -14.3 [95% CI: -18.56, -10.53]); however, among high-risk patients, this difference becomes both clinically and statistically insignificant (-4.46 [-9.79, 0.88]). With respect to incontinence, RP leads to even greater declines in function among high-risk patients compared to EBRT at 3 years (difference in treatment effects among low risk: -14.60 [-18.00, -11.19] and high risk: -19.25 [-23.87, -14.62]). No clinically significant interactions between treatment and risk were detected among the bowel, hormone, or urinary irritative domains.

Conclusion: These data suggest that the effect of treatment on urinary incontinence and sexual function vary by disease risk. Namely, high-risk patients report similar sexual function at 3 years regardless of treatment type but more drastic declines in urinary incontinence after surgery.
Introduction: Safety-net hospitals care for more patients of lower socioeconomic status (SES) than non-safety-net hospitals and may be disproportionately punished under Medicare readmission risk adjustment models that do not incorporate SES. Adequate risk adjustment is essential to ensure that reimbursement aligns with performance and is not influenced by patient selection. Our objective was to develop a readmission risk adjustment framework that incorporates socioeconomic status and assess impact of socioeconomic status on safety-net hospital readmission rate rankings.

Methods: California Office of Statewide Health Planning and Development data from 2007-2011 were used to identify all patients undergoing radical cystectomy for bladder cancer (n = 3,771), partial nephrectomy (n = 5,556) and radical nephrectomy (n = 13,136) for kidney cancer. Unadjusted hospital rankings and predicted rankings under a base model, which simulated the Medicare Hospital Readmissions Reduction Program model, were compared with predicted rankings under models incorporating SES and hospital factors. SES was derived from a multifactorial neighborhood score at the ZIP code level calculated from US Census data. Hospital data were obtained from Medicare. The main outcome measures were hospital rankings based on thirty-day all-cause readmission rate and differences between model predicted rankings.

Results: The thirty-day readmission rate was 26.1% for radical cystectomy, 8.3% for radical nephrectomy, and 9.5% for partial nephrectomy. For all procedures, the addition of SES, geographic, and hospital factors changed the overall hospital rankings significantly compared with the base model (p < 0.01), with the exception of SES in radical cystectomy (p = 0.07) and SES and rural factors in partial nephrectomy (p = 0.12). For radical nephrectomy and partial nephrectomy, the addition of SES and hospital factors significantly improved the mean ranking of safety-net hospitals and improved the ratio of observed relative to expected rankings (p < 0.01). For radical cystectomy there was no significant change in rankings with the addition of SES, rural status, or hospital factors.

Conclusion: Adding SES to existing Medicare readmission risk adjustment models leads to significant changes in hospital rankings, with a differential impact on safety-net hospitals.

Funding: Urology Care Foundation Research Scholars Program, Society of Urologic Oncology Research Scholars Fund.
Poster #104
RECLASSIFICATION RATES OF PATIENTS ON ACTIVE SURVEILLANCE AFTER THE ADDITION OF MRI-US FUSION BIOPSY OF THE PROSTATE: AN ANALYSIS OF THE SEVEN MOST USED CRITERIA ON A PROSPECTIVE COHORT OF MEN
Bruno, Nahar MD¹; Andrew Katims¹; Nachiketh Soodana Prakash, MD¹; Vivek Venkatramani, MD¹; Tulay Koru-Sengul, PhD²; Bruce Kava, MD¹; Ramgopal Satyanarayana, MD¹; Murugesan Manoharan, MD¹; Mark Gonzalgo, MD¹; Chad Ritch, MD¹; Dipen Parekh, MD¹ and Sanoj Punnen, MD¹
¹Department of Urology - University of Miami, FL; ²Department of Public Health Sciences, University of Miami, FL
(Presented By: Bruno Nahar, MD)

Introduction: Published selection criteria for active surveillance (AS) have been based on systematic transrectal ultrasound(TRUS) guided biopsy of the prostate. We evaluated the impact of adding MRI-US fusion biopsy to standard 12-core biopsy in selecting men for active surveillance.

Methods: Among men who underwent an MRI-US fusion biopsy for evaluation of prostate cancer we selected men who were eligible for at least one AS criteria based on the standard 12-core biopsy alone. We assessed each man’s eligibility for seven different AS criteria with and without the inclusion of fusion biopsy cores. The primary endpoint of this study was the proportion of men who were initially eligible for AS but became ineligible after addition of the fusion biopsy cores.

Results: 100 men were eligible for at least one AS criteria based on their 12 core standard biopsy. After addition of fusion biopsy cores, the proportion of men who became ineligible for AS varied depending on the criteria, ranging from 10.3% using the Royal Marsden criteria to 40.7% using the University of Miami criteria. Criteria that incorporated an absolute maximum number of cores positive (usually 2) had the highest rates of ineligibility after adding the fusion cores. Combining the cores from each target into one, or taking the single core with the highest grade or volume of tumor did not appear to reduce the proportion of men who became ineligible.

Conclusion: The addition of MRI-US fusion biopsy to standard 12-core biopsy significantly increased the number of men who became ineligible for AS using currently available selection criteria. AS criteria need to be updated to reflect in the in the increasing utilization of MRI-US fusion biopsy.
A NOVEL METHOD FOR HARVESTING AND CULTURE OF EX VIVO HUMAN PROSTATE TISSUE
Kymora Scotland, MD, PhD; Matthew Schiewer, PhD; Ayesha Shafi, PhD; Renee de Leeuw, PhD; Peter McCue, MD; Costas Lallas, MD; Edouard Trabulsi, MD; Karen Knudsen, PhD and Leonard Gomella, MD
Thomas Jefferson University, Philadelphia, PA
(Presented By: Kymora B. Scotland, MD, PhD)

Introduction: Current understanding of prostate tumorigenesis and recurrence may benefit from characterizing the expression patterns of genes associated with these activities. A major barrier in this field is the difficulty in deriving enduring prostate cancer cell lines. Additionally, many of the common cell lines that do exist do not always faithfully mimic human prostate tumor behavior. Given these limits of cell culture and the importance of the tumor microenvironment (TME) in cancer initiation and proliferation, three-dimensional culture models may be a more physiologically relevant alternative. In this prostate explant model, tumor tissue is cultured directly to maintain the integrity of the TME and the complex signaling networks involved in cancer propagation.

Methods: We have developed a system of ex vivo prostate tissue culture. Patient derived explants (PDex) are collected immediately after radical prostatectomy. They are prepared using whole mount 3-5 mm sliced sections under a sterile hood. Prostate biopsy maps and visual examination are used to identify regions of prostate cancer, with high volume cancer sections typically used for the tissue culture and confirmed by histology of the PDex. The explants are treated with the protein or drug of interest after which RNA and protein-level studies are performed. Experiments were then undertaken to investigate the expression of the androgen receptor, a master transcriptional regulator of both normal prostate and tumor.

Results: PDex cultures preserve tumor morphology and the integrity of the TME. They maintain viability on culturing for up to six days and Ki-67 assays demonstrate continued proliferation ex vivo. Evaluation of a cohort of over 100 patient samples reveal the expression of signaling pathway members and responses to clinical treatments that correlate with previously established responses of prostate tumor.

Conclusion: The PDex culture system is formulated to represent the architecture of prostate tumors as well as the intracellular and extracellular interactions of cancer cells with the TME in a manner that is more faithful to that of the in vivo state as compared to other methods of cell and tissue culture. Identifying the expression of genes that play a role in prostate cancer development may suggest the use of specific therapeutics or adjustments to current treatment regimens for individual cancer patients.
THE 4KSCORE TEST ACCURATELY PREDICTS AGGRESSIVE PROSTATE CANCER IN MEN OF ALL AGES AND RACE.
Bruno Nahar, MD¹; Daniel Sjoberg²; Stephen Zappala, MD³; Vivek Venkatramani, MD¹; Dipen Parekh, MD¹ and Sanoj Punnen, MD¹
¹Department of Urology - University of Miami, FL; ²Memorial Sloan Kettering Cancer Center, NY; ³Andover Urology, MA
(Presented By: Bruno Nahar, MD)

Introducción: A recent study confirmed the 4Kscore accurately predict aggressive prostate cancer. We assessed whether the performance of the 4Kscore Test differed by age or race.

Methods: 1312 men referred for prostate biopsy made up the cohort for these analyses. Differential calibration by age was assessed using logistic regression with an interaction between age and the 4Kscore Test for the outcome of a Gleason 3+4 cancer. We further categorized patients by age into subgroups of less than 55, 56-69, and 70 or older. The AUC for the 4Kscore Test was calculated in each age subgroup and confidence intervals for the difference in AUCs between groups were estimated.

Similar analyses were performed to assess differential calibration and discrimination of the 4Kscore Test in African Americans versus the rest of the cohort. Finally, Decision curve analysis was used to assess the clinical utility of the 4Kscore Test for predicting aggressive prostate cancer within these sub groups of age and race.

Results: Among the cohort, 291 (22%) men were found to have high-grade cancer on prostate biopsy. There was no evidence to suggest a difference in discrimination of high-grade prostate cancer by either age or race, with the difference in confidence intervals surrounding the AUC's overlapping zero. We found evidence of a difference in calibration by age when age was modeled as a continuous score (p=0.045). However, on sensitivity analysis looking at age categorized, we found no evidence of differential miscalibration (p=0.15).

We found evidence of a difference in calibration by race (p=0.02), with scores slightly under predicting Gleason 7 cancer among African American men. Decision curve analysis found a higher net benefit for using the 4Kscore Test to decide on the need for biopsy all of age and race subgroups.

Conclusion: We found no evidence of differential discrimination of Gleason 7 prostate cancer by age or race. There is some evidence to suggest miscalibration by age and race but this requires further assessment. Decision curve analysis suggests there is a clinical benefit to using the 4Kscore Test to decide on the need for a prostate biopsy in men of all ages and race.

Figure 3: Decision curve analysis of the 4Kscore among men a) <55 years, b) 55-69, and c) 70- years. Dashed black line shows net benefit for a biopsy all strategy, dashed grey line is for the biopsy none strategy, and the solid black line shows the net benefit when utilizing the 4Kscore. The strategy with the highest net benefit has the greatest clinical utility.
Poster #107
EXTENSION OF BASELINE PROSTATE ATROPHY IS ASSOCIATED WITH LOWER INCIDENCE OF PROSTATE CANCER ON REPEAT BIOPSY
Daniel Moreira, MD, MHS¹; Gerald Andriole, MD²; Ramiro Castro-Santamaria, MD³ and Stephen Freedland, MD⁴
¹University of Illinois at Chicago; ²Washington University at Saint Louis, MO; ³GSK, King of Prussia, PA; ⁴Cedars-Sinai, Los Angeles, CA
(Presented By: Daniel M. Moreira, MD, MHS)

Introduction: We previously showed presence and severity of prostate atrophy (PA) was independently associated with subsequent lower prostate cancer (PCa) incidence. However, the extension of PA varies among patients. Some have focal PA, where only a percentage of the biopsy is atrophic, while others have diffuse prostatic involvement. To date, there are no studies evaluating the association of PA extension with PCa risk. Therefore, we sought to evaluate whether extension of baseline PA was associated with the incidence of PCa at the 2-year repeat study mandated prostate biopsy in a clinical trial with systematic biopsies.

Methods: Retrospective analysis of 5504 men 50-75 years-old with prostate-specific antigen (PSA) between 2.5-10ng/mL and a prior negative biopsy in the Reduction by Dutasteride of PCa Events (REDUCE) trial who underwent 2-year biopsy and had complete data. PA extension (defined as the percentage of cores with atrophy) and PCa (defined as present or absent) were assessed by central pathology review. The association of baseline atrophy with positive 2-year repeat biopsies was evaluated with logistic regression in uni- and multivariable analysis, controlling for baseline covariates: age, race, family history (FH) of PCa, body-mass index (BMI), digital rectal exam (DRE), prostate volume (PV), PSA, acute and chronic inflammations and treatment arm (dutasteride or placebo).

Results: PA extension was classified as absent, or involving 1-25%, 26-50%, 51-75% and >75% of the baseline cores in 1674 (30.4%), 2076 (37.7%), 1191 (21.6%), 338 (6.2%), 225 (4.1%) cases, respectively. More extensive PA was associated with older age, lower PSA, higher PV and higher prevalence of acute and chronic inflammations (all P<0.01). The extension of PA was unrelated to race, BMI of PCa, DRE and treatment arm. In univariable analysis, PA extension was associated with lower risk of PCa at the 2-year biopsy (P<0.001). Compared to patients without PA, those with 1-25%, 26-50%, 51-75% and >75% core involvement had an odds-ratio for PCa of 0.65 (95%CI=0.55-0.78), 0.59 (95%CI=0.48-0.73), 0.52 (95%CI=0.36-0.75) and 0.46 (95%CI=0.29-0.72), respectively. In multivariable analysis, the extension of PA was independently associated with lower PCa risk (P<0.001).

Conclusion: In a cohort of men undergoing repeat prostate biopsy 2 years after a negative baseline biopsy, the extension of baseline PA was independently associated with lower PCa risk in a dose dependent fashion.
Poster #108
4D PROSTATE BRACHYTHERAPY: LONG TERM RESULTS OF A REAL-TIME BRACHYTHERAPY TECHNIQUE FOR PROSTATE CANCER
Ricardo Oliveira Soares, MD; Jennifer Uribe, MD; Santiago Uribe-Lewis, PhD; Julian Money-Kyrle, MD; Sara Khaksar, MD; Robert Laing, MD and Stephen Langley, MD
Guildford, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)

Introduction: 4D Brachytherapy is a novel low dose rate (LDR) brachytherapy approach for prostate cancer (PCa) that uses stranded and loose seeds performed as a one stage real-time implant. Here we have assessed long-term treatment outcomes of 4D Brachytherapy and compare with the conventional two-stage (2S) method.

Methods: Analysis of 3315 men who underwent LDR brachytherapy in a single institution using prospectively collected data. Patients were included for analysis if they had more than three years post-implant follow up and a minimum of 4 PSA measurements (including an initial PSA), 1917 cases were evaluated.

Results: We compared outcomes of 1063 men treated with 2S and 854 men with 4D Brachytherapy. Men with higher risk disease were treated with combination EBRT to 45Gy and or hormone therapy. There was no difference in proportion of patients treated by these modalities between the groups. Median follow-up times were 10.3 and 4.8 years (p<0.001) for 2S and 4D cases respectively. Improved post-implant dosimetry was seen in 4D patients with reduced variance compared to 2S cases (p<0.009). Clinical and biochemical control were significantly improved with 4D Brachytherapy vs 2S in low (100% vs. 92%, p<0.001), intermediate (96% vs. 84%, p<0.001), and high risk (93 vs 82%, p<0.02). To control for follow-up length time bias between techniques, a PSA cut-off of 0.4ng/ml at 48 months was used as a surrogate marker for failure. This again showed significantly more patients failed treatment with 2S relative to 4D Brachytherapy (73% vs 80%, p<0.01). Approximately 50% of patients whose PSA was ≥0.4ng/ml at 4 years ultimately developed biochemical failure for both groups. 4D Brachytherapy patients showed significantly better IPSS (p<0.01) and urinary quality of life (p<0.001) than 2S patients, while there was similar potency (IIEF score) in the 2 groups (p=0.4).

Conclusion: Compared to the conventional 2S technique, 4D Brachytherapy was associated with improved biochemical control and with reduced treatment related toxicity.
HEMI-ABLATIVE PROSTATE BRACHYTHERAPY (HAPPY) TRIAL: DOSIMETRY EVALUATION AND INITIAL TRIFECTA OUTCOMES
Ricardo Oliveira Soares, MD; Robert Laing, MD; Adrian Franklin, MD; Jennifer Uribe, MD; Alex Horton, MD; Santiago Uribe-Lewis, MD and Stephen Langley, MD
Guildford, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)

Introduction: Advances in magnetic resonance imaging (MRI) and prostate sampling enable early identification of men with low to intermediate risk prostate cancer who are candidates for focal therapies that minimize side effects. We report dosimetry data from a pilot study evaluating the effectiveness of hemi-gland low dose rate (HG-LDR) brachytherapy as a focal therapy approach to treat unilateral localized disease.

Methods: Twenty-two men underwent HG-LDR brachytherapy. Multi parametric MRI and transperineal template mapping biopsies were used to identify low volume unilateral disease. Whole gland therapy controls (n=400) were obtained from a prospective database of our patients. All implants were performed with 4D Brachytherapy. We analyzed oncological and functional results up to 18 months after treatment.

Results: Intraoperative and post-implant dosimetry complied with established brachytherapy parameters. Mean (standard deviation) postoperative D90 for the target hemi-gland was 153.8 (11.3) Gy compared to 47.5 (12.7) Gy for the contralateral hemi-gland (p<0.001). Mean postoperative V100% was 93.1 (3.9) and 24.6 (10.5) for the target and contralateral hemi-glands respectively (p<0.001). Comparing with the matched whole-gland treatment controls, HG-LDR showed reduced Urethra D30 (150.4 vs. 175.6, p<0.001) and rectal D2cc (75.5 vs. 94.9, p<0.001). At 12 months HG-LDR showed improved IPSS (p<0.05) and IIEF-5 scores (p<0.05) compared to whole-gland treatment. At 18 months there was no significant difference in PSA level between HG-LDR and controls (p=0.65).

Conclusion: HG-LDR focal brachytherapy is feasible with significant reduction in dose to the contralateral hemi-gland and organs at risk.

A MOLECULAR SUBGROUP OF PRIMARY PROSTATE CANCER WITH METASTATIC BIOLOGY AT PRESENTATION
Ricardo Oliveira Soares, MD¹; Hardev Pandha, MD, PhD³; Steven Walker⁴; Izhar Bhagwan, MD¹ and Christopher Eden, MD¹
¹Guildford, UK; ³Craigavon, UK
(Presented By: Ricardo M. De Oliveira Soares, MD, FEBU)

Introduction: Approximately 20% of patients with early, organ confined, prostate cancer will develop disease recurrence following radical prostatectomy. Our hypothesis was that a distinct molecular subgroup of prostate cancer with metastatic potential may be present at the time of presentation which may predispose to disease recurrence.

Methods: Using unsupervised hierarchical clustering of a discovery gene expression dataset we identified a novel molecular subgroup of primary prostate cancers with a transcriptional profile similar to metastatic disease. We developed an assay to prospectively classify patients within the subgroup. The assay was found to be prognostic in three independent prostatectomy datasets.

Results: 322 patients who had undergone radical prostatectomy were identified across 4 clinical sites. The assay was applied to formalin fixed, paraffin embedded samples and identified patients who developed biochemical recurrence (univariate HR 1.74 (1.18-2.56) and multivariable HR 1.65 (1.16-2.34) and metastatic progression (univariate HR 3.60 (1.81-7.13) and multivariable HR 3.50 (1.95-6.27)). The metastatic biology subgroup demonstrated over-expression of the tumor promoting transcription factor FOXM1 and its molecular targets as well as loss of expression of genes involved in preventing metastases.

Conclusion: These findings suggest that there is a distinct molecular subgroup of primary prostate cancers with metastatic potential at presentation which may inform therapeutic strategies to prevent disease recurrence in these patients.
Poster #111
IMPACT OF PRIMARY CARE PHYSICIAN EXPERIENCE ON ADHERENCE TO UNITED STATES PREVENTATIVE SERVICES TASK FORCE RECOMMENDATION AGAINST PSA SCREENING
Ryan Hutchinson, MD; Solomon Woldu, MD; Nirmish Singla, MD; Abdulhadi Akhtar, MD; Justin Haridas; Deepa Bhat, MS; Claus Roehrborn, MD; and Yair Lotan, MD
UT Southwestern Medical Center
(Presented by: Solomon Woldu)

Introduction: We examined the association of primary care physician (PCP) length of practice and prostate specific antigen (PSA) screening before and after the United States Preventative Services Task Force (USPSTF) recommendation against PSA screening in 2012.

Methods: 228,731 unique male non-oncology care patients at our institution were reviewed from 2010-2015 to identify rate of PSA orders / total male ambulatory care patients, before (2010-2011) and after (2013-2015) the USPSTF recommendation. Additionally, we identified PCPs who ordered >4 tests/year, did not have a practice break >6 months, and who were employed at our institution for the entire period to determine impact of time since residency completion on PSA ordering. These PCPs were divided into junior vs. senior physicians based on the median time (16 years) since completing residency. Changes on a per-provider basis were assessed as a scatterplot, linear regression, and ANOVA. PCPs were surveyed on their attitudes towards the USPSTF recommendation and responses compared to physician seniority and actual PSA ordering habits.

Results: Before and after the USPSTF recommendations, the PSA order rate / male ambulatory volume was 7.3% and 6.8%, respectively (p<0.001). From an initial cohort of 88 PCPs, 22 PCPs met inclusion criteria for subgroup analysis. There was a significant inverse relationship (Figure) between years since completion of residency and change in the overall proportion of patients who underwent PSA screening, with senior PCPs noted to have a larger relative decline in screening rates after the USPSTF recommendation (R²=0.308, p=0.007). 18 PCPs completed a survey on the USPSTF and PSA use which revealed no correlation between stated attitudes toward PSA screening and observed practice, however senior PCPs were more likely to claim greater current PSA screening (p=0.037).

Conclusion: We noted a small decrease in overall PSA screening after the USPSTF recommendation (-0.5%). Surprisingly, senior PCPs were more likely to decrease PSA screening following the recommendations. Furthermore, PCPs' stated opinion on PSA screening did not appear to have a strong influence on actual observed practice.
Poster #112
IMPACT OF INTERVAL BETWEEN BIOPSY AND RADICAL PROSTATECTOMY ON COMPLICATIONS, FUNCTIONAL, AND ONCOLOGIC OUTCOMES
Mary E. Westerman, MD; Vidit Sharma, MD; Stephen A. Boorjian, MD; Igor Frank, MD; Matthew T. Gettman, MD; R. Houston Thompson, MD; Matthew K. Tollefson, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, Minnesota
(Presented By: Mary E Westerman, MD)

Introduction: The optimal duration between prostate biopsy and radical prostatectomy (RP) is unknown. Herein, we assess the impact of time from biopsy to surgery on complications, function and oncologic outcomes following RP.

Methods: 13,265 men who underwent RP at our institution between 1992 and 2012 had a prostate biopsy within one year of surgery. Men were divided into four groups based on the interval between biopsy and surgery: 1) ≤3 weeks (n=2511), 2) 4-6 weeks (n=2493), 3) 7-12 weeks (n=5273), 4) >12 weeks (n=2998) to assess for complications. Oncologic outcomes were compared between those waiting ≤3 weeks (n=2511) versus ≥6 months (n=443), stratified by NCCN risk category. Logistic regression was performed to assess the impact of time on postoperative complications, functional and oncologic outcomes.

Results: Mean time from biopsy to surgery was 63 days (±51 days) and the overall complication rate for the cohort was 19.8% with a 1.0% intraoperative complication rate. Men undergoing RP within 3 weeks of biopsy were older (63.4 vs 61.7; p<0.001), with higher pre-operative PSA (9.1 vs 7.6; p<0.001) and clinically higher risk disease (3.2% vs 1.9% with ≥2 NCCN high risk criteria; p<0.001) compared to those who waited more than 12 weeks until surgery. On multivariate analysis, waiting at least 7 weeks was associated with a lower likelihood of complications (OR: 0.8, p<0.001) and higher likelihood of a nerve sparing procedure (OR: 1.6, p<0.001). Men waiting 12 weeks were least likely to have a positive margin (OR: 0.6, p<0.001). There was no significant difference in functional outcomes at 1 year. Finally, there was no clinically significant difference in oncologic outcomes among men undergoing early (≤3 weeks) compared to delayed (≥6 months) RP.

Conclusion: Waiting at least 7 weeks from biopsy to RP is associated with a lower overall complication rate, with the lowest positive margin rates occurring at more than 12 weeks after biopsy. There appears to be no oncologic harm in waiting 6-12 months between biopsy and RP, even among intermediate and high risk men.

Table 1: Logistic Regression analysis assessing impact of time from biopsy on peri-operative complications

<table>
<thead>
<tr>
<th></th>
<th>1-3 weeks</th>
<th>4-6 weeks</th>
<th>7-12 weeks</th>
<th>&gt;12 weeks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Margin</td>
<td>ref</td>
<td>0.9 (0.8-1.1)</td>
<td>0.1</td>
<td>0.1 (0.7-0.9)</td>
</tr>
<tr>
<td>Nerve sparing (any)</td>
<td>&lt;0.001</td>
<td>1.1 (1.0-1.3)</td>
<td>0.1</td>
<td>1.6 (1.4-1.8)</td>
</tr>
<tr>
<td>Overall Transfusion</td>
<td>&lt;0.001</td>
<td>1.3 (1.0-1.5)</td>
<td>0.03</td>
<td>2.1 (2.0-3.1)</td>
</tr>
<tr>
<td>Overall Complication</td>
<td>&lt;0.001</td>
<td>1.1 (0.9-1.2)</td>
<td>0.4</td>
<td>0.8 (0.7-1.0)</td>
</tr>
<tr>
<td>Introoperative Complication</td>
<td>0.8</td>
<td>1.1 (0.6-2.0)</td>
<td>0.1</td>
<td>1.0 (0.4-1.9)</td>
</tr>
<tr>
<td>Early complication</td>
<td>0.05</td>
<td>1.0 (0.8-1.2)</td>
<td>1.6</td>
<td>0.8 (0.7-1.0)</td>
</tr>
<tr>
<td>Continence at 1 year</td>
<td>0.08</td>
<td>1.0 (0.8-1.2)</td>
<td>1.0</td>
<td>0.8 (0.7-1.0)</td>
</tr>
</tbody>
</table>

Adjusted for BMI, NCCN risk category, open vs. robotic approach, biopsy Gleason score, clinical stage, PSA, year of surgery, prostate volume, number of prior biopsies.
Poster #113
ADAPTING STRATEGIES FOR PREVENTION OF INFECTION FOLLOWING TRANSRECTAL PROSTATE BIOPSY AND FIDUCIAL MARKER PLACEMENT
Solomon Woldu, MD; Ryan Hutchinson, MD; Nirmish Singla, MD; Brad Hornberger, PA; Claus Roehrborn, MD and Yair Lotan, MD
UT Southwestern Medical Center
(Presented by: Solomon Woldu)

Introduction: We evaluated our incidence of infectious complications after transrectal prostate procedures (TRPX) and analyzed the effect of augmenting our antibiotic prophylaxis strategy over time.

Methods: Since 2010, we prospectively monitored for infections following transrectal ultrasound guided prostate biopsy and fiducial marker placement. Two changes in peri-TRPX prophylaxis were employed since we began monitoring. In 2011 we added a single dose of intramuscular (IM) aminoglycoside to our standard antibiotic prophylaxis regimen of 3 days of either oral fluoroquinolone (FQ) or trimethoprim-sulfamethoxazole. In 2015 we began to perform formalin needle tip disinfection before each biopsy and screen all high-risk patients for antibiotic resistance using a rectal swab culture in order to provide targeted prophylaxis. We report our rates of infection-related hospitalization over this time period and antibiotic resistance patterns.

Results: 2398 transrectal prostate biopsies and fiducial marker placements were performed from 2010 through the first half of 2016 resulting in 41 cases (1.71%) of infection-related hospitalization. After an initial 3.79% rate of infection-related hospitalization through 2010, we note a decline to a rate of 1.53% after the addition of IM aminoglycoside to the regimen (2011-2014). The addition of rectal swab culture screening in high-risk individuals (n=84) identified a 29.8% rate of FQ resistance and was associated with further decline in the rate of hospitalizations due to infection to 1.23%. Joinpoint regression analysis demonstrated inflection points in the regression trends that corresponded temporally with changes to our prophylaxis regimens.

Conclusion: While the initial addition of IM aminoglycoside appeared to be effective in decreasing post-procedure infections, further augmentation of our prophylaxis regimen through rectal swab screening of high-risk patients and formalin needle tip disinfection led to a greater decline in rates of infection-related hospitalizations.
Poster #114

IMAGE-BASED MONITORING OF TARGETED BIOPSY-PROVEN PROSTATE CANCER: ACTIVE SURVEILLANCE IN 502 MEN WITH MEDIAN 5 YEARS FOLLOW-UP

Thomas G. Clifford¹, Andre Luis de Castro Abreu¹, Inderbir S. Gill¹, Duke Bahn², Sunao Shoji¹, Arnaud Marien¹, Toshitaka Shin¹, Carlos E. Fay¹, Sameer Chopra¹, Nariman Ahmadi¹, Jie Cai¹ and Osamu Ukimura¹

¹Center for Active Surveillance, Focal Therapy & Image-guided Surgery, USC Institute of Urology, Catherine & Joseph Aresty Department of Urology, Keck School of Medicine, University of Southern California, Los Angeles, California, USA; ²Prostate Institute of America, Community Memorial Hospital, Ventura, CA

(Presented By: Thomas G. Clifford)

Introduction: We update outcomes of our active surveillance (AS) program in 502 men, with emphasis on image-based monitoring of targeted biopsy proven cancer and predictors of crossover to intervention (CI).

Methods: Since 1996, a total of 502 patients underwent AS for low (n=422, 84%) or intermediate (n=80, 16%) risk prostate cancer, with median follow-up of 5 years. The AS protocol included PSA (6 monthly), multi-parametric transrectal ultrasound (TRUS) annually, and surveillance biopsy (2–3 yearly, or as indicated). Each dominant hypo-echoic lesion (HEL), confirmed to be cancer on targeted biopsy, was closely monitored, with its dimensions recorded on TRUS annually. Clinical variables were compared between patients remaining on AS versus those crossing over to CI. Primary study end-point was to determine freedom from CI.

Results: Entry data of patients remaining on AS (n=355; 71%) versus those crossing over to CI (147; 29%) were similar: age (62 vs. 62yrs, p=0.9), PSA (4.6 vs. 5.2ng/ml, p=0.06), clinical stage T1c/T2a (318/31 vs. 125/28, p=0.5), biopsy Gleason grade [6/7(3+4)/7(4+3)] of index cancer (317/33/5 vs. 122/23/2, p=0.11), biopsy cancer core length of index cancer (1.3 vs. 2.0mm, p=0.2) and median dominant HEL dimension (11 vs. 12mm, p=0.16). On multivariable cox regression, predictors of crossover to CI included: PSA at entry >4ng/ml (p=0.048), PSA velocity>0.75ng/ml/year (p<0.0001), and any Gleason pattern 4 in biopsy (p=0.0005). Surveillance biopsy outcome predicted crossover to CI: increase in number of positive cores (p<0.001), Gleason upgrade (p=0.001) and cancer core length ≥4mm (p=0.001). Sequential TRUS monitoring data were as follows: median dominant HEL dimension in patients on AS versus those crossing over to CI were 11 vs. 13mm (p=0.02) at 1–2 years, 11 vs. 13mm (p=0.001) at 3–4 years, and 12 vs. 15mm (p=0.0002) at ≥4 years follow-up, respectively. Estimated probability of CI-free-survival was 78% at 5yrs and 48% at 10 years.

Conclusion: In a selected cohort of 502 men with low-to-intermediate risk prostate cancer with median 5 years follow-up, active surveillance with delayed intervention had encouraging outcomes. Image-based monitoring of targeted biopsy-proven cancer can facilitate ‘per-lesion’ based active surveillance strategy. Predictors of crossover to intervention (PSA kinetics, surveillance biopsy outcomes, sequential hypo-echoic lesion size) were identified.
THE HETEROGENEOUS GENOMIC LANDSCAPE OF LOW-RISK PROSTATE CANCER
Matthew Cooperberg¹, Nicholas Erho², June Chan¹, Felix Feng¹, Janet Cowan¹, Jeffry Simko¹, Christine Buerki², Imelda Tenggara¹, Elai Davicioni¹ and Peter Carroll¹
¹UCSF; ²GenomeDx
(Presented By: Matthew R. Cooperberg, MD, MPH)

Introduction: Active surveillance (AS) is becoming standard of care for men with low-risk prostate cancer; however a need exists for better tools to assess which men are optimal candidates for AS. In this study we compare genomic expression profiles of AS candidates against higher-risk radical prostatectomy (RP) patients to characterize the genomics of clinically low-risk prostate cancer.

Methods: Biopsies from 473 UCSF patients potentially suitable for AS (stage ≤cT2N0M0, PSA≤10 ng/ml, Gleason 3+3 or low-volume 3+4 ) were profiled using the Affymetrix Human Exon microarray to generate RNA expression data. These cases were compared to 2043 RP cases previously profiled on the same microarray platform. Scores for 21 published prognostic signatures were calculated and gene-set enrichment analysis pathway genes were summarized to provide levels of patient risk and pathway activity.

Results: Of the 473 AS biopsies profiled, 408 (86%) passed quality control and were used for analysis. Based on the average scores for 21 prognostic signature risk models, 923 (45%) were classified as low, 724 (35%) as intermediate, and 396 (20%) as high genomic risk (n = 396). Considering only the clinically low-risk patients at diagnosis, 356 (87%) were low, 45 (11%) were intermediate and 7 (2%) were high risk. The Figure shows a heat map of expression comparing the UCSF AS candidates to the higher-risk prostatectomy cases. Genomic risk was positively associated with cell cycle related pathway activity (E2F, G2M, MYC, DNA Repair, mTOR, mitotic spindle, p<0.001) and negatively associated with apical junction (p<0.001), epithelial-mesenchymal transition (p<0.001), and androgen receptor signaling (p<0.05) pathways. Clustering of patients based on the expression of 36 pathways revealed two biologic groups corresponding to putative basal and luminal subtypes. Compared to higher risk RP patients, the low risk prostate cancer tumors at diagnosis were enriched for basal-like subtypes (20% vs 33%, p<0.001).

Conclusion: Although only 2% of low risk AS candidates have high risk genomic characteristics, very substantial genomic heterogeneity exists in this population, and pathway activation overlaps significantly with higher-risk RP patients. It remains unclear what is the clinical significance of the basal-luminal axis in this population and how this information may be used. These results suggest that even in potential AS candidates, genomic profiling could eventually be used to better guide management.
Poster #116
EVALUATING THE IMPACT OF LOCAL THERAPY ON OVERALL SURVIVAL IN PATIENTS WITH METASTATIC PROSTATE CANCER – RESULTS FROM A NATIONAL POPULATION-BASED CANCER REGISTRY

Vivek Venkatramani, MD¹; Tulay Koru-Sengul, PhD²; Bruno Nahar, MD¹; Feng Miao, PhD²; Nachiketh Soodana Prakash, MS¹; Sanjaya Swain, MD³; Murugesan Manoharan, MD³; Chad Ritch, MD¹; Mark Gonzalgo, MD³; Dipen Parekh, MD³ and Sanoj Punnen, MD¹

¹Department of Urology, University of Miami Miller School of Medicine, Miami, Florida; ²Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, FL; ³Department of Urology, University of Miami Miller School of Medicine, Miami, FL

(Presented By: Vivek Venkatramani, MD)

Introduction: Recent studies have shown a possible survival advantage for men with metastatic prostate cancer (MPCa) who undergo local treatment of the primary tumor (either surgery or radiation) with androgen deprivation therapy (ADT) when compared to ADT alone. We hypothesize that this benefit will depend on the degree of metastatic burden. We assess this by looking at men with varying levels of metastatic disease, and comparing the overall survival between those who did and did not undergo local therapy in addition to ADT.

Methods: Patients with MPCa (cN+ or cM+) who received ADT were identified from the National Cancer Database (NCDB) (2004-2013). The NCDB captures more than 70% of cancer cases in the US. These patients were then divided into 2 groups, depending on whether or not they received local therapy to the prostate primary, and compared for overall survival. We used logistic regression to provide adjusted Hazard ratios (OR) and corresponding 95% confidence intervals (95%CI) regarding the impact of local therapy and type of local therapy on overall survival. We then performed a subgroup analysis to determine the impact of local therapy specifically among men with MON1, M1a, M1b and M1c disease, respectively.

Results: A total of 21,003 men with MPCa who received ADT were identified. Of these, 7,442 received local treatment and 13,561 did not. The median survival in men receiving ADT was 4.1 years (3.9-4.3) versus 2.4 years (2.4-2.5) in men who did not. Among these men, local therapy reduced the likelihood of mortality (HR 0.9; 95%CI:0.86-0.94). Surgery with radiotherapy had the most benefit (HR 0.35; 95%CI:0.26-0.28), followed by surgery alone (HR 0.56; 95%CI:0.45-0.68) and radiation alone (HR 0.92; 95%CI:0.88-0.96). When looking at this association by the degree of metastatic burden we found that local therapy had a benefit on overall survival among men with M0N1 and M1a disease, but not for M1b and M1c.

Conclusion: Our study shows a significant benefit in OS for men with MPCa undergoing local therapy in addition to ADT, versus ADT alone. This benefit was restricted to men with N1 and M1a disease. These results require further validation, ideally via prospective randomized trials.
Poster #117  
MEXICAN-AMERICANS WITH LOW RISK PROSTATE CANCER CONSIDERING ACTIVE SURVEILLANCE MAY HARBOR A RISK OF AN ADVERSE OUTCOME: AN ANALYSIS OF THE SURVEILLANCE, EPIDEMIOLOGY, AND END RESULTS (SEER) REGISTRY

Jonathan Katz, MD¹; Raymond Balise, PhD²; Vivek Venkatramani, MD³; Felix Chinea, MD⁴; Murugesan Manoharan, MD³; Mark Gonzalgo, MD³; Chad Ritch, MD³; Alan Pollack, MD⁵; Dipen Parekh, MD³ and Sanoj Punnen, MD³

¹Department of Urology, University of Miami Miller School of Medicine, Miami, FL; ²Department of Public Health Sciences, University of Miami Miller School of Medicine, Miami, Florida; ³Department of Urology, University of Miami Miller School of Medicine, Miami, Florida; ⁴Department of Radiologic Oncology, University of Miami Miller School of Medicine, Miami, Florida

(Presented By: Vivek Venkatramani, MD)

Introduction: It is well known that African American (AA) men are at an increased risk for more aggressive prostate cancer (PCa) that may make them less ideal candidates for active surveillance (AS). However, this concern among Hispanic men, has not been well studied. We have previously reported on an increased risk of PCa mortality among Mexican-American men, and we evaluated if this had any application to men being considered for AS. Therefore, among men with low-risk PCa who are eligible for AS and underwent radical prostatectomy (RP), we investigated whether Mexican-American men were more likely to have adverse oncological features in their surgical specimens.

Methods: This was a retrospective PCa study using the Surveillance, Epidemiology, and End Results (SEER) database from the years 2004-2013. The study includes data from 19 registries, located across the United States. Participants were men with localized or regional PCa, initially diagnosed as Gleason Pattern 6, with ≤ 2 cores positive, who subsequently underwent RP, with complete data on biopsy and surgical pathology. Men were grouped into various race/ethnicity subgroups to assess the association between race/ethnicity and adverse pathology at RP. We measured increased rate of discovery of high risk PCa at RP, across the different race/ethnicities. We defined aggressive tumors in 3 ways: any upgrading to Gleason Pattern (GP) 7 or higher, an upgrade to GP 4+3 or higher, and non-organ confined disease (≥ pT3a or N1). Prior to data collection, we hypothesized that both AA and Mexican-American men, would show significantly increased rates of high-risk PCa following RP.

Results: AA and Mexican-American men, were significantly more likely to be found to have aggressive PCa, following RP. In multivariate logistic regression adjusted for SES, relative to non-Hispanic Whites, Mexican-Americans had at increased odds of upgrading to GP 7 or higher (OR 1.37; 95% CI [1.00 - 1.86]), and more upgrading to GP 4+3 or higher (OR 1.67; 95% CI [1.00 - 2.80]). AA men were more likely to have non-organ confined disease (OR 1.34; 95% CI [1.06 - 1.69]).

Conclusion: Mexican-Americans and AAs who have low risk prostate cancer on biopsy and are candidates for AS are at an increased risk of harboring more aggressive disease in the radical prostatectomy specimen. While this is well known among AAs, this is a novel finding among Mexican Americans and deserves further validation.
Poster #118
THE IMPACT OF SOCIOECONOMIC STATUS, RACE, AND INSURANCE TYPE ON THE RISK OF NEWLY DIAGNOSED METASTATIC PROSTATE CANCER IN THE UNITED STATES
Adam Weiner, MD¹; Richard Matulewicz, MD, MS¹; Jeffrey Tosoian, MD, MPH²; Joseph Feinglass, PhD¹ and Edward Schaeffer, MD, PhD¹
¹Northwestern University, Chicago, IL; ²James Buchanan Brady Urological Institute, The Johns Hopkins University School of Medicine, Baltimore, MD
(Presented By: Adam Benjamin Weiner, MD)

Introduction: We hypothesize lower socioeconomic status (SES) may lead to higher risk of mPCa regardless of race and insurance status and partly explain existing disparities in PCa outcomes. We therefore used a large national cancer registry to compare socioeconomic, demographic, and clinical characteristics of men presenting with and without mPCa.

Methods: All men diagnosed with adenocarcinoma of the prostate in the National Cancer Data Base from 2004 to 2013 were identified. A four-level composite metric of SES was created using census-based income and education data. Multivariable logistic regression analysis was used to evaluate the association of various factors such as race/ethnicity and insurance status with the likelihood of presenting with mPCa while controlling for SES.

Results: Of the 1,034,754 patients with PCa, 4% presented with mPCa. Metastatic PCa was diagnosed in 3% of patients in the highest SES group and 5% in the lowest SES group (lowest vs highest SES: adjusted OR 1.39, 95% CI 1.35-1.44, p<0.001). Likewise, having Medicaid or no insurance (12.5%; OR 3.91, 95% CI 3.78-4.05, p<0.001) was associated with greater odds of mPCa compared to having private insurance or Medicare (3.6%). Compared to White men (3.6%), Black (5.9%; adjusted OR 1.47, 95% CI 1.43-1.51, p<0.001) and Hispanic men (6.2%; OR 1.22, 95% CI 1.17-1.28; p<0.001) had higher odds of metastatic diagnoses. SES disparities in the diagnosis of mPCa were seen within race/ethnicity and insurance groups (Figure). Decreasing SES lead to larger increases in the absolute risk of mPCa among Black and Hispanic men and men with Medicaid or no insurance compared to White men and men with private insurance or Medicare, respectively.

Conclusion: There is an inverse relationship between SES and odds of presenting with mPCa. Having no insurance or Medicaid and being of Black or Hispanic race/ethnicity increased odds of mPCa even when controlling for SES. Decreasing SES lead to increased risk of mPCa even within each race/ethnicity and insurance groups, especially for non-White men and men with Medicaid or no insurance. The effect of SES on mPCa presentation may partly explain existing disparities in PCa outcomes.
Introduction: As the use of prostate magnetic resonance imaging (MRI) becomes more widely adopted, community practices are less likely to have a single, high-volume radiologist as a dedicated reader for all images. At our institution, prostate MRI studies have been read as part of the clinical MRI workflow of the abdominal imaging section. We aim to ascertain the effect of inter-radiologist variability on the accuracy of prostate MRI interpretation.

Methods: We reviewed our prospectively maintained database of consecutive men who underwent prostate MRI prior to biopsy between September 2014 (when PI-RADS was adopted at our institution) and December 2015. A total of 13 attending radiologists read the 241 prostate MRI, of which 9 radiologists had read at least 11 studies and 4 radiologists had read less than 4 studies each. Patients with PI-RADS 1 or 2 lesions received standard template transrectal ultrasound-guided (TRUS) biopsy, while patients with PI-RADS 3 to 5 lesions received both a standard template TRUS and software fusion targeted biopsy.

Results: Overall sensitivity of PI-RADS 4 or 5 for Gleason 7+ PCa was 80.7% (71/88 men) and the positive predictive value was 48.3% (71/147). Figure 1 displays the sensitivity of PI-RADS 4 or 5 interpretation by radiologist at our institution, which ranges from 60 to 100%. When controlling for prostate-specific antigen, digital rectal examination, radiologist experience, lesion location, and lesion volume, we find that patient age (OR 1.2, p=0.03) and no previous biopsy (OR 25.0, p<0.01) are significant predictors of accurate MRI interpretation for Gleason 7+ PCa.

Conclusion: As the interpretation of prostate MRI expands to an increasing number of radiologists, the radiologist-to-radiologist variability in accuracy appears to be a function of patient clinical parameters rather than radiologist experience.

Figure 1: Sensitivity of PI-RADS 4 or 5 prostate MRI interpretation by radiologist. Observed results (black dot), 95% confidence interval (white dot), and expected result (red dot) by radiologist. The shaded region represents the 95% confidence interval for the entire cohort.
Poster Session I – Full Abstracts

Poster #120
ROLE OF 5-ALPHA REDUCTASE INHIBITORS AMONG MEN MANAGED BY ACTIVE SURVEILLANCE FOR PROSTATE CANCER: OVER 5 YEARS MEDIAN FOLLOW UP
Toshitaka Shin, MD, PhD¹; Andre Luis de Castro Abreu¹; Inderbir S. Gill¹; Sameer Chopra¹; Daniel Melecchi de Oliveira Freitas¹; Carlos E. Fay¹; Masakatsu Oishi²; Alfredo Bove¹; Thomas G. Clifford³; Nariman Ahmadi¹; Jie Cai¹; Duke Bahn³ and Osamu Ukimura ²
¹USC Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA; ²USC Institute of Urology, Keck School of Medicine, University of Southern California, Los Angeles, CA, USA. Department of Urology, Kyoto Prefectural University of Medicine, Kyoto, Japan; ³Prostate Institute of America, Ventura, CA, USA
(Presented by: Toshitaka Shin)

Introduction: The role of 5-alpha reductase inhibitors (5-ARIs) for patients of prostate cancer (PCa) on active surveillance (AS) is controversial. Our aim was to evaluate the role of 5-ARIs in this setting with over 5 years follow up.

Methods: We retrospectively reviewed 361 patients who enrolled in AS program. The patients were grouped in two, with (n=119, 33%) or without (n=242, 67%) use of 5-ARIs during AS. All patients had at least two years follow up. Pathological progression (PP) was defined as upgrade on Gleason score, increase in maximum cancer core length (>4mm) or percentage (>25%). Kaplan-Meier method was conducted to estimate survivals without PP and therapeutic progression (TP), and multivariable Cox regression for predictors of PP and TP.

Results: Patient characteristics of the two groups were similar. The median follow up was 7.3 years for the 5-ARI group and 5.3 years for the No 5-ARI group. The 5-ARI group experienced a lower rate of TP (p=0.005) and not taking 5-ARI was a predictor of TP (hazard ratio (HR): 2.01, 95% confidence interval (CI): 1.2-3.3, p=0.005) in multivariable regression analysis. In the patients with surveillance biopsy, the 5-ARI group experienced a lower rate of PP (p=0.04) and not taking 5-ARI was a predictor of PP (HR: 1.72, 95% CI: 1.1-2.7, p=0.02).

Conclusion: In over 5 years follow up, the use of 5-ARIs for the patients with low-risk PCa on AS may delay cancer progression. However, in order to use 5-ARIs routinely as second chemoprevention agents, further investigations are still needed.
Conclusion: PCa was a significant independent predictor for Gleason 7+ PCa on biopsy (OR 1.01 as continuous variable, p<0.01).

Controlling for time to biopsy, prostate volume, PI-RADS classification (1 versus 2), the PCPTRC estimated risk for high-grade PCa continued to be recommended for patients with a negative MRI, particularly those with an elevated PCPTRC estimated risk of high-grade PCa.

Methods: We reviewed our prospectively maintained database of consecutive men who underwent prostate MRI prior to biopsy between January 2012 and December 2015. We identified 84 men (39 biopsy naïve, 30 previous negative biopsy, and 15 active surveillance) with negative prostate MRI who received standard template transrectal ultrasound-guided (TRUS) prostate biopsy. PI-RADS 1 and 2 interpretations were considered a negative MRI. All patients on active surveillance carried a diagnosis of Gleason 6 PCa. The NPV of prostate MRI for Gleason 7+ PCa was calculated. Multivariate logistic regression was performed to identify risk factors for Gleason 7+ PCa on biopsy. Prostate Cancer Prevention Trial Risk Calculator (PCPTRC) estimated risk of high-grade (Gleason 7+) PCa was calculated for all patients.

Results: Overall, the NPV of MRI for Gleason 7+ PCa was 86.9% (73/84 men). No significant differences in NPV were noted based on indication for biopsy (biopsy naïve 89.7%, previous negative biopsy 83.3%, active surveillance 86.7%, p=0.76). Controlling for time to biopsy, prostate volume, PI-RADS classification (1 versus 2), the PCPTRC estimated risk for high-grade PCa was a significant independent predictor for Gleason 7+ PCa on biopsy (OR 1.01 as continuous variable, p<0.01).

Conclusion: As prostate MRI continues to be adopted into clinical practice, standard template TRUS prostate biopsy should continue to be recommended for patients with a negative MRI, particularly those with an elevated PCPTRC estimated risk of high-grade PCa.
Poster #122
EVALUATION OF THE MICROBIOME IN PROSTATE CANCER
David Golombos, MD¹; Padraic O’Malley, MD²; Patrick Lewicki, BA¹; LaMont Barlow, MD¹; Abimbola Ayangbesan, BA¹; Galeb Abu-Ali, PhD³; Curtis Huttenhower, PhD³; Christopher Barbieri, MD, PhD¹ and Douglas Scherr, MD¹
¹Department of Urology, Weill Cornell Medicine, New York, NY, USA; ²Department of Urology, Dalhousie University, Halifax, Nova Scotia, Canada; ³Department of Biostatistics, Harvard T.H. Chan School of Public Health, Boston, MA, USA
(Presented By: David Michael Golombok, MD)

Introduction: Recent studies have demonstrated that microbiota can alter cancer susceptibility and progression by diverse mechanisms such as modulating inflammation, influencing genomic stability of host cells, and producing metabolites that epigenetically regulate host gene expression. By comparing the gastrointestinal (GI) microbiome of men with prostate cancer (PCa) to men with benign prostates, we sought to elucidate potential biomarkers or mechanistic principles behind how the microbiota may impact the pathogenesis of PCa.

Methods: We performed a case-control pilot study on 20 men at the time of consultation for either benign prostatic conditions or intermediate/high risk clinically localized PCa (Gleason ≥4+3 cN0M0). Key exclusion criteria included recent antibiotic use, significant GI disorder, or systemic therapy for PCa. Stool samples were collected and processed. Computational analysis of microbial communities was performed utilizing the MetaPhlAn 2 and HUMAnN2 platforms for microbial genomics analysis for taxonomic classification, gene content and abundance, and pathway clustering. Linear discriminant analysis (LDA) effect size (LEfSe) method was used to support high-dimensional class comparisons with a focus on metagenomic analysis to find biologically relevant features characterizing the two cohorts. Kruskal-Wallis sum-rank test was used to detect features with significant differential abundance with respect to class, with biological consistency investigated using a set of pairwise tests among subclasses using the Wilcoxon rank-sum test, both to an α <0.05.

Results: In taxonomy-based analysis, higher relative abundance (LDA score 4.7) of Bacteroides massiliensis, a metabolizer of host carbohydrates, was seen in PCa cases compared to controls. Faecalibacterium prausnitzii (LDA 4.7), regarded as an anti-inflammatory bacterium deficient in disease processes such as Crohn’s, and Eubacterium rectalie (LDA 4.6), thought to be a major producer of butyrate and suggested to have a protective effect against colorectal cancer, had higher relative abundance among controls. Biologically significant differences between cohorts were also found in relative gene, pathway, and enzyme abundance.

Conclusion: Our microbial genomics analysis suggests that biologically significant differences exist in the gut microbiota of men with PCa compared to controls. These differences may play a role in the pathobiology of PCa, and warrant further exploration.
STATIN USE DOES NOT CONFER PROTECTION AGAINST ADVERSE ONCOLOGIC OUTCOMES AMONG MEN ELECTING ACTIVE SURVEILLANCE LOCALIZED PROSTATE CANCER

Yaw Nyame, MD, MBA; Lamont Wilkins, BS; Nima Almassi, MD; Daniel Greene, MD; Andrew Stephenson, MD, MBA; Eric Klein, MD; Michael Gong, MD, PhD and Ryan Berglund, MD

Cleveland Clinic, Cleveland, OH
(Presented By: Yaw A. Nyame, MD, MBA)

Introduction: This study aims to assess the effect of statin therapy on oncologic outcomes among men managed with active surveillance at our institution.

Methods: This is an observational study evaluating 635 men managed with active surveillance from 2005 to 2015 with median follow-up of 50.5 months (IQR 31.1-80.3). The primary endpoints were the cumulative rates of overall survival and survival-free from biochemical recurrence, definitive treatment, and surveillance failure, the latter of which was defined as development of metastatic disease or biochemical recurrence after definitive therapy. Event rates are reported as 5- and 10-year cumulative probabilities. Comparative analysis stratified by statin use was performed using Kaplan-Meier estimates with significance calculated by the log-rank test.

Results: The median age was 66.7 and 63.3 years for patients with and without statin use, respectively. Among statin users, 13.5% of patients self-identified as African American. 356 (56.1%) of patients in the cohort were on a statin during surveillance. Among non-statin users, the probability of overall survival was 97.4% (95% CI 92.4, 99.1) and 94.4% (95% CI 86.8, 97.7) at 5-year and 10-year, respectively; compared to 98.3% (95% CI 95.5, 99.2) and 93.7% (95% CI 83.9, 97.6) in men on statins. The 5- and 10-year survival-free from biochemical recurrence was 92.4% (95% CI 83.5, 96.6) and 79.8% (95% CI 54.7, 91.9) for non-statin users, and 92.0% (95% CI 83.7, 96.2) and 74.0% (95% CI 53.9, 86.6) for statin users. Similarly, the cumulative rate of freedom from surveillance failure was 97.3% (95% CI 94.0, 98.8) and 92.6% (95% CI 81.8, 97.1) at 5- and 10-year, respectively, for non-statin users; and 97.2% (95% CI 94.1, 98.7) and 89.8% (95% CI 80.0, 94.9) for men on statins. Lastly, the 5- and 10-year survival free from treatment was 58.6% (95% CI 51.2, 65.2) and 41.7% (95% CI 30.2, 52.7), respectively, for non-statin users, and 62.1% (95% CI 56.1, 67.5) and 48.5% (95% CI 40.2, 56.2), at 5- and 10- years, for users. On univariate time-dependent analysis, there were no differences in the rates of the aforementioned clinical events when stratified by statin use.

Conclusion: Statin use was not associated with any significant clinical benefit among men selecting active surveillance in our active surveillance cohort.
Poster #124
PRIMARY TOTAL GLAND CRYOABLATION FOR PROSTATE CANCER. 5 YEARS OF ONCOLOGIC AND FUNCTIONAL FOLLOW-UP DATA PROSPECTIVELY COLLECTED AND COMPARED TO RADICAL PROSTATECTOMY
Alfredo Maria Bove, Andre Luis De Castro Abreu, Sameer Chopra, Toshitaka Shin, Carlos Fay, Daniel Melecchi De Oliveira Freitas, Nariman Ahmadi, Thomas Clifford, Jie Cai, Duke Bahn, Osamu Okimura, Gary Lieskovsky and Inderbir S. Gill
University of Southern California
(Presented by: Andre Luis De Castro Abreu)

Introduction: To report median 5-year follow up of primary cryoablation (CRYO) based on targeted-biopsy proven prostate cancer (PCa) mapping, focusing on (a) the complications, oncologic and function outcomes and (b) its matched-pair analysis with patients undergoing radical prostatectomy (RP).

Methods: The records of 102 patients with localized PCa undergoing CRYO of whole prostate gland were reviewed. At entry, image-based cancer mapping using staging biopsy guided by transrectal ultrasound (TRUS) and Doppler were digitally documented. All CRYO procedures were performed under TRUS guidance with individualized cryoneedle delivery based on preoperative cancer mapping. The follow up included PSA, TRUS, systematic plus targeted biopsy for pre-operatively biopsy-proven cancer area and questionnaires. Complications were reported by Clavien system. Continence was defined as use of no pad and potency by the capability to penetrate. Biochemical failure was reported as: (1) PSA > 0.2 ng/ml and (2) PSA nadir + 2 ng/ml (Phoenix). Contemporaneous cohort undergoing open RP was pair-matched by preoperative PSA, Gleason and clinical stage in order to compare oncologic outcomes.

Results: The median follow up, age, PSA and Gleason were 5 yrs, 71 yrs, 7.5 ng/ml and 6, respectively. Clinical stage was T1c (48%), T2 (44%) and T3 (8%). D’Amico group risk was low (L = 24%), intermediate (I = 50%) and high (H = 26%). In 65 (66%) patients the PSA reached < 0.2 ng/ml. The estimated biochemical failure-free survival (EBFFS) was 84% by Phoenix. 73 biopsies were performed in 43 (44%) patients, with 5 (5%) positive for PCa. Complications occurred in 13 patients and Clavien-grade was I (6%), II (4%) or IIIa (3%). The incontinence rate was 4% and 12% of the patients recovered potency. The matched-paired RP cohort had similar baseline parameters and follow up as CRYO. The 5 years EBFFS by PSA > 0.2 ng/ml for CRYO was 39% (L = 51%; I = 39%; H =25%) and for RP was 79% (L = 95%; I = 77%; H = 67%), p<0.001. Metastases occurred in 5 (5%) CRYO vs 4 (4%) RP patients. Salvage treatment was performed in 8 CRYO vs 12 RP patients.

Conclusion: CRYO for PCa using individualized cryoneedle delivery based on biopsy-proven cancer mapping achieved acceptable oncologic and functional outcomes with low rates of incontinence and complications. Regarding metastases and salvage treatment requirement, it provided compatible median 5 years oncologic outcomes to pair-matched open RP.
**Poster Session I – Full Abstracts**

**Poster #125**

**NOMOGRAM MODEL INTEGRATING MP-MRI IN PREDICTING PATHOLOGIC PROGRESSION OF PROSTATE CANCER IN ACTIVE SURVEILLANCE PATIENTS**

Win Shun Lai, MD¹; Jennifer Gordetsky, MD²; John Thomas, MD³; Jeffrey Nix, MD¹ and Soroush Rais-Bahrami, MD⁴

¹Department of Urology, University of Alabama at Birmingham, Birmingham, AL; ²Department of Pathology, Department of Urology, University of Alabama at Birmingham, Birmingham, AL; ³Department of Radiology, University of Alabama at Birmingham, Birmingham, AL; ⁴Department of Urology, Department of Radiology, University of Alabama at Birmingham, Birmingham, AL

(Presented By: Win Shun V. Lai, MD)

**Introduction:** The recent introduction of multi-parametric magnetic resonance imaging (mp-MRI) of the prostate has the potential to further evolve the criteria for active surveillance selection. However, mp-MRI parameters have yet to be integrated into AS candidacy criteria. The purpose of this investigation was to create a nomogram model integrating clinical variables and mp-MRI based data to predict disease progression in AS patients.

**Methods:** A retrospective study was performed to identify patients referred to our institution on AS who underwent MP-MRI with MRI/Ultrasound (MRI/US) fusion–guided prostate biopsy. Clinical variables and MP-MRI findings were assessed, including prostate specific antigen density (PSAD), duration between pre-referral and MRI/US biopsies, number of lesions, total lesion volume, total lesion density and MRI suspicion score (MRI-SS). Logistic regression modeling was used to assess for significant associations between these factors and progression of disease on MRI/US biopsy. A predictive model and nomogram for disease progression were then calculated using the identified significant factors.

**Results:** A total of 76 patients were reviewed with a mean age of 62.5 years and a median PSA of 5.1 ng/mL. The average length of time between pre-referral and MRI/US biopsies was 21 months. Of these patients, 20 of 76 (26.35%) were found to have pathologic progression. PSAD, duration between pre-referral and MRI/US biopsies, MRI-SS and MRI total lesion density were found to be significantly associated with disease progression. A logistic regression model using these factors to predict progression had an area under the curve of 0.84 on receiver operating characteristic analysis, compared to AUC of 0.73 without MRI factors. Based on this model, a nomogram was generated for which a probability cutoff of 22% as indication of disease progression produced a sensitivity, specificity, positive predictive value and negative predictive value of 80%, 81.25%, 57.1% and 92.86% respectively.

**Conclusion:** Integration of MRI findings can add value to a model predicting Gleason 6 upgrading in men on AS. This can be used to define AS patients with low risk disease for whom a biopsy can be deferred.
Poster #126
TRANSCRIPTOME WIDE ANALYSIS OF MRI-TARGETED BIOPSY AND MATCHING SURGICAL SPECIMENS FROM HIGH-RISK PROSTATE CANCER PATIENTS TREATED WITH RADICAL PROSTATECTOMY
Jan Philipp Radtke¹, Peter Black², Mandeep Takhar³, Nicholas Erho³, Marguerite du Plessis³, Christine Buerki³, Kaye Ong³, Elai Davicioni³ and Boris Hadaschik¹
¹Department of Urology, University Hospital Heidelberg, Heidelberg, Germany; ²Department of Urologic Sciences, University of British Columbia, Vancouver BC, Canada; ³Research and Development, GenomeDx Biosciences Inc., Vancouver BC, Canada
(Presented By: Peter Colin Black, MD)

Introduction: The index lesion defined as the most suspicious lesion on multiparametric MRI (PIRADS) may be representative of final pathology and could be amenable to focal therapy. To what extent this lesion and other foci with potentially lethal cancer subclones contribute to cancer progression is one of the key questions in current research. Here we connect prostate imaging with high-precision spatial annotation of prostate biopsies and transcriptome-wide molecular characterization of intratumoral heterogeneity.

Methods: This study includes 11 patients diagnosed with high-risk prostate cancer on MRI-targeted biopsy (Bx) and treated with radical prostatectomy (RP) at the University of Heidelberg. Five tissue specimens were collected for each patient: index tumor RP based on highest Gleason grade, index tumor prostate Bx, 2 benign tissue biopsies (adjacent to and far away from the index tumor), and a second tumor focus on Bx if available. Whole transcriptome RNA expression was profiled for each sample. Genomic prostate cancer signatures from the Decipher Genomic Resource Information Database (GRID) were used to compare the genomic signal in MRI invisible foci vs MRI visible tumors using Pearson's correlation. GRID signatures were also used to assess intratumoral genomic heterogeneity using hierarchical clustering.

Results: Ten RP and 23 Bx samples passed quality control measures. Gene expression between RP and index Bx, but not adjacent benign samples was highly correlated. The distribution of low and high PIRADS samples in the analysis was 10 and 11 respectively. The genomics of all 10 low PIRADS samples resembled benign tissue and 10 of the 11 high PIRADS samples resembled prostate cancer tissue as determined by the tumor vs normal classifier. A strong association was observed between PIRADS v2 and Decipher (r = 0.805, p < 0.001) as well as the genomic Gleason grade classifier score (r = 0.813, p < 0.001) which predicts patients with high grade disease. When clustering high PIRADS samples by GRID signature scores, most samples clustered tightly by patient. One patient showed unique tumor biology in the index vs secondary lesion suggesting the presence of intrapatient heterogeneity.

Conclusion: MRI-targeted Bx genomics show excellent correlation with RP-genomics and confirm the information captured by PIRADS. Genomics also allow exploration of intratumoral heterogeneity suggesting utility in profiling multiple foci identified by MRI.
Poster #127  
THE ASSOCIATION BETWEEN NUMBER OF PRIOR BIOPSIES AND COMPLICATIONS DURING RADICAL PROSTATECTOMY  
Vidit Sharma, MD; Mary Beth Westerman, MD; Matthew K. Tollefson, MD; R. Houston Thompson, MD; Stephen A. Boorjian, MD; Igor Frank, MD; Matthew T. Gettman, MD and R. Jeffrey Karnes, MD  
Mayo Clinic, Rochester, MN  
(Presented By: Vidit Sharma, MD)

Introduction: There is limited evidence to support that increased number of prostate biopsies with a more difficult posterior dissection during radical prostatectomy (RP). Here we analyze a large institutional database to determine if there is an association between the number of prior prostate biopsies and complications during RP.

Methods: Years 1994-2013 of a prospectively maintained institutional RP registry were queried for men without prior radiation. Patients were grouped into 3 groups: 1 biopsy, 2 biopsies, or 3 or more biopsies. Standard descriptive statistics were used to compare the three groups. The primary outcomes were intra-operative and post-operative complications. Multivariate logistic regression models were used to verify positive univariate findings when feasible.

Results: Among 13,203 men undergoing RP, 90.9% (12,004) had 1 biopsy, 6.4% (839) had 2 biopsies, and 2.7% (360) had 3 or more biopsies. Men with 3 or more biopsies were older (64.6 vs 61.9) with larger prostates (47.0 vs 37.0cc) compared to men with 1 prior biopsy (p<0.001), while there was no significant difference in PSA density (0.24 vs 0.26, p=0.913). Not surprisingly, men with 3 or more biopsies had lower risk disease relative to those with just one biopsy, supported by a lower rate of all of the following: pathologic Gleason 7-10 (32.4% vs 46.2%, p<0.001), pT3/4 (6.7% vs 19%, p<0.001), positive margins (16.9% vs 24.8%, p<0.001), and pN1 (1.7% vs 3.4%, p=0.015). Intraoperative complications were significantly more likely as the number of biopsies increased (3.7% vs 5.1% vs 6.4%, p=0.004). Specifically, rates of intra-operative transfusions (3.1% vs 4.6% vs 4.7%, p=0.010) and rectal injury (0.2% vs 0.4% vs 1.4%, p<0.001) were higher for patients with 3 or more biopsies. The incidence of post-operative complications did not demonstrate a clear trend between the 3 groups (26.1% vs 30.2% vs 27.9%, p=0.028). On forward stepwise multivariate logistic regression, 3 or more biopsies remained associated with intraoperative complications (Odds Ratio 1.575, 95%CI 1.015-2.445, p=0.043) after adjusting for age, BMI, year, open vs robotic, prostate size, number of nodes removed, PSA, pT stage, Gleason score, and nerve sparing status.

Conclusion: There was a small association between the number of biopsies and intra-operative complications during RP that, if verified by other cohorts, may be a useful addition to pre-operative patient counseling.
Poster #128
MANAGEMENT TRENDS FOR MEN WITH EARLY STAGE NON-SEMINOMATOUS GERM CELL TUMORS OF THE TESTICLE: A POPULATION-BASED STUDY
Adam Weiner, MD¹; Shane Pearce, MD² and Scott Eggener, MD²
¹Northwestern University, Chicago, IL; ²University of Chicago, Chicago, IL
(Presented By: Adam Benjamin Weiner, MD)

Methods: We extracted data from the National Cancer Data Base on all men diagnosed with clinical stage (CS) IA (without lymphovascular invasion) or IB (with lymphovascular invasion) NSGCT diagnosed between 2004 and 2013. We stratified our cohort into CSIA and CSIB and measured temporal trends in the use of chemotherapy, RPLND, and surveillance. Because data on S-stage was available in a limited number of patients, we analyzed men with known S-stage separately as a sensitivity analysis. Using multivariable logistic regressions, we also analyzed the association of patient and clinical covariates with use of surveillance.

Results: Of the 4,080 men with CSIA NSGCT, 70%, 17%, and 13% received surveillance, RPLND, and chemotherapy, respectively. Surveillance increased in this group from 65% (2004-2005) to 74% (2012-2013; adjusted OR 1.50, 95% CI 1.14-1.98, p=0.004). Of the 2,580 men with CSIB NSGCT, 46%, 20%, and 34% received surveillance, RPLND, and chemotherapy, respectively. Surveillance in this group was 48% in the years 2004 to 2005 and 2012 to 2013 (adjusted p=0.8). When we considered patients with documented normal serum tumor markers (S0), treatment trends were generally similar. Upon multivariable analyses, higher income and the oldest age quartile were associated with increased odds of surveillance among men with CSIA NSGCT (both p<0.050). Hispanic men with CSIB NSGCT were more likely to receive surveillance compared to non-Hispanic White men (p=0.001).

Conclusion: Nearly three quarters of men with CSIA NSGCT and nearly half of men with CSIB NSGCT received surveillance in 2012-2013. Likelihood of surveillance increased from 2004-2013 for men with CSIA NSGCT but was unchanged for men with CSIB. These differences in surveillance by stage may reflect an uptake of risk-adapted management based on lymphovascular invasion.
Poster Session I – Full Abstracts

Poster #129
PATTERNS OF CARE AND SURVIVAL OUTCOMES FOR ADOLESCENT AND YOUNG ADULT (AYA) PATIENTS WITH TESTICULAR SEMINOMA IN THE UNITED STATES: A STUDY OF THE NATIONAL CANCER DATABASE
Alonso, Carrasco, Jr., MD¹; Arya Amini, MD²; Paul Maroni, MD³; Elizabeth Kessler, MD⁴; Carrye R. Cost, MD⁵; Brian S. Greffe, MD⁶; Timothy P. Garrington, MD⁷; Arthur K. Liu, MD, PhD⁸ and Nicholas G. Cost, MD⁹
¹Department of Surgery - Division of Urology - Aurora, Colorado; ²Department of Radiation Oncology - Aurora, Colorado; ³Department of Surgery, Division of Urology - Aurora, Colorado; ⁴Department of Genitourinary Cancer - Aurora, Colorado; ⁵Department of Pediatrics, Division of Hematology and Oncology - Aurora Colorado; ⁶Department of Surgery, Division of Urology University of Colorado School of Medicine (Presented By: Alonso Carrasco, Jr., MD)

Introduction: Testicular germ cell tumors (GCTs) are the most common solid tumor among adolescent and young adult (AYA) males. AYA patients most typically have non–seminoma as compared to seminoma, thus there is less reported on the AYA seminoma experience. The purpose of this study was to evaluate national trends in postoperative treatment and overall survival (OS) outcomes in testicular seminoma by age group, specifically comparing AYAs to older adults.

Methods: The National Cancer Data Base (NCDB) was queried for patients with testicular seminoma diagnosed between 2004–2012, who underwent orchiectomy followed by observation or adjuvant therapy. Patients were grouped by age: AYA (15–39 yr), adults between 40–55 yr, and adults >55 yr. OS was presented using Kaplan–Meier curves and groups compared via a log-rank test. Univariate (UVA) and multivariate (MVA) analyses were performed using Cox proportional hazards regression models.

Results: In total 22,361 patients were evaluated. The majority were AYA patients (n=12,880), followed by adults 40–55 yr (n=8,022), and > 55 yr (n=1,459). Unadjusted 5–year OS was significant better for AYAs vs. adults 40–55 and > 55 years (98.0%, 96.4%, 87.7%; p<0.001), as was 10–year OS (96.1%, 91.8%, 71.3% respectively; p<0.001), see Figure. Under MVA, OS was significantly better for AYAs (reference) vs. adults 40–55yr (hazard ratio [HR], 1.80; 95% confidence interval [CI], 1.52–2.13; p<0.001) and > 55 years (HR, 4.26; 95% CI, 3.47–5.23; p<0.001). Additionally, AYA patients were less likely to present with metastatic disease – stage II (OR, 0.86; p=0.002) or stage III (OR, 0.72; p<0.001). Accordingly, AYA patients were less likely to undergo RPLND (OR, 0.81; p=0.001) and were less often managed with adjuvant therapy including chemotherapy (OR, 0.91; p=0.027), radiation therapy (OR, 0.93; p=0.025), or both (OR, 0.68; p=0.020).

Conclusion: AYA testicular seminoma patients present with earlier stage disease which allows them to be managed with observation following orchiectomy when compared to older adults in this population–based analysis. Among AYA patients, OS was modestly better when compared to adults 40–55 years and significantly better when compared to adults > 55 years.
Poster #130
POST-CHEMOTHERAPY RETROPERITONEAL LYMPH NODE DISSECTION FOR ADVANCED GERM CELL MALIGNANCY: HISTOLOGY AND CLINICAL OUTCOMES IN PATIENTS WITH ELEVATED SERUM TUMOR MARKERS
Qiang Li, MD, PhD¹; Piotr Zareba, MD, MPH¹; Brett Carver, MD¹; George Bosl, MD²; Darren Feldman, MD²; Dean Bajorin, MD²; Robert Motzer, MD² and Joel Sheinfeld, MD¹
¹Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, New York; ²Genitourinary Oncology Service, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Qiang Li, MD, PhD)

Introduction: To evaluate histologic findings and clinical outcomes among a contemporary cohort of germ cell tumor patients with elevated serum tumor markers (STM) at time of post-chemotherapy retroperitoneal lymph node dissection (RPLND).

Methods: From 2001 to 2014, 63 patients with elevated STM (α-fetoprotein ≥15.0 ng/mL and/or human chorionic gonadotropin ≥2.0 IU/L) underwent a post-chemotherapy RPLND. Of these patients, 35 (56%) had elevated AFP, 26 (41%) had elevated HCG and two (3%) had elevation of both. We evaluated associations between patient characteristics, histology, and cancer-specific survival (CSS) using descriptive statistics and univariable Cox regression models.

Results: Median age at the time of RPLND was 28 (IQR 22, 37) years. Sixteen patients (25%) received two or more lines of chemotherapy prior to RPLND. RP histology revealed viable cancer in 20 patients (32%), teratoma only in 24 (38%), and fibrosis/necrosis only in 19 (30%). Viable cancer was more common among patients treated with second-line chemotherapy than those receiving only first-line chemotherapy (63% vs. 21%, P=.004); and in those with rising STM at RPLND compared with those with stable STM (73% vs. 19%, P<.001). Concordance rates between retroperitoneal and extra-retroperitoneal sites were 100% for fibrosis, 67% for teratoma, and 43% for viable cancer. Five-year CSS was 83% (95% CI 69-91%), with 11 patients (17%) dying of testis cancer during 4.5-year median follow-up. Persistent STM elevation after RPLND was associated with worse CSS (HR 9.73; 95% CI 2.95-32.07; P<.001). There were no statistically significant associations between CSS and IGCCCG risk group, receipt of second-line chemotherapy, rising STM prior to RPLND, or the presence of viable cancer, possibly because of the low number of deaths in our cohort.

Conclusion: The data suggests that a bilateral RPLND can achieve cure in a high proportion of carefully selected patients with elevated STM after first or second-line chemotherapy, including those found to have viable cancer in the retroperitoneum. Persistent STM elevation post-RPLND was the most significant factor impacting CSS.

Funding: Supported by the Richard Capri Foundation
Poster #131
IMPACT OF SOCIOECONOMIC STATUS ON SURVIVAL IN MEN WITH METASTATIC TESTICULAR CANCER
Michael Leapman, MD¹; Renu Eapen, MD²; Samuel Washington, MD²; Sima Porten, MD, MPH² and Maxwell Meng, MD²
¹Yale University School of Medicine Department of Urology, New Haven, CT; ²University of California San Francisco, San Francisco, CA
(Presented By: Michael Leapman, MD)

Introduction: Testicular cancer is the most common solid malignancy in young men, where the integration of multi-modal treatments including platinum-based chemotherapy has led to dramatic improvements in survival for patients with metastatic disease. Although prior population-level data have indicated disparities in tumor grade and stage at diagnosis, it remains unclear whether race/ethnicity, socioeconomic status (SES), and access to care are associated with overall survival among men with advanced disease.

Methods: We identified patients with testicular cancer diagnosed between 2004 and 2013 within the National Cancer Database, a nationwide clinical oncology database capturing approximately 70% of newly diagnosed cancer cases. The primary objective was to examine the influence of socioeconomic factors including race/ethnicity, insurance status, treatment facility, rural versus urban status, and education level on overall survival in men with metastatic testicular cancer (AJCC clinical stage 2A or higher). Associations of clinical, pathologic and demographic factors were examined using univariate and multi-variable Cox proportional hazards regression models.

Results: Of 54,683 men, we identified 32,141 with advanced stage disease (58.8%) followed for a median of 50.3 months (IQR 26-78). Receipt of multi-agent chemotherapy was similar by SES measures across clinical stage groupings. On adjusted multivariable analysis, uninsured status (HR 1.27, 95% CI 1.09-1.47, p<0.01), lower median household income (HR1.15, 95% CI 1.07-1.24, p<0.01), lower quartile of high school completion rate (HR 1.11, 95% CI 1.03-1.19, p<0.01), AA race (HR 1.40, 95% CI 1.10-1.78, p=0.01) was associated with worse overall survival. Similar findings were observed when stratified by germ cell versus non-germ cell histology.

Conclusion: Measures of socioeconomic status including education, insurance status and household income were associated with overall survival in patients with metastatic testicular cancer in the United States. These findings inform efforts to expand access to and improve quality of care. Further investigation is warranted to examine the impact of recent broadening insurance coverage on outcomes for this disease.
Poster #132
OUTCOMES OF METASTATIC BLADDER CANCER FOLLOWING RADICAL CYSTECTOMY
Cory Hugen, MD; Hooman Djaladat, MD, MS; Anne Schuckman, MD; Jie Cai, MS; Gus Miranda, BS and Siamak Daneshmand, MD
University of Southern California, Los Angeles, CA
(Presented By: Cory Michael Hugen, MD)

Poster #133
EFFECT OF PERIOPERATIVE BLOOD TRANSFUSION ON ONCOLOGIC OUTCOME FOLLOWING RADICAL CYSTECTOMY
Michael Metcalfe, MD; Graciela Gonzales, PhD; Kyle Potts, MD; Neema Navai, MD; Ashish Kamat, MD; Juan Cata, MD; Colin Dinney, MD and Jay Shah, MD
University of Texas, MD Anderson Cancer Center
(Presented By: Michael Joseph Metcalfe, MD)

Poster #134
THERMO REVERSIBLE HYDROGEL BASED DELIVERY OF MITOMYCIN C (MITOGEL) FOR TREATMENT OF UPPER TRACT UROTHELIAL CARCINOMA (UTUC)
Jeffery Lin, BS¹; Nir Kleinmann, MD²; Gregory Wirth, MD³; Surena Matin, MD⁴; Ofer Nativ, MD⁵; Gil Mayer, MD⁶; Fred Witjes, MD⁷; Asaf Shvero, MD⁸; Karim Chanie, MD⁹; Allen Pantuck, MD¹⁰; Angie Smith, MD¹¹; Mark Schoenberg, MD¹²; Nadav Malchí¹³; Gil Hakim, BSc¹⁴; Michal Jeshurun-Gutshtat, MD¹⁵; Ifat Klein, PhD¹⁶; Helen Kopelen, CCRC, CCRP¹ and Seth Lerner, MD, FACS¹
¹Baylor College of Medicine, Houston, TX; ²Chaim Sheba Medical Center, Tel-Ha'Shomer, Israel; ³Geneva University Hospital, Geneve, Switzerland; ⁴MD Anderson Cancer Center, Houston, Texas; ⁵Benai-Zion Medical Center, Haifa, Israel; ⁶University of Nijmegen, Mijmegen, Netherlands; ⁷University of California, Los Angeles, Los Angeles, CA; ⁸University of California Los Angeles, Los Angeles, CA; ⁹University of North Carolina, Chapel Hill, NC; ¹⁰The Montefiore Medical Center and The Albert Einstein College of Medicine, Bronx, New York; ¹¹UroGen, Pharma Ltd., Ra’anana, Israel
(Presented By: Jeffery Lin, BS)

Poster #135
FEMALE CYSTECTOMY WITH ORTHOTROPIC URINARY DIVERSION - IS FEAR OF URETHRAL RECURRENCE JUSTIFIED?
Cory Hugen, MD; Hooman Djaladat, MD, MS; Anne Schuckman, MD; Jie Cai, MS; Gus Miranda, BS and Siamak Daneshmand, MD
University of Southern California, Los Angeles, CA
(Presented By: Cory Michael Hugen, MD)

Poster #136
IMPACT OF HISTOLOGIC SUBTYPE ON BLADDER CANCER OUTCOME
Samuel Washington, MD¹; Thomas Sanford, MD²; Michael Leapman, MD³; Maxwell Meng, MD⁴ and Sima Porten, MD, MPH⁵
¹University of California, San Francisco, San Francisco, CA; ²National Cancer Institute, National Institutes of Health, Bethesda MD; ³Yale University, New Haven, CT
(Presented By: Samuel L. Washington, III, MD)

Poster #137
YOUNG PATIENTS WITH BLADDER CANCER: OUTCOMES FROM THE NATIONAL CANCER DATABASE
Samuel Washington, MD; Maxwell Meng, MD and Sima Porten, MD, MPH
University of California, San Francisco, San Francisco, CA
(Presented By: Samuel L. Washington, III, MD)
Poster #138
ASSOCIATION BETWEEN METABOLIC SYNDROME AND RECURRENCES OF NON-MUSCLE INVASIVE BLADDER CANCER FOLLOWING TREATMENT WITH BACILLUS CALMETTE-GUERIN TREATMENT
Andrew Lenis, MD, MS¹; Kian Asanad BS²; Maher Blaibel, BS³; Nicholas Donin, MD¹ and Karim Chamie, MD, MSHS¹
¹Department of Urology, UCLA, Los Angeles, California; ²School of Medicine, UCLA, Los Angeles, California; ³School of Medicine, UC Riverside, Riverside, California
(Presented By: Andrew Thomas Lenis, MD, MS)

Poster #139
THE CHEMOABLATIVE EFFECT OF VESIGEL INSTILLATION IN PATIENTS WITH NMIBC – PRELIMINARY RESULTS:
Andrew Lenis, MD, MS¹; Karim Chamie¹; Boris Friedman²; Andrea Tubaro³; Ami Sidi⁴; Daniel Kedar⁵; Lorenzo Colombo⁶; Dov Engelstein⁷; Joan Palau⁸; Gregory Wirth⁹; Ilan Leibovitch¹⁰; Michal Jeshurun¹² and Fred Witjes¹³
¹Department of Urology, UCLA, Los Angeles, California; ²Urology Department, Carmel Medical Center, Haifa 34362 Israel; ³Department of Urology, S. Andrea Hospital of Rome, Roma, Italy; ⁴Department of Urology Surgery, The Edith Wolfson Medical Center, Holon, Israel; ⁵Department of Urology, Rabin MC, Beilinson Hospital, Petah Tikva, Israel; ⁶Department of Urology, Vita Salute University, San Raffaele Hospital of Milan, Italy; ⁷Department of Urology, Western Galilee Hospital, Nahariya, Israel; ⁸Department of Urology, Fundació Puigvert of Barcelona, Spain; ⁹Department of Urology, Hospital HUG of Geneva, Genève, Swiss; ¹⁰Department of Urology, Meir Medical Center, Kfar Saba, Israel; ¹¹Institute of Pathology, Sheba Medical Center Hospital- Tel Hashomer, Ramat Gan, Israel; ¹²UroGen Pharma Ra’anana, Israel; ¹³Department of Urology, Radboud University of Nijmegen Medical Center, The Netherlands
(Presented By: Andrew Thomas Lenis, MD, MS)

Poster #140
DISCERNING PREDICTORS FOR GENDER DIFFERENCES IN SURVIVAL OUTCOMES FOR PATIENTS TREATED FOR BLADDER CANCER
Justin Fang, MD¹; Jinhai Huo, PhD²; Preston Kerr, MD¹; Leslie Ynalvez¹; Tamer Dafashy¹; Sharon Giordano, MD, MPH³; Edwin Morales, MD⁴; Ashish Kamat, MD⁵ and Stephen Williams, MD¹
¹Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ³Department of Medicine and Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁴Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁵Department of Urology, The University of Texas San Antonio Health Sciences Center, San Antonio, TX; ⁶Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Justin E. Fang, MD)

Poster #141
ASSESSMENT OF T0 RESPONSE RATE FOLLOWING NEOADJUVANT CHEMOTHERAPY FOR BLADDER CANCER UTILIZING A COMPUTERIZED VOLUME ANALYSIS SYSTEM
Amir H. Lebastchi, MD; Christopher M. Russell, MD; Kenny H. Cha; Lubomir Hadjiiski, MD; Heang-Ping Chan, MD; Rich Cohan, MD; Elaine Caoili, MD; Ajjai Alva, MBBS and Alon Z. Weizer, MD, MS
University of Michigan, Ann Arbor, MI
(Presented By: Amir H. Lebastchi, MD)
Poster #142
MOLECULAR TUMOR GRADING BASED ON WHOLE RNA SEQUENCING DELINEATES THREE MOLECULAR GRADES IN NON MUSCLE INVASIVE BLADDER CANCER
Alexandre Zlotta, MD¹; Jess Shen²; Iryna Shnitsar²; Thenappan Chandrasekar, MD³; Aidan Noon⁴; Eduardo Cabeza²; Cynthia Kuk³; Christine Ilczynski²; Rouyu Ni⁶; Balram Sukhu⁴; Kim Chan²; Adrian Gunaratne⁵; Annette Erlich⁵; Morgan Roupret, MD⁷; Eva Comperat, MD⁸; Joan Sweet, MD⁹; Neil Fleshner, MD⁴; Girish Kulkarni, MD¹; Azar Azad⁶; Theodorus van der Kwast, MD⁹ and Jeffrey Wrana, PhD²
¹University Health Network, Princess Margaret Cancer Centre, Dept. of Surgical Oncology, Division of Urology, Toronto, CA; ²Mount Sinai Hospital, Lunenfeld-Tanenbaum Research Institute, Toronto, CA; ³University of Toronto, Toronto, ON; ⁴University of Sheffield, Urology, Sheffield, UK; ⁵Mount Sinai Hospital, Dept. of Urology, Toronto, CA; ⁶Mount Sinai Hospital, Dept. of Pathology and Laboratory Medicine, Toronto, CA; ⁷Groupe Hospitalier La Pitié-Salpêtrière, Université Pierre et Marie Curie, Dept of Urology, Paris France; ⁸Groupe Hospitalier La Pitié-Salpêtrière, Université Pierre et Marie Curie, Dept of Pathology, Paris France; ⁹University Health Network, Dept. of Pathology, Toronto, CA
(Presented By: Thenappan Chandrasekar, MD)

Poster #143
MUSCLE INVASIVE BLADDER CANCER: MOLECULAR SUBTYPES ARE RELATED TO BENEFIT OF NEOADJUVANT CHEMOTHERAPY
Roland Seiler, MD¹,²; Hussam Al Deen Ashab, MSc³; Nicolas Erho, MSc⁴; Brian Winters, MD⁴; James Douglas, MD⁵; Bas W.G. van Rhijn, MD⁴⁶; Gottfrid Sjödahl, PhD⁷; Qiqi Wang, MSc⁸; Voelak Cheourg, MSc⁹; Christine Buerki, PhD⁷; Beatrix Palmer-Aronsten, BSc⁷; Seth P. Lerner, MD⁶⁰; Katherine Hoadley, PhD⁷¹; Scott North, MD⁵⁴; David J. McConkey, PhD¹¹; Kim van Kessel, MD¹²; Woonyoung Choi, PhD¹¹; William Y. Kim, MD²⁶; Ellen C. Zwarthoff, MD, PhD¹²; Matthew Sommerlad, MD⁵; George N. Thalmann, MD⁶; Elai Davicioni, PhD³; Simon J. Crabb, MD¹⁴; Joost L. Boormans, MD, PhD¹²; Marc Dall’Era, MD¹⁴; Jonathan Wright, MD⁴; Michiel S. van der Heijden, MD⁴ and Peter Black, MD¹⁴
¹Department of Urologic Sciences, University of British Columbia, Vancouver, British Columbia, Canada; ²Department of Urology, University of Bern, Switzerland; ³GenomeDx Biosciences Inc., Vancouver, BC, Canada; ⁴Department of Urology, University of Washington School of Medicine, Seattle, Washington; ⁵Department of Urology, University Hospital of Southampton, Hampshire, UK; ⁶Department of Surgical Oncology, Division of Surgery, Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital, Amsterdam, The Netherlands; ⁷Division of Urological Research, Department of Translational Medicine, Lund University, Malmö, Sweden; ⁸Department of Urologic Oncology, Baylor College of Medicine, Houston, TX, USA; ⁹Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; ¹⁰Department of Oncology, University of Alberta Cross Cancer Institute, Edmonton, AB, Canada; ¹¹Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX, USA; ¹²Department of Urology, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands; ¹³Department of Medical Oncology, University Hospital of Southampton, Hampshire, UK; ¹⁴UC Davis Comprehensive Cancer Center, Sacramento, CA, USA
(Presented By: Peter Colin Black, MD)

Poster #144
SURGICAL MANAGEMENT OF UROTHELIAL CARCINOMA IN PATIENTS WITH UPPER TRACT AND LOWER TRACT DISEASE: IMPACT OF SURGICAL SEQUENCE
Tanner Miest, MD, PhD; Amir Toussi, MD; R. Jeffery Karnes, MD; Stephen Boorjian, MD; R. Houston Thompson, MD; Igor Frank, MD and Matthew Tollefson, MD
Department of Urology, Mayo Clinic, Rochester, MN
(Presented By: Tanner Miest, MD, PhD)

Poster #145
DOES LIPOSOMAL BUPIVACAINE (EXPAREL) USE INTRAOPERATIVELY DECREASE POSTOPERATIVE NARCOTIC USE IN RADICAL CYSTECTOMY PATIENTS?
Courtney Chang, BS¹; Janet Baack Kukreja, MD, MPH²; Mohamed Seif, MD²; Neema Navai, MD³; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD³
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)
Poster #146
PATIENT REPORTED OUTCOMES: MEASURING AND IMPROVING SYMPTOM BURDEN IN RADICAL CYSTECTOMY PATIENTS UNDERGOING TRADITIONAL CARE COMPARED TO ENHANCED RECOVERY
Courtney Chang, BS¹; Janet Baack Kukreja, MD, MPH²; Ting Yu Chen, MS²; Qiuling Shi, MD, PhD, MSc²; Xin Shelley Wang, MD, MPH³; Neema Navai, MD²; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD²
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)

Poster #147
INTRATUMORAL HETEROGENEITY OF HER-2/NEU EXPRESSION IN UROTHELIAL CARCINOMA WITH MICROPAPILLARY MORPHOLOGY
Sumit Isharwal, MD¹; Hongying Huang, MD²; Gouri Nanjungud, PhD³; François Audenet, MD¹; Ying-Bei Chen, MD, PhD²; Anuradha Gopalan, MD²; Samson Fine, MD²; Satish Tickoo, MD²; Gopakumar Iyer, MD₄; Guido Dalbagni, MD¹; Bernard Bochner, MD¹; David Solit, MD⁴; Victor Reuter, MD² and Hikmat Al-Ahmadie, MD²
¹Urology Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Pathology, Memorial Sloan-Kettering Cancer Center, New York, NY; ³Molecular Cytogenetics Core Facility, Memorial Sloan-Kettering Cancer Center, New York, NY; ⁴Genitourinary Oncology Service, Department of Medicine, Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented By: Sumit Isharwal, MD)

Poster #148
PRE-SURGERY NEUTROPHIL-TO-LYMPHOCYTE RATIO IS SIGNIFICANTLY ASSOCIATED WITH SURVIVAL OUTCOMES IN PATIENTS WITH UROTHELIAL CARCINOMA TREATED WITHOUT NEOADJUVANT CHEMOTHERAPY AND WITH RADICAL CYSTECTOMY
Jason Podolnick, BS¹; Janet Baack Kukreja, MD, MPH²; Xuemei Wang, MS²; Hsiang-Chun Chen, PhD²; Neema Navai, MD²; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD²
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)

Poster #149
GENOMIC DIFFERENCES BETWEEN “PRIMARY” AND “SECONDARY” MUSCLE INVASIVE BLADDER CANCER (MIBC): IMPLICATIONS FOR NEOADJUVANT CHEMOTHERAPY
Eugene Pietzak, MD; Aditya Bagrodia, MD; Hikmat Al-Ahmadie, MD; Qiang Li, MD; Harry Herr, MD; Samuel Funt, MD; David Barron, MD, PhD; Ahmet Zehir, PhD; Michael Berger, PhD; David Solit, MD; Maria Arcila, MD; Dean Bajorin, MD; Jonathan Rosenberg, MD; Eugene Cha, MD; Bernard Bochner, MD and Gopa Iyer, MD
Memorial Sloan Kettering Cancer, New York, NY
(Presented By: Eugene J. Pietzak, III, MD)

Poster #150
OUTCOMES AND SURVIVAL IN NONBILHARZIAL PURE SQUAMOUS CELL BLADDER CANCER IN PATIENTS UNDERGOING CURATIVE RADICAL CYSTECTOMY
Nourhan Ismaeel, BS¹; Janet Baack Kukreja, MD, MPH²; Neema Navai, MD²; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD²
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)
Poster #151
ABSENCE OF TUMOR ON REPEAT TURBT DOES NOT PREDICT FINAL PATHOLOGIC T0 STAGE IN MUSCLE INVASIVE BLADDER CANCER TREATED WITH RADICAL CYSTECTOMY
Janet Baack Kukreja, MD, MPH¹; Sima Porten, MD²; Vishnukamal Golla, MD²; Graciela Noguera-Gonzalez, MPH¹; Neema Navai, MD¹; Ashish Kamat, MD¹; Colin Dinney, MD¹ and Jay Shah, MD¹
¹MD Anderson Cancer Center, Houston, TX; ²University of California San Francisco, San Francisco, CA; ³University of California Los Angeles, Los Angeles, CA
(Presented By: Janet Baack Kukreja, MD)

Poster #152
IS NEOADJUVANT CHEMOTHERAPY BENEFICIAL BEFORE RADICAL CYSTECTOMY? EXAMINING THE EXTERNAL VALIDITY OF THE SWOG-8710 TRIAL
Nawar Hanna, MD, MSc¹; Quoc-Dien Trinh, MD¹; Jesse Sammon, MD²; Thomas Seisen, MD¹; Malte Vetterlein, MD¹; Raphael B. Moreira, MD³; Mark A. Preston, MD, MPH¹; Stuart R. Lipsitz, ScD¹; Joaquim Bellmunt, MD, PhD³; Mani Menon, MD²; Toni K. Choueiri, MD³ and Firas Abdollah, MD²
¹Division of Urological Surgery and Center for Surgery and Public Health, Brigham and Women's Hospital/Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA; ²Henry Ford Hospital, Vattikuti Institute of Urology, Center for Outcomes Research, Analytics and Evaluation, Detroit, MI, USA; ³Department of Medical Oncology, Dana-Farber Cancer Institute, Brigham and Women's Hospital, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA
(Presented By: Nawar Hanna, MD)

Poster #153
COMPARATIVE EFFECTIVENESS OF ROBOT-ASSISTED VS. OPEN RADICAL CYSTECTOMY
Nawar Hanna, MD, MSc¹; Jeffrey J. Leow, MBBS, MPH¹; Maxine Sun, MPH¹; Firas Abdollah, MD²; Mani Menon, MD²; Adam S. Kibel, MD¹; Joaquim Bellmunt, MD, PhD³; Toni K. Choueiri, MD³ and Quoc-Dien Trinh, MD¹
¹Division of Urological Surgery and Center for Surgery and Public Health, Brigham and Women's Hospital/Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA; ²Henry Ford Hospital, Vattikuti Institute of Urology, Center for Outcomes Research, Analytics and Evaluation, Detroit, MI, USA; ³Department of Medical Oncology, Dana-Farber Cancer Institute, Brigham and Women's Hospital, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA
(Presented By: Nawar Hanna, MD)

Poster #154
RESULTS OF SECOND LINE TOPICAL THERAPY FOR UPPER TRACT UROTHELIAL CARCINOMA (UTUC)
Adithya Balasubramanian, BA¹; Michael J. Metcalfe, MD²; Gavin Wagenheim, MD³; Lianchun Xiao, MS³; John Papadopoulos, MD³; Neema Navai, MD²; John W. Davis, MD³; Jose A. Karam, MD³; Ashish M. Kamat, MD³; Christopher G. Wood, MD³; Colin P. Dinney, MD³ and Surena F. Matin, MD³
¹Baylor College of Medicine, Houston, TX; ²Department of Urology, MD Anderson Cancer Center, Houston, TX; ³Department of Biostatistics, MD Anderson Cancer Center, Houston TX
(Presented By: Adithya Balasubramanian, BA)
**Poster Session II – Summary**

**Poster #155**

**A PROPENSITY SCORE ANALYSIS OF RADICAL CYSTECTOMY VERSUS BLADDER-SPARING TRIMODAL THERAPY IN THE SETTING OF A MULTIDISCIPLINARY BLADDER CANCER CLINIC**

Girish Kulkarni, MD¹; Thomas Hermanns, MD¹; Yanliang Wei, MD¹; Thenappan Chandrasekar, MD²; Raj Satkunasivam, MD¹; Paul Athanasopoulos, MD¹; Peter Boström, MD¹; Cynthia Kuk³; Kathy Li, MD¹; Arnoud Templeton, MD⁴; Srikala Sridhar, MD⁴; Theodorus van der Kwast, MD⁵; Peter Chung, MD⁶,⁷; Robert Bristow, MD⁴,⁷; Michael Milosevic, MD⁶,⁷; Padraig Warde, MD⁶,⁷; Neil Fleshner, MD¹; Michael Jewett, MD¹; Shahina Bashir⁸ and Alexandre Zlotta, MD¹

¹Princess Margaret Cancer Centre, Department of Surgery, Division of Urology, University Health Network, University of Toronto, Toronto, Canada; ²University of Toronto, Toronto, ON; ³Department of Surgery, Division of Urology, Mount Sinai Hospital, University of Toronto, Toronto, Canada; ⁴Princess Margaret Cancer Centre, Department of Medical Oncology, University of Toronto, Toronto, Canada; ⁵Department of Pathology, University Health Network, University of Toronto, Toronto, Canada; ⁶Radiation Medicine Program, Princess Margaret Cancer Centre and University Health Network; ⁷and Department of Radiation Oncology, University of Toronto, Toronto, Canada; ⁸Department of Biostatistics, Princess Margaret Cancer Centre, University of Toronto, Toronto, Canada

(Presented By: Thenappan Chandrasekar, MD)

**Poster #156**

**GENOMIC DIFFERENCES BETWEEN MALES AND FEMALES WITH HIGH GRADE UROTHELIAL BLADDER CANCER**

David Paulucci, BA; Balaji Reddy, MD; Ketan Badani, MD and John Sfakianos, MD

Icahn School of Medicine at Mount Sinai, New York, NY

(Presented By: David Joseph Paulucci, BA)

**Poster #157**

**PERIOPERATIVE TRANSFUSION OF LEUKOCYTE DEPLETED BLOOD PRODUCTS IN RADICAL CYSTECTOMY PATIENTS DOES NOT ADVERSELY IMPACT SURVIVAL: A RETROSPECTIVE ANALYSIS ON 1,026 PATIENTS.**

Juan Chipollini, MD¹; Dominic Tang, MD¹; Ali Antar²; Scott Gilbert, MD³; Julio Pow-Sang, MD¹; Wade Sexton, MD¹; Philippe Spiess, MD¹; Sephalie Patel, MD¹ and Michael Poch, MD¹

¹Moffitt Cancer Center, Tampa, FL; ²USF Morsani College of Medicine, Tampa, FL

(Presented By: Juan Chipollini, MD)

**Poster #158**

**ASSESSMENT OF UPPER TRACT UROTHELIAL CARCINOMA INVASIVENESS USING HIGH-FREQUENCY ENDOLUMINAL ULTRASONOGRAPHY**

Jeffrey Farnum, MD; Raghu Vikram, MD; Surena Matin, MD; Colin Dinney, MD and Arvind Rao, PhD

Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX

(Presented By: Jeffrey Farnum, MD)

**Poster #159**

**FAMILIAL BLADDER CANCER: A POPULATION BASED ANALYSIS**

Piyush Pathak, BS; William Lowrance, MD, MPH; Zhe Yu, BS; Ken Smith, PhD and Heidi Hanson, PhD

University of Utah Huntsman Cancer Institute, Salt Lake City, UT

(Presented By: Piyush Pathak, BS)

**Poster #160**

**BLUE LIGHT CYSTOSCOPY FOR DIAGNOSIS OF UROTHELIAL BLADDER CANCER: RESULTS: FROM A PROSPECTIVE MULTICENTER REGISTRY**

Soroush Bazargani, MD¹; Hooman Djaladat, MD, MS¹; Anne K. Schuckman, MD¹; Badri Konyet, MD, MBA²; Trinity Bivalaqua, MD³; Jeff Holzbeierlein, MD⁴; Brian Willard, MD⁵; Jennifer Taylor, MD, MPH⁶; Joseph Liao, MD⁷; Kamal Pohar, MD⁸; James Tierney, MD⁹ and Siamak Daneshmand MD¹

¹USC Institute of Urology, Los Angeles, CA; ²University of Minnesota, Minneapolis, Minnesota; ³Johns Hopkins, Baltimore, MD; ⁴Kansas University, KS; ⁵Carolina Urology Partners, Lexington SC; ⁶Michael E. DeBakey VAMC, Houston TX; ⁷Palo Alto VA, CA; ⁸Ohio State University, Columbus, OH; ⁹Charleston Area Medical Center, Wv

(Presented By: Soroush T. Bazargani, MD)
Poster #161
EFFECT OF PRECYSTECTOMY EPITHELIAL TUMOR MARKER RESPONSE TO NEOADJUVANT CHEMOTHERAPY ON ONCOLOGICAL OUTCOMES IN UROTHELIAL BLADDER CANCER
Soroush Bazargani, MD¹; Hooman Djaladat, MD, MS¹; Anne K. Schuckman, MD¹; Sarmad Sadeghi, MD²; Tanya Dorff, MD³; David Quinn, MD² and Siamak Daneshmand, MD¹
¹USC Institute of Urology, Los Angeles, CA; ²USC Department of Internal Medicine, Hematology and Oncology
(Presented By: Soroush T. Bazargani, MD)

Poster #162
EFFECTIVENESS OF MYCOBACTERIUM PHLEI CELL WALL-NUCLEIC ACID COMPLEX (MCNA) IN BCG- UNRESPONSIVE PATIENTS
Roger Li, MD¹; John Amrhein, MSc PStat²; Zvi Cohen³; Monique Champagne, BPharm, MSc⁴ and Ashish Kamat, MD, MBBS, FACS¹
¹The University of Texas, MD Anderson Cancer Center; ²Kinston and McDougall Scientific Ltd., Toronto, Ontario, Canada; ³Bioniche Therapeutics Corp, Pinte-Claire, Quebec Canada; ⁴Telesta Therapeutics Inc., Saint-Laurent, Quebec, Canada
(Presented by: Roger Li)

Poster #163
CLINICAL AND IMMUNOLOGIC OUTCOMES OF BCG PRIMING PRIOR TO INTRAVESICAL INDUCTION IMMUNOTHERAPY FOR NON-MUSCLE INVASIVE BLADDER CANCER
Niannian Ji, PhD¹; Edwin E. Morales, MD¹; Neelam Mukherjee¹; Vincent Hurez, DVM, PhD¹; Tyler J. Curiel, MD¹; Getahun Abate, MD, PhD²; Daniel F. Hoft, MD, PhD³ and Robert S. Svatet, MD¹
¹San Antonio, Texas; ²Saint Louis, Missouri
(Presented By: Edwin E. Morales, MD)

Poster #164
INTRAVESICAL BCG INDUCES CD4+ EXPANSION BUT NOT DIFFERENTIATION IN A CLINICALLY RELEVANT IMMUNE COMPETENT MODEL OF BLADDER CANCER
Max Kates, MD; Thomas Nirschi; Nikolai Sopko; Noah Hahn; Alex Baras; Charles Drake and Trinity Bivalacqua, MD, PhD
(Presented By: Max Kates, MD)

Poster #165
PROPENSITY MATCHED COMPARATIVE ANALYSIS OF SURVIVAL FOLLOWING CHEMORADIATION AND RADICAL CYSTECTOMY IN PATIENTS WITH MUSCLE INVASIVE BLADDER CANCER
Chad Ritch, MD, MBA¹; Nachiketh Soodana Prakash, MBBS, MS¹; Raymond Balise, PhD²; Bruno Nahar, MD¹; David Alonzo, MD¹; Katherine Almengo, BS¹; Vivek Venkatramani, MD¹; Sanjaya Swain, MD¹; Sanoj Punnen, MD¹; Dipen Parekh, MD¹ and Mark Gonzalgo, MD¹
¹Department of Urology, University of Miami, Miami, Florida; ²Department of Urology and Biostatistics, University of Miami, Miami, Florida
(Presented By: Chad R. Ritch, MD, MBA)

Poster #166
IN VITRO INFECTIVITY AND CELL KILLING BY TWO ONCOLYTIC VIRUSES AGAINST UROTHELIAL CARCINOMA
Tanner Miest, MD, PhD¹; Mike Steele³; Yumei Zhou, PhD³; R. Jeffery Karnes, MD¹; Stephen Boorjian, MD¹; R. Houston Thompson, MD¹; Matthew Tollefson, MD¹; Igor Frank, MD¹; Kah Whye Peng, PhD²; Stephen Russell, MD, PhD² and Bradley Leibovich, MD¹
¹Department of Urology, Mayo Clinic, Rochester, MN; ²Department of Molecular Medicine, Mayo Clinic, Rochester, MN
(Presented By: Tanner Miest, MD, PhD)
Poster #167
DEFINITIVE TREATMENT OF BLADDER CANCER IN OCTOGENARIANS: BALANCING INCREASED PERIOPERATIVE MORTALITY WITH SUPERIOR OVERALL SURVIVAL
William Boysen, MD; Vignesh Packiam, MD; Joseph Rodriguez III, MD; Melanie A. Adamsky, MD; Norm Smith, MD and Gary D. Steinberg, MD
University of Chicago, Chicago IL
(Presented By: William Boysen, MD)

Poster #168
DOES SOCIOECONOMIC STATUS IMPACT LIFESTYLE BEHAVIORS AND HEALTH-RELATED QUALITY OF LIFE IN BLADDER CANCER SURVIVORS?
Ajay Gopalakrishna, MHS; Thomas Longo, MD; Joseph Fantony, MD; Steven Brousell, MD and Brant Inman, MD
Duke University Medical Center, Durham, NC
(Presented By: Ajay Gopalakrishna, BS, BA)

Poster #169
PATTERNS OF CARE FOR THE EVALUATION OF HEMATURIA AMONG INSURED NON-ELDERLY PATIENTS
Alyssa Greiman, MD¹; Kit Simpson, PhD²; Amit Patel, MD³ and Sandip Prasad, MD⁴
¹Medical University of South Carolina; ²Department of Healthcare Leadership and Management College of Health Professions MUSC, Charleston, SC; ³Department of Urology, DuPage Medical Group, DuPage, IL; ⁴Department of Urology, Medical University of South Carolina, Charleston, SC and Department of Surgery, Ralph H. Johnson VA Medical Center, Charleston, SC
(Presented By: Alyssa Greiman, MD)

Poster #170
RATES AND PREDICTORS OF UPGRADING FROM BIOPSY TO SURGICAL PATHOLOGY FOR UPPER TRACT UROTHELIAL CARCINOMA
Ezra Margolin, BA; Justin Matulay, MD; Ojas Shah, MD and Christopher Anderson, MD
Columbia University Medical Center, New York, NY
(Presented By: Christopher Anderson)

Poster #171
RESTRICTIVE TRANSFUSION IN RADICAL CYSTECTOMY IS SAFE
Sumeet Syan-Bhanvadia, MD; Siri Drangsholt, MD; Swar Shah, MD; Jie Cai; Gus Miranda and Siamak Daneshmand, MD
USC Institute of Urology, Los Angeles CA
(Presented By: Sumeet Kaur Syan-Bhanvadia, MD)

Poster #172
GENDER DISPARITIES IN THE DIAGNOSIS OF UPPER TRACT UROTHELIAL CARCINOMA FOLLOWING INITIAL PRESENTATION WITH HEMATURIA
Meera Chappidi, MPH; Max Kates, MD; Trinity Bivalacqua, MD, PhD and Phillip Pierorazio, MD
The James Buchanan Brady Urological Institute, Johns Hopkins University School of Medicine, Baltimore, MD
(Presented By: Meera Reddy Chappidi, BS, MPH)
Poster #173
IMPACT OF ACCOUNTABLE CARE ORGANIZATIONS ON PROSTATE SPECIFIC ANTIGEN (PSA) TESTING AND PROSTATE BIOPSY
Amy N. Luckenbaugh, MD¹; Samuel R. Kaufman²; Tudor Borza³; Phyllis Yan³; Lindsey A. Herrel³; Ted A. Skolarus⁴; Edward Norton⁵; Florian R. Schroeck⁶; Bruce L. Jacobs⁷; David C. Miller⁸; Vahakn B. Shahinian⁹ and Brent K. Hollenbeck²
¹University of Michigan Ann Arbor, Michigan; ²University of Michigan, Department of Urology, Dow Division of Health Services Research Ann Arbor, MI; ³University of Michigan, Department of Internal Medicine, Department of Economics, University of Michigan, Ann Arbor, Michigan, National Bureau of Economic Research, Cambridge, Massachusetts; ⁴The Dartmouth Institute for Health Policy and Clinical Practice Lebanon, NH; ⁵University of Pittsburgh, Department of Urology, Graduate School of Public Health Pittsburgh, PA; ⁶University of Michigan, Department of Internal Medicine Ann Arbor, MI
(Presented By: Amy Luckenbaugh, MD)

Poster #174
INITIAL VALIDATION OF AUTOMATED DATA EXTRACTION METHODS: IN UROLOGIC ONCOLOGY PRACTICE
Renu Eapen, MBBS, FRACS; Mark Bridge; Niloufar Ameli, MS; Janet Cowan, MA; Frank Stauff; Peter Carroll, MD and Matthew Cooperberg, MD
University of California, San Francisco. San Francisco, California
(Presented by: Renu Eapen)

Poster #175
PROFILES OF UROLOGIC CANCER AMONG THE ELDERLY: SHIFTING INCIDENCE, STAGE PRESENTATION, AND MORTALITY
Deepak Pruthi, MD, FRCSC¹; Zoann Nugent, PhD²; David Dawe, MD³; Harminder Singh, MD, MPH⁴ and Piotr Czaykowski, MD⁵
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Epidemiology and Cancer Registry, CancerCare Manitoba, Winnipeg, Manitoba, Canada; ³Department of Medical Oncology and Hematology, CancerCare Manitoba, Winnipeg, Manitoba, Canada; ⁴Internal Medicine, University of Manitoba, Winnipeg, Manitoba, Canada
(Presented By: Deepak Kumar Pruthi, MD, FRCSC)

Poster #176
EFFECT OF SURGICAL APPROACH ON PERIOPERATIVE OUTCOMES IN NEPHROURETERECTOMY
Alexander A. Parker; Andrew G. Bachman; Marshall Shaw, MD; Brian W. Cross, MD; Kelly L. Stratton, MD; Michael S. Cookson, MD and Sanjay G. Patel, MD
University of Oklahoma College of Medicine – Department of Urology, Oklahoma City, OK
(Presented By: Alexander Parker, BS)

Poster #177
IMPROVING NEEDLE BIOPSY ACCURACY IN SMALL RENAL MASS USING TUMOR-SPECIFIC DNA METHYLATION MARKERS
Sameer Chopra, MD, MS¹; Jie Liu, PhD²; Mehrdad Alemozaffar, MD, MS³; Manju Aron, MD⁴; Daniel Weisenberger, PhD⁵; Clayton Collins, PhD⁶; Sumeet Syan, MD⁷; Brian Hu, MD⁸; Mihir Desai, MD⁹; Monish Aron, MD⁹; Vinay Duddalwar, MD⁹; Inderbir Gill, MD⁹; Kimberly Siegmund, PhD⁹ and Gangning Liang, PhD⁹
¹University of Southern California, Los Angeles, CA; ²USC; ³Emory (Atlanta, GA); ⁴Loma Linda (Redlands, CA)
(Presented by: Sameer Chopra)

Poster #178
ONCOCYTIC TUMORS: QUANTITATIVE CONTOUR ANALYSIS AS AN IMAGE-BASED DISCRIMINATOR BETWEEN CHROMOPHOBES RENAL CELL CARCINOMAS AND ONCOCYTOMAS
Felix Yap, MD; Steve Can, MD; Sameer Chopra, MD, MS; Darryl Hwang, MD; Monish Aron, MD; Mihir Desai, MD; Vinay Duddalwar, MD and Inderbir Gill, MD
University of Southern California, Los Angeles, CA
(Presented By: Sameer Chopra, MD, MS)
Poster #179
IMAGE TEXTURE ANALYSIS OF PERIRENAL FAT AS A PREDICTOR OF INTRA-OPERATIVE ADHERENT PERINEPHRIC FAT
Chidubem Ugwueze, MD; Darryl Hwang, MD; Steve Cen, MD; Sameer Chopra, MD, MS; Mark Kwon, MD; Monish Aron, MD; Mihir Desai, MD; Inderbir Gill, MD and Vinay Duddalwar, MD
University of Southern California, Los Angeles, CA
(Presented By: Sameer Chopra, MD, MS)

Poster #180
NOT ALL SMALL RENAL MASSES ARE CREATED EQUAL: PREDICTORS OF PATHOLOGIC UPSTAGING IN CLINICAL T1 RENAL CANCER A MULTI-INSTITUTIONAL STUDY
Deepak Pruthi, MD, FRCSC¹; Dharam Kaushik, MD¹; Michael Liss, MD¹; Hanzhang Wang, MD, MPH¹; Ronald Rodriguez, MD, PhD¹ and Thomas McGregor, MD, FRCSC²
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Urology, University of Manitoba, Winnipeg, Manitoba
(Presented By: Deepak Kumar Pruthi, MD, FRCSC)

Poster #181
IMPACT OF PERIOPERATIVE HMG-COA REDUCTASE INHIBITOR USE ON RATES OF ACUTE KIDNEY INJURY IN PATIENTS UNDERGOING PARTIAL NEPHRECTOMY
Shreyas Joshi, Karen Ruth, Debra Kister, Michelle Collins, Stephanie Eble, David Chen, Richard Greenberg, Rosalia Viterbo, Marc Smaldone, Alexander Kutikov and Robert Uzzo
Fox Chase Cancer Center, Philadelphia, PA
(Presented By: Shreyas S. Joshi, MD)

Poster #182
CHARACTERIZATION OF GENOMIC ALTERATIONS ASSOCIATED WITH METASTATIC TROPISM IN A COHORT OF PATIENTS WITH RENAL CELL CARCINOMA
Maria Becerra, MD; Francisco Sanchez-Vega, PhD; Ed Reznik, PhD; Brandon Manley, MD; Almedina Redzematovic; Mahyar Kashan; Mazyar Ghanaat, MD; Jonathan Coleman, MD; Paul Russo, MD; Ari Hakimi, MD and James Hsieh, MD, PhD
Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center. New York, NY
(Presented By: Maria F. Becerra, MD)

Poster #183
MANAGEMENT AND CLINICAL OUTCOMES OF MIXED EPITHELIAL AND STROMAL TUMOR: THE MSKCC EXPERIENCE
Mahyar Kashan, BA; Mazyar Ghanaat, MD; Maria Becerra, MD; Brandon Manley, MD; Nicole Benfante; Paul Russo, MD; Jonathan Coleman, MD and Ari Hakimi, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Mahyar Kashan, BA)

Poster #184
PERIOPERATIVE OUTCOMES FOR ROBOTIC AND OPEN MULTIPLEX PARTIAL NEPHRECTOMY IN THE MANAGEMENT OF MULTIFOCAL RENAL CELL CARCINOMA
Ted Crisostomo-Wynne¹; Shawna Boyle, MD²; David Kim³; Michele Fasceili, MD⁴; W. Marston Linehan, MD⁵ and Adam Metwalli, MD⁶
¹Uniformed Services University; ²NIH, Bethesda, MD; ³George Washington University Hospital, Washington DC; ⁴Cleaveland Clinic, Cleaveland, OH
(Presented By: Shawna L. Boyle, MD)
Poster Session II — Summary

Poster #185
RENAL FAILURE AND SURGERY: HOW LOW IS TOO LOW? PARTIAL NEPHRECTOMY IN HEREDITARY RENAL CANCER POPULATION WITH IMPAIRED RENAL FUNCTION
Shawna Boyle, MD¹; Michele Fascelli, MD²; David Kim³; Ted Crisostomo-Wynne⁴; W. Marston Linehan, MD¹ and Adam Metwalli, MD¹
¹NIH, Bethesda, MD; ²Cleveland Clinic, Cleveland, OH; ³George Washington University Hospital, Washington DC; ⁴Uniformed Services University
(Presented By: Shawna L. Boyle, MD)

Poster #186
IMMUNOHISTOCHEMICAL EXPRESSION PROFILE OF EPITHELIAL MEMBRANE ANTIGEN IN RENAL TUMORS: AN ANALYSIS OF PROGNOSTIC SIGNIFICANCE
Katherine Hawkins, BS; Mahmoud Mohamed, MD; Lulin Hu, MD; Haiyan Liu, MD; Fan Lin, MD and Heinric Williams, MD
Geisinger Health System/ New York Methodist Hospital- NY-Presbyterian Health Care System
(Presented By: Katherine Hawkins, BS)

Poster #187
ROBOTIC VERSUS OPEN INFERIOR VENA CAVA (IVC) TUMOR THROMBECTOMY: THE INITIAL COMPARISON
Sameer Chopra, MD, MS; Jeff Loh-Doyle, MD; Jie Cai, MS; Monish Aron, MD; Mihir Desai, MD and Inderbir Gill, MD
University of Southern California, Los Angeles, CA
(Presented By: Sameer Chopra, MD, MS)

Poster #188
A MULTI-INSTITUTIONAL REVIEW OF POST-OPERATIVE COMPLICATIONS IN 1,248 PATIENTS UNDERGOING ROBOTIC PARTIAL NEPHRECTOMY
Kyle Blum, MD¹; David Paulucci, BA¹; Balaji Reddy, MD¹; Eric Moskowitz, MD¹; Daniel Rosen, MD¹; Ronney Abaza, MD²; Daniel Eun, MD³; Ashok Hemal, MD⁴ and Ketan Badani, MD¹
¹Icahn School of Medicine at Mount Sinai, New York, NY; ²OhioHealth Dublin Methodist Hospital, Columbus, OH; ³Temple University School of Medicine, Philadelphia, PA; ⁴Wake Forest School of Medicine, Winston-Salem, NC
(Presented By: David Joseph Paulucci, BA)

Poster #189
CLINICAL RESPONSE RATES OF NEOADJUVANT CHEMOTHERAPY IN UPPER TRACT UROTHELIAL CARCINOMA: A SINGLE INSTITUTIONAL EXPERIENCE
Hayley R. Silver, MD¹; Mark A. Bjurlin, MD¹; Nicolas M. Donin, MD² and William C. Huang, MD¹
¹Department of Urology, NYU Langone Medical Center, New York, New York; ²Department of Urology, David Geffen School of Medicine, University of California, Los Angeles, CA
(Presented By: Hayley Silver, MD)

Poster #190
NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA: A POPULATION-BASED ASSESSMENT OF UTILIZATION AND OUTCOMES BY SURGICAL APPROACH
Joseph Rodriguez III, MD; Vignesh Packiam, MD; Scott Johnson, MD; Zachary Smith, MD; Gary Steinberg, MD; Arieh Shalhav, MD and Norm Smith, MD
University of Chicago, Chicago, IL
(Presented By: Joseph Rodriguez, MD)
Poster #191
CYSTIC RENAL CELL CARCINOMA: RADIOLOGIC EVALUATION, MANAGEMENT AND CLINICAL OUTCOMES
Mazyar Ghanaat, MD; Mahyar Kashan, BA; Maria Becerra, MD; Michael Chiok; Andreas M. Hötker, MD; Brandon Manley, MD; Nicole Benfante; Jonathan Coleman, MD; Paul Russo, MD; Oguz Akin, MD and Ari Hakimi, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Mazyar Ghanaat, BS, MD)

Poster #192
COMPARING PREDICTIVE ACCURACY FOR FOUR PROGNOSTIC MODELS OF RECURRENCE FOLLOWING SURGERY IN NON-METASTATIC RENAL CELL CARCINOMA WITH THROMBUS
Shivashankar Damodaran, MCH¹; Jose Karam, MD²; Timothy Masterson, MD³; Viraj Master, MD⁴; Vitaly Margulis, MD⁵; Adam Lorentz, MD⁶; Tyler Bauman, MD⁷; Michael Blute, MD⁸; Christopher Wood, MD⁹; Jason Abel, MD¹⁰; Saad Aldousaari, MD¹¹ and Evan Bloom, MD¹²
¹Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison WI; ²Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ³Department of Urology, Indiana University School of Medicine; ⁴Department of Urology, Emory University School of Medicine; ⁵Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX
(Presented by: Shivashankar Damodaran)

Poster #193
PERCUTANEOUS CRYOABLATION FOR COMPLEX RENAL TUMORS
Bimal Bhindi, MD, CM, MSc, FRCSC; Ross Mason, MD, FRCSC; Mustafa Haddad, MD; Jennifer Geske, MS; Stephen Boorjian, MD, FACS; Bradley Leibovich, MD, FACS; Thomas Atwell, MD; Grant Schmit, MD and Houston Thompson, MD
Mayo Clinic, Rochester, MN, USA
(Presented By: Bimal Bhindi, MD, CM)

Poster #194
PATHOLOGIC OUTCOMES FOR COMPLEX LESIONS IN PATIENTS WITH HEREDITARY LEIOMYOMATOSIS WITH RENAL CELL CARCINOMA
Louis Spencer Krane, MD¹; Patrick Gomella, MD, MPH²; Abhinav Sidana, MD¹; Kai Hammerich, MD, PhD¹; James Peterson, BS¹; Daniel Su, MD¹; Maria Merino, MD¹; Ashkan Malayeri, MD¹; Ramaprasad Srinivasan, MD, PhD¹; W. Marston Linehan, MD¹ and Adam Metwalli, MD¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD; ²George Washington University Department of Urology, Washington, DC
(Presented By: Patrick T. Gomella, MD, MPH)

Poster #195
NUCLEAR RENAL SCAN LIKELY OVERESTIMATES SPLIT RENAL FUNCTION OF AFFECTED KIDNEY IN PATIENTS WITH LARGE RENAL MASS
Mohammed Haseebuddin, MD; Samuel Weprin; Robert Uzzo; Andrew McIntosh; Daniel Parker; Benjamin Ristau; Nikhil Waingankar; Rosalia Viterbo; David Chen; Richard Greenberg; Marc Smaldone and Alexander Kutikov
(Presented By: Mohammed Haseebuddin, MD)

Poster #196
MINIMALLY INVASIVE VERSUS OPEN RADICAL NEPHRECTOMY FOR CLINICAL STAGE T4 RENAL MASSES
Zachary Smith, MD; Scott Johnson, MD; Vignesh Packiam, MD; Joseph Rodriguez, MD and Scott Eggener, MD
University of Chicago, Chicago, IL
(Presented By: Zachary Lee Smith, MD, FACS)
**Poster Session II – Summary**

**Poster #197**
**RISK CALCULATOR: THE NON-NEOPLASTIC KIDNEY SCORE PREDICTS POST-OPERATIVE RENAL FUNCTION IN RADICAL NEPHRECTOMY SPECIMENS**
Deepak Pruthi, MD, FRCSC¹; Vivian Liu, MD²; Evan Weins, BSc³; Ruchi Chhibba, MD⁴; Ian Gibson, ChB, MD, FRCPath⁵ and Thomas McGregor, MD, FRCSC³
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Pathology, University of Manitoba, Winnipeg, Manitoba, Canada; ³Department of Urology, University of Manitoba, Winnipeg, Manitoba, Canada; ⁴Department of Emergency Medicine, University of Manitoba, Winnipeg, Manitoba, Canada
(Presented by: Deepak Pruthi)

**Poster #198**
**VALIDATION OF VENOUS THROMBOEMBOLISM RISK ASSESSMENT SCORE IN MAJOR UROLOGIC CANCER SURGERY: A POPULATION BASED STUDY**
Ross Krasnow, MD, MS¹; Mark Preston, MD, MPH¹; Yu-Hung Lin, MD²; Benjamin Chung, MD³; Adam Kibel, MD¹ and Steven Chang, MD, MS¹
¹Brigham and Woman’s Hospital, Boston, MA; ²Koo Foundation Sun Yat-Sen Cancer Center, Taipei, Taiwan; ³Stanford University, Palo Alto, CA
(Presented By: Ross E. Krasnow, MD, MS)

**Poster #199**
**USE OF AUTOMATED SMS-BASED MESSAGING TO IMPROVE OUTCOMES AND SATISFACTION IN PATIENTS UNDERGOING MAJOR UROLOGIC ONCOLOGY SURGERY**
Neal Patel, MD; Nariman Ahmadi, MD; David Hatcher, MD; Fatima Husain, MD; Monish Aron, MD; Mihir Desai, MD and Inderbir Gill, MD
USC Institute of Urology, Keck School of Medicine, Los Angeles, California
(Presented By: Neal Patel, MD)

**Poster #200**
**THE HSF1 CANCER SIGNATURE IN UROLOGIC TUMORS**
Christopher Zhang; Heinric Williams, MD, FACS and Thomas Prince, PhD
Geisinger Health Systems, Danville, PA
(Presented By: Christopher Zhang)

**Poster #201**
**INDICATIONS FOR NOVEL INTERPOSITION MYOCUTANEOUS FLAP FOR THE REPAIR OF RECTO-URINARY FISTULA**
Alyssa Greiman, MD¹; Lawrence Dagrosa, MD¹; Nima Baradaran, MD¹; Eric Rovner, MD¹; Lance Tavana, MD² and Harry Clarke, MD, PhD¹
¹Department of Urology, Medical University of South Carolina, Charleston, SC, USA; ²Department of Plastic Surgery, Medical University of South Carolina, Charleston, SC, USA
(Presented By: Alyssa Greiman, MD)

**Poster #202**
**THE LANDSCAPE OF WHOLE-GENOME ALTERATIONS AND PATHOLOGIC FEATURES IN GENITOURINARY MALIGNANCIES: AN ANALYSIS OF THE CANCER GENOME ATLAS**
Mark Ball, MD; Michael Gorin, MD¹; Charles Drake, MD, PhD¹; Hans Hammers, MD, PhD² and Mohamad Allaf, MD¹
¹Johns Hopkins University, Baltimore, MD; ²Univeristy of Texas Southwestern, Dallas, TX
(Presented By: Mark W. Ball, MD)
**Poster Session II — Summary**

**Poster #203**
**DEMOGRAPHIC AND SOCIOECONOMIC PREDICTORS OF PATHOLOGIC STAGE AND SURVIVAL AMONG 14,395 PATIENTS WITH PENILE CANCER: A REPORT FROM THE NATIONAL CANCER DATABASE**
David Paulucci, BA; Kyle Blum, MD; Kyrollis Attalla, MD; Ketan Badani, MD and John Sfakianos, MD
Icahn School of Medicine at Mount Sinai, New York, NY
(Presented By: David Joseph Paulucci, BA)

**Poster #204**
**LONG-TERM ONCOLOGIC OUTCOMES OF ADDING RADICAL PROSTATECTOMY TO CASTRATION FOR PATHOLOGICAL NODE-POSITIVE PROSTATE CANCER**
Bimal Bhindi, MD, CM, MSc, FRCSC; Laureano Rangel, MSc; Ross Mason, MD, FRCSC; Matthew Gettman, MD, FACS; Igor Frank, MD; Eugene Kwon, MD; Matthew Tollefson, MD; R. Houston Thompson, MD; Stephen Boorjian, MD, FACS and Jeffrey Karnes, MD, FACS
Mayo Clinic, Rochester, MN, USA
(Presented By: Bimal Bhindi, MD, CM)

**Poster #205**
**LYMPH NODE FLUORESCENCE DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY WITH INDOCYANINE GREEN - A PROSPECTIVE DOSING ANALYSIS**
Avinash Chennamsetty, MD¹; Ali Zhumkhawala, MD¹; Scott Tobis, MD²; Nora Ruel, MA³; Clayton Lau, MD¹ and Bertram Yuh, MD¹
¹City of Hope National Medical Center, Department of Surgery, Division of Urology and Urologic Oncology, Duarte, CA; ²Tobis Urology, Santa Barbara, CA; ³City of Hope National Medical Center, Department of Biostatistics, Duarte, CA
(Presented By: Avinash Chennamsetty, MD)

**Poster #206**
**INITIAL SERIES OF ROBOTIC SALVAGE RETROPERITONEAL AND PELVIC LYMPH NODE DISSECTION FOR “NODE-ONLY” RECURRENT PROSTATE CANCER**
Carlos Eduardo Schio Fay, MD¹; Andre Luis de Castro Abreu, MD¹; Daniel Park, MD¹; Daniel Melecchi de Freitas, MD¹; Sameer Chopra, MD¹; Neal Patel, MD¹; David Quinn, MD¹; Tanya Dorff, MD¹; John Carpten, MD¹; Peter Kuhn, MD¹; Parkash Gill, MD¹; Fabio Almeida, MD² and Inderbir Gill, MD¹
¹USC Institute of Urology, Catherine & Joseph Aresty Department of Urology, Keck School of Medicine, University of Southern California, Los Angeles, California; ²Phoenix Imaging Center, Phoenix, Arizona
(Presented By: Carlos Fay)

**Poster #207**
**ADJUVANT RADIATION IS NOT ASSOCIATED WITH SURVIVAL BENEFIT UPON LONG-TERM FOLLOW-UP IN MEN WITH A POSITIVE SURGICAL MARGIN FOLLOWING RADICAL PROSTATECTOMY**
Bimal Bhindi, MD, CM, MSc, FRCSC; Rachel Carlson, MS; Ross Mason, MD, FRCSC; Phillip Schulte, PhD; Matthew Gettman, MD, FACS; Igor Frank, MD; Matthew Tollefson, MD; R. Houston Thompson, MD; Stephen Boorjian, MD, FACS; Bradley Leibovich, MD, FACS and Jeffrey Karnes, MD, FACS
Mayo Clinic, Rochester, MN, USA
(Presented By: Bimal Bhindi, MD, CM)
Poster #208
PREDICT: A STUDY EVALUATING BASELINE DISEASE CHARACTERISTICS PREDICTIVE OF DISTANT METASTASES IN PATIENTS WITH CASTRATION-RESISTANT PROSTATE CANCER – UPDATED DATA
Stephen J. Freedland, MD¹; Matthew R. Smith, MD, PhD²; Raoul S. Concepcion, MD³; Christopher Pieczonka, MD⁴; Benjamin Gartrell, MD⁵; Zvi Schiffman, MD, FACS⁶; Tim Van Mouverik, PharmD⁷; Nancy Chang, PharmD⁷ and Neal D. Shore, MD, FACS⁸
¹Durham VA Medical Center, Durham, NC and Cedars Sinai Medical Center, Los Angeles, CA; ²Massachusetts General Hospital, Boston, MA; ³Urology Associates P.C., Nashville, TN; ⁴Associated Medical Professionals, Syracuse, NY; ⁵Montefiore Medical Center, Bronx, NY; ⁶Houston Metro Urology P.A., Houston, TX; ⁷Dendreon Pharmaceuticals Inc, Seattle, WA; ⁸Carolina Urologic Research Center, Myrtle Beach, SC
(Presented By: Stephen J. Freedland, MD)

Poster #209
PROGNOSTIC GRADE GROUP (PGG) PROSTATE CANCER GRADING SYSTEM: CAN MULTIPARAMETRIC MRI (MPMRI) ACCURATELY SEPARATE PATIENTS WITH PGG 1, PGG 2 AND HIGH GRADE CANCER?
Kae Jack Tay, MBBS¹; Jamie Holtz, BSc¹; Rachel Silverman, MSc²; Rajan Gupta, MD¹ and Thomas Polascik, MD¹
¹Duke University, Durham, NC; ²University of North Carolina, Chapel Hill, NC
(Presented By: Kae Jack Tay, MBBS)

Poster #210
DOES MULTIPARAMETRIC MRI (MPMRI) IMPROVE CLINICAL CRITERIA IN DEFINING MEN WITH PROSTATE CANCER FOR ACTIVE SURVEILLANCE?
Kae Jack Tay, MBBS¹; Rajan Gupta, MD¹; Jamie Holtz, BSc¹; Rachel Silverman, MSc²; Ariel Schulman, MD¹; Efrat Tsivian, MD¹ and Thomas Polascik, MD¹
¹Duke University, Durham, NC; ²University of North Carolina, Chapel Hill, NC
(Presented By: Kae Jack Tay, MBBS)

Poster #211
EFFECT OF MEDICARE SHARED SAVINGS PROGRAM ACCOUNTABLE CARE ORGANIZATIONS ON PROSTATE CANCER CARE
Tudor Borza, MD, MS¹,²; Samuel Kaufman, MS³; Phyllis Yan, MS²; Lindsey Herrel, MD, MS¹,²; Amy Luckenbaugh, MD¹; David Miller, MD, MPH¹,²; Ted Skolarus, MD, MPH¹,²,³; Bruce Jacobs, MD, MS⁴; Edward Norton, PhD⁵,⁶,⁷; Vahakn Shahinian, MD, MS⁸ and Brent Hollenbeck, MD, MS¹,²
¹University of Michigan, Department of Urology, Division of Oncology; ²University of Michigan, Department of Urology, Division of Health Services Research; ³VA Ann Arbor Healthcare System, Center for Clinical Management and Research; ⁴Department of Urology, University of Pittsburgh, Pittsburgh, Pennsylvania; ⁵Department of Health Management and Policy, University of Michigan, Ann Arbor, Michigan; ⁶Department of Economics, University of Michigan, Ann Arbor, Michigan; ⁷National Bureau of Economic Research, Cambridge, Massachusetts; ⁸Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan
(Presented By: Tudor Borza, MD, MS)

Poster #212
MICHIGAN PROSTATE SCORE (MIPS): A NOVEL URINARY BIOMARKER PANEL FOR THE PREDICTION OF PROSTATE CANCER DIAGNOSIS
Amir H. Lebastchi, MD; Christopher M. Russell, MD; Alexander M. Helfand, BA; Takahiro Osawa, MD, PhD; Javed Siddiqui, MS; Rabia Siddiqui; Arul M. Chinnaiyan, MD, PhD; Priya Kunju, MD; Rohit Mehra, MBBS; Debbie Snyder; Scott A. Tomlins, MD, PhD; John T. Wei, MD, MS and Todd M. Morgan, MD
University of Michigan, Ann Arbor, MI
(Presented By: Amir H. Lebastchi, MD)
Poster #213
MRI-TRUS FUSION BIOPSY AT NCI: CHANGES IN PROSTATE CANCER DETECTION RATE OF FUSION VS SYSTEMATIC BIOPSY
Brian P. Calio, BA¹; Abhinav Sidana, MD¹; Dordaneh Sugano, BS¹; Zachary Stanik¹; Mahir Maruf, MD¹; Amit L. Jain, MD¹; Maria J. Merino, MD²; Baris Turkbey, MD³; Peter L. Choyke, MD³; Bradford J. Wood, MD⁴ and Peter A. Pinto, MD⁴
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ³Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁴Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Brian Patrick Calio, Jr., BA)

Poster #214
IMPACT OF POSITIVE SURGICAL MARGINS ON QUALITY OF LIFE IN PROSTATE CANCER PATIENTS TREATED WITH RADICAL PROSTATECTOMY
John Oliver DeLancey, MD, MPH; Richard Matulewicz, MD, MS; David Victorson, PhD; Sandra Gutierrez, MS; James Burns, MS and Shilajit Kundu, MD
Northwestern University, Chicago, IL
(Presented By: John Oliver DeLancey, MD, MPH)

Poster #215
UPDATED CLINICAL AND SAFETY DATA FROM STRIDE, A RANDOMIZED, PHASE 2, OPEN-LABEL STUDY OF SIPULEUCEL-T WITH CONCURRENT VS SEQUENTIAL ENZALUTAMIDE IN METASTATIC CASTRATION-RESISTANT PROSTATE CANCER
Christopher M. Pieczonka, MD¹; Daniel P. Petrylak, MD²; David I. Quinn, MD³; Charles G. Drake, MD, PhD⁴; Jorge A. Garcia, MD, FACP⁵; Curtis J. Dunshee, MD, FACS⁶; Nancy Chang, PharmD⁷ and John M. Corman, MD⁸
¹Associated Medical Professionals of New York, Syracuse, NY; ²Yale Cancer Center, New Haven, CT; ³Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA; ⁴The Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD; ⁵Cleveland Clinic, Cleveland, OH; ⁶Urological Associates of Southern Arizona P.C., Tucson, AZ; ⁷Dendreon Pharmaceuticals Inc., Seattle, WA; ⁸Virginia Mason Cancer Institute, Seattle, WA
(Presented By: Christopher M. Pieczonka, MD)

Poster #216
DOES PROLONGED SURGICAL WAIT TIME FOR ROBOT-ASSISTED RADICAL PROSTATECTOMY IMPACT PATHOLOGICAL OUTCOMES?
Mounsif Azizi, MD¹; Marc Zanaty, MD² Mansour Alnazari²; Kelsey Lawson, MD³; Emad Rajih, MD³; Abdullah Alenizi, MD³; Pierre-Alain Hueber¹; Thierry Lebeau, MD³; Serge Benayoun, MD³; Pierre I. Karakiewicz¹; Assad El-Hakim³ and Kevin C. Zorn¹
¹Section of Urology, Department of Surgery, University of Montreal Hospital Center, Montreal, Canada; ²Division of Urology, Department of Surgery, Hôpital du Sacré-Cœur de Montreal, Montreal, Canada; ³Department of Urology, Taibah University, Madina, Saudi Arabia
(Presented By: Mounsif Azizi, MD)

Poster #217
RISK STRATIFICATION OF PROSTATE CANCER OF PATIENTS ON ACTIVE SURVEILLANCE: INTEGRATING GENOMIC BIOMARKERS AND MULTIPARAMETRIC MRI
Sudhir Isharwal, MD; Wenda Ye, MS; Joseph Zabell, MD; Andrei Purysko, MD; Eric Klein, MD; Andrew Stephenson, MD and Michael Gong, MD, PhD
Cleveland Clinic, Cleveland, OH
(Presented By: Sudhir Isharwal, MBBS)
Poster #218
COMPARISON OF END-FIRE VS. SIDE-FIRE ULTRASOUND PROBES FOR MRI/TRUS FUSION-GUIDED PROSTATE BIOPSY
Amit L. Jain, MD¹; Abhinav Sidana, MD¹; Zachary Stanik¹; Mahir Maruf, MD¹; Brian Calio, BA¹; Dordaneh Sugano, BS¹; Collier Wright, MD¹; Patrick Gommella, MD¹; Kai Hammerich, MD¹; Mark Ball, MD¹; Vladimir Valera, MD¹; Pingkun Yan²; Sherif Mehralivand, MD²; Baris Turkbey, MD²; Peter L. Choyke, MD²; Bradford J. Wood, MD² and Peter A. Pinto, MD¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Amit Lodha Dharm Chand Jain, MD)

Poster #219
TUMOR DRAINING LYMPH NODES IN PROSTATE CANCER HARBOR IMMUNE SUPPRESSOR CELLS THAT MAY IMPAIR TUMOR-REACTIVE T CELLS
Vidit Sharma, MD; Haidong Dong, MD, PhD; Eugene K. Kwon, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, MN
(Presented By: Vidit Sharma, MD)

Poster #220
IDENTIFICATION OF THRESHOLD PSA AND PSA DENSITY TO OPTIMIZE THE DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER BY PI-RADSv2 Driven MRI/TRUS FUSION GUIDED BIOPSY
Sherif Mehralivand, MD¹; Sandra Bednarova, MD²; Kai Hammerich, MD³; Francesca Mertan, BSME³; Sonia Gaur, BS³; Maria Merino, MD³; Bradford Wood, MD³; Peter Choyke, MD³; Peter Pinto, MD³ and Baris Turkbey, MD³
¹Mainz, Germany; ²Udine, Italy; ³Bethesda, MD
(Presented By: Sherif Mehralivand, MD)

Poster #221
RESULTS: OF SERIAL TESTING OF A 17-GENE GENOMIC PROSTATE SCORE IN PROSTATE CANCER PATIENTS ON ACTIVE SURVEILLANCE
Samuel Washington, MD¹; Michael Leapman, MD³; Cowan Janet, MS¹; Jeffrey Lawrence, MD³; Phillip Febbo, MD³; June Chan, ScD¹; Matthew Cooperberg, MD, MPH¹ and Peter Carroll, MD, MPH¹
¹University of California, San Francisco, San Francisco, CA; ²Yale University, New Haven, CT; ³Genomic Health, Inc, Redwood City, CA
(Presented By: Samuel L. Washington, III, MD)

Poster #222
DOES PI-RADS V2 SCORES PREDICT ADVERSE SURGICAL PATHOLOGY AT RADICAL PROSTATECTOMY?
Hao Nguyen, MD, PhD; Antonio Westphalen, MD; Niloufar Ameli, MS; Michael Leapman, MD; Janet Cowan, MS; Jeff Simko, MD; Katsuto Shinohara, MD and Peter Carroll, MD, MPH
UCSF Medical Center, San Francisco, CA
(Presented By: Hao Gia Nguyen, MD PhD)

Poster #223
ACCURACY OF MULTI-PARAMETRIC MAGNETIC RESONANCE IMAGING FOR DETECTION OF PROSTATE CANCER EXTRACAPSULAR EXTENSION AND RELATION TO ITS HISTOLOGIC EXTENT
Melanie Adamsky, MD; Scott Johnson, MD; Vignesh Packiam, MD; Alexander Gallan, MD; Tatjana Antic, MD; Arieh Shalhav, MD and Aytekin Oto, MD
The University of Chicago Medicine, Chicago, IL
(Presented By: Melanie Adamsky, MD)
Poster #224
URINARY AND SEXUAL FUNCTION IN PATIENTS AFTER OPEN VS. ROBOT-ASSISTED RADICAL PROSTATECTOMY FOR PROSTATE CANCER IN THE COMMUNITY: RESULTS: FROM THE CAPSURE REGISTRY
Annika Herlemann, MD¹; Janet Cowan, MA²; Peter Carroll, MD, MPH² and Matthew Cooperberg, MD, MPH²
¹LMU Munich; ²University of California, San Francisco, Helen Diller Family Comprehensive Cancer Center, San Francisco, CA, USA
(Presented By: Annika Herlemann, MD)

Poster #225
EFFECT OF PREOPERATIVE MRI ON OUTCOMES OF ROBOTIC-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY
Samuel Washington, MD; Hao Nguyen, MD, PhD; Niloufar Ameli, MS; Katsuto Shinhara, MD; Antonio Westphalen, MD, PhD and Peter Carroll, MD, MPH
University of California, San Francisco, San Francisco, CA
(Presented By: Samuel L. Washington, III, MD)

Poster #226
EVALUATING MRI FUSION BIOPSY VS SYSTEMATIC ULTRASOUND GUIDED BIOPSY IN PREDICTING HIGH GRADE CANCER AT TIME OF RADICAL PROSTATECTOMY
Hao Nguyen, MD, PhD; Katsuto Shinhara, MD; Janet Cowan, MS; Antonio Westphalen, MD; Jeff Simko, MD; Matthew Cooperberg, MD, MPH and Peter Carroll, MD, MPH
UCSF Medical Center, San Francisco, CA
(Presented By: Hao Gia Nguyen, MD PhD)

Poster #227
ASSOCIATION OF PRIMARY ANDROGEN DEPRIVATION THERAPY WITH DEPRESSION IN PATIENTS WITH LOCALIZED PROSTATE CANCER: RESULTS: FROM THE CAPSURE REGISTRY
Annika Herlemann, MD¹; Janet Cowan, MA²; Renu Eapen, MD²; June Chan, ScD²; Matthew Cooperberg, MD, MPH² and Peter Carroll, MD, MPH²
¹LMU Munich; ²University of California, San Francisco, Helen Diller Family Comprehensive Cancer Center, San Francisco, CA, USA
(Presented By: Annika Herlemann, MD)

Poster #228
MOLECULAR IMAGING USING 68GA-PSMA PET MAY INCREASE DETECTION OF REGIONAL AND DISTANT METASTASIS IN CLINICALLY HIGH RISK PROSTATE CANCER PATIENTS AND IN PATIENTS WITH BIOCHEMICAL RECURRENCE.
Hao Nguyen, MD, PhD; Thomas Hope, MD; Matthew Cooperberg, MD, MPH; Kirsten Greene, MD, MPH; Janet Cowan, MS; Huiqing Wang, MD; Katsuto Shinhara, MD; Antonio Westphalen, MD; Jeff Simko, MD and Peter Carroll, MD, MPH
UCSF Medical Center, San Francisco, CA
(Presented By: Hao Gia Nguyen, MD PhD)

Poster #229
ACCURACY OF MAGNETIC RESONANCE IMAGING (MRI) IN DIAGNOSING PROSTATE CANCER: COMPARING THE 5-POINT LIKERT SCORING SYSTEM VIS-À-VIS MRI-ULTRASOUND FUSION TARGETED BIOPSY
Toshitaka Shin, MD, MS; Thomas Smyth, MD; Owings Mills, MD; Osamu Ukimura, MD; Jie Cai, MS; Nariman Ahmadi, MD; Sameer Chopra, MD, MS; Andre Luis de Castro Abreu, MD; Hiromitsu Mimata, MD and Inderbir Gill, MD
University of Southern California, Los Angeles, CA
(Presented By: Toshitaka Shin, MD, PhD)
Poster #230
THE IMPACT OF CLINICAL CCP TESTING IN MEN WITH LOCALIZED PROSTATE CANCER FOR EXPANDING THE POPULATION OF MEN ELIGIBLE FOR ACTIVE SURVEILLANCE
Behfar Ehdaie, MD, MPH¹; Steven Stone, PhD²; Ryan Bernhisel, MStat³; James Eastham, MD⁴; Thomas Keane, MD⁴; John Davis, MD⁵; E. David Crawford, MD⁶; Michael Brawer, MD⁷; Daniel Lin, MD⁷ and Peter Scardino, MD⁸
¹Memorial Sloan Kettering Cancer Center, New York City, NY; ²Myriad Genetics, Inc., Salt Lake City, UT; ³Memorial Sloan Kettering Cancer Center, New York, NY; ⁴The Medical University of South Carolina, Charleston, SC; ⁵The University of Texas MD Anderson Cancer Center, Austin, TX; ⁶University of Colorado at Denver, Denver, CO; ⁷University of Washington, Seattle, WA
(Presented By: Behfar Ehdaie, MD MPH)

Poster #231
THE MAJORITY OF UPGRADING FROM STANDARD TRUS BIOPSY TO RADICAL PROSTATECTOMY PATHOLOGY IS DISCOVERED ON MRI/US FUSION GUIDED TARGETED BIOPSY
James L. Ellenburg, MD¹; Jennifer B. Gordetsky, MD²; John V. Thomas, MD³; Jeffrey W. Nix, MD¹ and Soroush Rais-Bahrami, MD¹
¹University of Alabama at Birmingham, Department of Urology, Birmingham, AL; ²University of Alabama at Birmingham, Department of Pathology, Birmingham, AL; ³University of Alabama at Birmingham, Department of Radiology, Birmingham, AL
(Presented By: James Luke Ellenburg, MD)

Poster #232
MULTIPARAMETRIC MRI/ULTRASOUND FUSION BIOPSY IMPROVES BUT DOES NOT REPLACE STANDARD TEMPLATE BIOPSY FOR THE DETECTION OF PROSTATE CANCER
Keyan Salari, MD, PhD¹; Nawar Hanna, MD¹; Matthew Wszolek, MD¹; Francisco Gelpi-Hammerschmidt, MD¹; Mukesh Harisinghani, MD²; Douglas Dahl, MD¹; Michael Blute, MD¹ and Adam Feldman, MD, MPH¹
¹Massachusetts General Hospital, Department of Urology, Boston, MA; ²Massachusetts General Hospital, Department of Radiology, Boston, MA
(Presented By: Keyan Salari)

Poster #233
CONTEMPORARY PROSTATE CANCER RADIATION THERAPY IN THE UNITED STATES: COMPLIANCE WITH QUALITY MEASURES
Daniel Lee; JoAnn Alvarez, MA; Tatsuki Koyoma, PhD; Matthew J. Resnick, MD, MPH, MMHC; David F. Penson, MD, MPH, MMHC; Daniel A. Barocas, MD, MPH; Karen E. Hoffman, MD, MPH, MHS and CEASAR Investigators
Vanderbilt University Medical Center, Nashville TN
(Presented By: Daniel J. Lee, MD)
Poster #234
GERMLINE MUTATIONS IN THE KALLIKREIN 6 REGION AND PREDISPOSITION FOR AGGRESSIVE PROSTATE CANCER
Laurent Briollais¹; Hilmi Ozcelik²; Jingxiong Xu³; Maciej Kwiatkowski³; Emilie Lalonde⁴; Dorota H. Sendorek⁴; Neil E. Fleshner⁵; Franz Recker³; Cynthia Kuk⁶; ⁷; Ekaterina Olkhov-Mitsel⁸; ⁹; Sevtap Savas¹⁰; Sally Hanna¹; Tristan Juvet¹; Geoffrey A. Hunter¹; Hong Li¹; Karen Chadwick¹; Ioannis Prassas¹⁰; Antoninus Soosaipillai¹¹; John Trachtenberg¹²; Ants Toi¹³; Yu-Jia Shiah¹⁴; Michael Fraser¹⁴; Theodorus van der Kwast¹⁵; Robert G. Bristow¹⁶; Harry Hill ⁺; Eleftherios P. Diamandis¹⁴; Paul C. Boutros¹⁴; and Alexandre Zlotta, MD, PhD, FRCSC¹⁴
¹Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital & Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada; ²Fred A. Litwin Centre for Cancer Genetics, Lunenfeld-Tanenbaum Research Institute, Toronto, Ontario, Canada & Department of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, ON, Canada; ³Department of Urology, Cantonal Hospital Aarau. Aarau, Switzerland; ⁴Informatics & Biocomputing Program, Ontario Institute for Cancer Research, Ontario, Canada; ⁵Department of Medical Biophysics, University of Toronto, Toronto, Canada; ⁶Department of Surgical Oncology, Urology, Princess Margaret Hospital, University Health Network. Toronto, ON, Canada; ⁷Department of Surgery, Urology. Mount Sinai Hospital. Toronto, ON, Canada; ⁸Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, ON, Canada; ⁹Faculty of Medicine, Memorial University, St. John’s, NL, Canada; ¹⁰Department of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, ON, Canada; ¹¹Department of Pathology and Laboratory Medicine, University Health Network, Toronto, ON, Canada; ¹²Department of Pathology. Toronto General Hospital, University Health Network. Toronto, ON, Canada; ¹³Department of Pathology and Laboratory Medicine, University Health Network, Toronto, ON, Canada; ¹⁴Mount Sinai Hospital, University Health Network, Toronto, Ontario
(Presented By: Alexandre Zlotta, MD)

Poster #235
BILATERAL PROSTATE CANCER FOUND ON PROSTATE BIOPSY IN PATIENTS CONSIDERING ACTIVE SURVEILLANCE: DETECTION NOT PROGRESSION
Pablo Sierra, MD¹; Jonathan Wang, MD²; Kyle Richards, MD³,⁴; E. Jason Abel, MD³,⁴; Tracy Downs, MD³; Fangfang Shi, MS³ and David Jarrard, MD³,⁴
¹Universidad CES, Medellin, Colombia; ²Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ³University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ⁴University of Wisconsin Carbone Cancer Center, Madison, WI, USA
(Presented By: Jonathan Wang, MD)

Poster #236
IMPROVING RISK STRATIFICATION IN A COMMUNITY-BASED AFRICAN AMERICAN POPULATION USING CELL CYCLE PROGRESSION SCORE
Walter Rayford, MD, PhD, MBA¹; Mark Greenberger, MD² and Randy Bradley, PhD³
¹Cordova, TN; ²Memphis, TN; ³Knoxville, TN
(Presented By: Walter Rayford, MD, PhD, MBA)

Poster #237
COMPARATIVE ANALYSIS OF THE DECIPHER GENOMIC CLASSIFIER AND CAPRA-S NOMOGRAM BETWEEN AFRICAN AMERICAN AND CAUCASIAN POPULATIONS
Walter Rayford, MD, PhD, MBA¹; Mark Greenberger, MD² and Randy Bradley, PhD³
¹Cordova; ²Memphis, TN; ³Knoxville, TN
(Presented By: Walter Rayford, MD, PhD, MBA)
Poster #238
PREDICTION OF PATHOLOGICAL OUTCOME AT RADICAL PROSTATECTOMY FOR MRI-ULTRASOUND FUSION PROSTATE BIOPSY VERSUS STANDARD TRANSRECTAL ULTRASOUND GUIDED PROSTATE BIOPSY
Hans Arora, MD, PhD¹; Yaw Nyame, MD, MBA¹; El-Shafei Ahmed, MD¹; Onder Kara, MD¹; Marwan Ali, MD²; Andrei Pursyko, MD³; Andrew Stephenson, MD, MBA¹; J. Stephen Jones, MD¹ and Eric Klein, MD¹
¹Glickman Urological & Kidney Institute, Cleveland Clinic, Cleveland, OH; ²Cleveland Clinic Akron General, Cleveland, OH; ³Imaging Institute, Cleveland Clinic, Cleveland, OH
(Presented By: Hans C. Arora, MD, PhD)

Poster #239
TARGETING THE HSP40/HSP70 AXIS AS A NOVEL STRATEGY TO DISRUPT ARV7 SIGNALING IN CASTRATION-RESISTANT PROSTATE CANCER.
Matthew J. Watson, DO¹; Michael A. Moses, PhD¹; Jason E. Gestwicki, PhD²; Jane B. Trepel, PhD³ and Len Neckers, PhD¹
¹NIH, NCI, Urological Oncology Branch; ²UCSF, Department of Pharmaceutical Chemistry (San Francisco, CA); ³NIH, NCI, Developmental Therapeutics Branch
(Presented by: Matthew J. Watson)

Poster #240
WHAT FALSE NEGATIVE RATE OF NON-INVASIVE TESTING ARE ACTIVE SURVEILLANCE PATIENTS AND URO-Oncologists WILLING TO ACCEPT IN ORDER TO AVOID PROSTATE BIOPSY?
Rashid Sayyid, MD¹; Dharmendra Dingar, PhD¹; Katherine Fleschner, BSc¹; Taylor Thorburn, BSc¹; Joshua Diamond, BSc¹; Erik Yao, MD¹; Karen Hersey, BSc¹; Karen Chadwick, MSc¹; Nathan Perlis, MSc¹; Laurence Klotz, MD²; Antonio Finelli, MD, MSc³; Robert Hamilton, MD, MPH¹; Girish Kulkarni, MD, PhD¹; Alexandre Zlotta, MD, PhD¹ and Neil Fleshner, MD, MPH¹
¹University Health Network, Toronto, ON; ²Sunnybrook Health Sciences Center, Toronto, ON
(Presented By: Rashid Sayyid, MD)

Poster #241
VALIDATION OF THE 2015 PROSTATE CANCER PROGNOSTIC GRADE GROUPS FOR PREDICTING LONG-TERM ONCOLOGIC OUTCOMES IN A SHARED EQUAL ACCESS HEALTH SYSTEM.
Ariel Schulman, MD¹; Lauren Howard, MS¹; Kae Jack Tay, MD¹; Rajan Gupta, MD¹; Efrat Tsivian, MD¹; Christopher Amling, MD²; William Aronson, MD³; Matthew Cooperberg, MD⁴; Christopher Kane, MD⁵; Martha Terris, MD⁶; Stephen Freedland, MD⁷ and Thomas Polascik, MD¹
¹Duke Medical Center, Durham, NC; ²Oregon Health & Science University, Portland, OR; ³UCLA Medical Center, Los Angeles, CA; ⁴UCSF Medical Center, San Francisco, CA; ⁵UCSD Health System, San Diego, CA; ⁶Georgia Regents Health System, Augusta, GA; ⁷Cedars-Sinai Medical Center, Los Angeles, CA
(Presented By: Ariel Schulman, MD)

Poster #242
DEFINING THE INDEX LESION FOR SALVAGE PARTIAL GLAND ABLATION AFTER RADIATION THERAPY FOR LOCALIZED PROSTATE CANCER
Arjun Sivaraman, MD; Toshikazu Toshi, MD; Hebert Alberto Vargas, MD; Samson Fine, MD; James Eastham, MD and Behfar Ehdaie, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Arjun Sivaraman, MD)
Poster #243
PHASE IIA, RANDOMIZED PLACEBO-CONTROLLED TRIAL OF SINGLE HIGH DOSE CHOLECALCIFEROL (VITAMIN D3) AND DAILY GENISTEIN (G-2535) VERSUS PLACEBO IN MEN UNDERGOING PROSTATECTOMY
David Jarrard, MD; Badrinath Konety, MD, MBA¹; Wei Huang, MD²; Tracy Downs, MD³,⁴; Jill Kolesar, PharmD, BCPS, FCCP, RPh⁵,⁶,⁷; KyungMann Kim, PhD⁷,⁸; Tom Havighurst, MS⁶,⁷; Joel Slaton, MD¹; Margaret House, RN, OCN¹; Howard Parnes, MD⁷ and Howard Bailey, MD⁸,⁹
¹Department of Urology, University of Minnesota, Minneapolis, MN, USA; ²Department of Pathology and Laboratory Medicine University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ³Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ⁴University of Wisconsin Carbone Cancer Center, Madison, WI, USA; ⁵School of Pharmacy, University of Wisconsin, Madison, USA; ⁶Department of Biostatistics and Medical Informatics; ⁷National Cancer Institute, Bethesda, MD, USA; ⁸Department of Medicine, University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ⁹Environmental and Molecular Toxicology, University of Wisconsin, Madison, WI, USA
(Presented By: David F. Jarrard, MD)

Poster #244
68Ga-PSMA PET/CT IMPROVES BIOCHEMICAL RESPONSE AFTER SALVAGE LYMPH NODE DISSECTION FOR NODAL RECURRENCE
Annika Herlemann, MD; Alexander Kretschmer, MD; Alexander Buchner, MD; Lina El-Malazi; Christian G. Stief, MD and Christian Gratzke, MD
LMU Munich
(Presented By: Annika Herlemann, MD)

Poster #245
TECHNICAL MISS ON SOFTWARE FUSION MRI TARGETED BIOPSY: CAN WE DETERMINE THE CAUSE?
Michael Chevinsky, MD; Eric Kim, MD; Joel Vetter, MS; Niraj Badhiwala, MD; John Weaver, MD; Robert Grubb, MD and Gerald Andriole, MD
Division of Urologic Surgery, Washington University School of Medicine, St. Louis, MO, USA
(Presented By: Michael S. Chevinsky, MD)

Poster #246
DIFFERENCES IN METASTATIC PROSTATE CANCER SURVIVAL BY RACE AND ETHNICITY
Jordan A. Baeker Bispo, BA, MPH; Lunan Ji, MD; Ronit Shah, MD; Nachiketh Soodana Prakash, MBBS, MS; Chad Ritch, MD; Mark Gonzalgo, MD; Murugesan Manoharan, MD; Dipen Parekh, MD; Raymond Balise, PhD and Sanoj Punnen, MD
University of Miami, Miller School of Medicine and Sylvester Comprehensive Cancer Center, Miami, Florida
(Presented By: Jordan A. Baeker Bispo, BA, MPH)

Poster #247
LONG-TERM ONCOLOGICAL OUTCOMES IN PATIENTS WITH BIOCHEMICAL RECURRENCE AFTER RADICAL PROSTATECTOMY
Derya Tilki, Raisa Pompe, Pierre Tennstedt, Markus Graefen and Hartwig Huland
Department of Urology and Martini-Klinik Prostate Cancer Center
(Presented By: Derya Tilki, MD)

Poster #249
MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING FOR DETECTION AND LOCALIZATION OF PROSTATE CANCER: DIAGNOSTIC PROPERTIES
Matvey Tsvian, MD¹; Rajan Gupta, MD¹; Efrat Tsvian, MD¹; Michael Abern, MD²; Ariel Schulman, MD³; Kae Jack Tay, MD³ and Thomas Polascik, MD⁴
¹Duke University Medical Center, Durham NC; ²University of Illinois at Chicago, Chicago IL
(Presented By: Matvey Tsvian, MD)
Poster #250
THE 4KSCORE AND MULTI-PARAMETRIC MRI PROVIDE INDEPENDENT BUT COMPLEMENTARY ACCURACY FOR THE DETECTION OF SIGNIFICANT PROSTATE CANCER TO HELP GUIDE THE NEED FOR A PROSTATE BIOPSY.
Bruno Nahar, MD¹; Tulay Koru-Sengul, PhD²; Nachiketh Prakash, MD¹; Vivek Venkatramani, MD¹; Murugesan Manoharan, MD¹; Mark Gonzalgo, MD¹; Chad Ritch, MD¹; Dipen Parekh, MD¹ and Sanoj Punnen, MD¹
¹Department of Urology - University of Miami; ²Department of Public Health Sciences - University of Miami
(Presented By: Bruno Nahar, MD)

Poster #251
MRI GUIDED IN_BORE BIOPSY FOR PATIENTS WITHOUT RECTUM
Dordaneh Sugano, BS¹; Abhinav Sidana, MD¹; Collier Wright, MD¹; Brian Calio, BA¹; Amit L. Jain, MD¹; Mahir Maruf, MD¹; Maria J. Merino, MD²; Peter L. Choyke, MD³; Baris Turkbey, MD³; Bradford J. Wood, MD⁴ and Peter A. Pinto, MD⁴
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ³Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁴Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Dordaneh Sugano, BS)

Poster #252
COMPARISON OF MULTIPARAMETRIC MRI TO PSA KINETICS AS AN INDICATION OF PROSTATE CANCER PROGRESSION IN MEN ON ACTIVE SURVEILLANCE
Mahir Maruf, MD¹; Michael Kongnyuy, MS¹; Arvin K. George, MD²; M. Minhaj Siddiqui, MD³; Abhinav Sidana, MD¹; Akhil Muthigi, BS⁴; Subin Valayil⁴; Amit L. Jain, MD¹; Brian Calio, BA¹; Dordaneh Sugano, BS¹; Thomas P. Frye, MD⁴; Peter L. Choyke, MD⁵; Baris Turkbey, MD⁶; Bradford J. Wood, MD⁶ and Peter A. Pinto, MD⁴
¹National Cancer Institute, National Institutes of Health, Urologic Oncology Branch, Bethesda, Maryland; ²Department of Urology, University of Michigan Health System, Ann Arbor, Michigan; ³Division of Urology, Department of Surgery, University of Maryland School of Medicine, Baltimore, Maryland; ⁴Department of Urology, University of Rochester School of Medicine, Rochester, New York; ⁵Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁶Center for Interventional Oncology, National Cancer Institute & NIH Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Mahir Maruf, MD)

Poster #253
MULTI-PARAMETRIC MAGNETIC RESONANCE IMAGING (MPMRI) IDENTIFIES SIGNIFICANT APICAL PROSTATE CANCERS
Alexander Kenigsberg, MST¹; Tsutomu Tamada, MD²; Andrew B. Rosenkrantz, MD³; Ming Zhou, MD⁴ and Herbert Lepor, MD⁴
¹Department of Urology, NYU School of Medicine, New York, NY; ²Department of Urology, NYU School of Medicine, New York, NY; ³Department of Radiology, Kawasaki Medical School, Okayama Japan; ⁴Department of Pathology, NYU School of Medicine, New York, NY; ⁵Department of Radiology, NYU School of Medicine, New York, NY; ⁶Department of Pathology
(Presented By: Alexander Kenigsberg, MST)

Poster #254
IS PROSTATE CANCER STAGE MIGRATION CONTINUING FOR BLACK MEN IN THE PSA ERA?
Ryan Dobbs, MD; David Greenwald, MD; Harpreet Wadhwa, MD; Vincent Freeman, MD and Michael Abern, MD
University of Illinois Chicago
(Presented By: Ryan W. Dobbs, MD)

Poster #255
TARGETED MRI/US FUSION PROSTATE BIOPSY: THE FIRST 206 PATIENTS - A SINGLE UROLOGIST’S EXPERIENCE IN A SMALL PRIVATE COMMUNITY UROLOGY PRACTICE.
Ali Kasraeian, MD, FACS¹; Jamie Cesaretti, MD²; Joshua Yellin, MD³; Brooke Knoell, PA-C⁴ and Ahmad Kasraeian, MD, FACS⁵
¹Kasraeian Urology; ²Terk Oncology (Jacksonville, Florida); ³Precision Imaging (Jacksonville, FL);
(Presented by: Ali Kasraeian)
Poster #256
PATHOLOGIC ANALYSIS OF THE PROSTATIC ANTERIOR FAT PAD AT THE TIME OF RADICAL PROSTATECTOMY: INSIGHTS FROM A PROSPECTIVE SERIES
Mark Ball, MD; Kelly Harris, MD; Zeyad Schwen, MD; Jeffrey Mullins, MD; Misop Han, MD; Patrick Walsh, MD; Alan Partin, MD and Jonathan Epstein, MD
Johns Hopkins University, Baltimore, MD
(Presented By: Mark W. Ball, MD)

Poster #257
CRITICAL ASSESSMENT OF RADIOTHERAPY FOLLOWING RADICAL PROSTATECTOMY: TIMING OF RADIOTHERAPY, RECURRENCE AND OUTCOMES
Linda Huynh, BS; Stephen Williams, MD and Thomas Ahlering, MD
¹Department of Urology, University of California Irvine Health, Orange, CA, USA; ²Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX, USA; ³UC Irvine Health, Department of Urology in Orange, CA
(Presented By: Thomas Edward Ahlering, MD)

Poster #258
PROSTATE BIOPSY DISEASE BURDEN SCORE AS A RISK ASSESSMENT TOOL FOR ADVERSE PATHOLOGIC FEATURES AT TIME OF RADICAL PROSTATECTOMY
Paras Shah, MD; Matt Elmasri, BS; Ren Ke, MD; Deepak Kapoor, MD and Carl Olsson, MD
¹The Smith Institute of Urology - New Hyde Park, NY; ²The Arthur Smith Institute of Urology, New Hyde Park, NY; ³Mount Sinai Icahn School of Medicine; ⁴Columbia University School of Medicine
(Presented By: Matthew Elmasri, BS)

Poster #259
MALIGNANT MESOTHELIOMA OF THE TUNICA VAGINALIS TESTIS: OUTCOMES FOLLOWING SURGICAL MANAGEMENT BEYOND RADICAL ORCHIECTOMY
Pedro Recabal Guiralde, MD; Barak Rosenzweig, MD; Wassim Bazzi, MD; Brett Carver, MD and Joel Sheinfeld, MD
MSKCC, New York, NY
(Presented By: Pedro Recabal Guiralde, MD)

Poster #260
POST-CHEMOTHERAPY RETROPERITONEAL LYMPH NODE DISSECTION WITH ADJUNCTIVE NEPHRECTOMY FOR NONSEMINOMATOUS GERM CELL TESTICULAR CANCER
Maria Becerra, MD; Brandon Manley, MD; Andrew Winer, MD; John Graham, MD; Brett Carver, MD and Joel Sheinfeld, MD
Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Maria F. Becerra, MD)

Poster #261
CLINICAL AND RADIOGRAPHIC PREDICTORS OF GREAT VESSEL RESECTION OR RECONSTRUCTION DURING RETROPERITONEAL LYMPH NODE DISSECTION
Scott Johnson, MD; Charles Nottingham, MD; Stephen Thomas, MD and Scott Eggener, MD
The University of Chicago Medicine, Chicago, IL
(Presented By: Scott Charles Johnson, MD)
OUTCOMES OF METASTATIC BLADDER CANCER FOLLOWING RADICAL CYSTECTOMY
Cory Hugen, MD; Hooman Djaladat, MD, MS; Anne Schuckman, MD; Jie Cai, MS; Gus Miranda, BS and Siamak Daneshmand, MD
University of Southern California, Los Angeles, CA
(Presented By: Cory Michael Hugen, MD)

Introduction: Metastatic Urothelial Cell Carcinoma (UCC) of the bladder is a highly lethal disease with poor long-term survival. We reviewed our experience with pathologic M+ disease following radical cystectomy.

Methods: We performed a retrospective review of all patients at USC undergoing planned radical cystectomy from 1971-2014 using our institutional bladder cancer database. We identified all M+ patients and performed COX regression and Kaplan-Meier survival analyses.

Results: We identified 88 patients with M+ disease of whom 6 patients were inoperable and 12 patients underwent surgery for symptomatic palliation. Fifty-four patients were staged M1 secondary to distant lymph node metastasis while liver, lung, retroperitoneal, and bone metastases were found in 18, 12, 12, and 8 patients, respectively. Thirty-two patients underwent neoadjuvant chemotherapy while 24 were adjuvantly treated. Additionally, 18 patients underwent neoadjuvant radiation therapy while 7 were treated adjuvantly. A neobladder was performed in 25 (28%) patients, 17 (19%) received a continent cutaneous diversion, and 40 (45%) an ileal conduit. The median overall survival of the entire cohort was 130 days. When stratifying by adjuvant chemotherapy, the median survival was 332 days for recipients versus 102 days for non-recipients. In both groups, only 7 patients survived >1 year. The median survival for palliative cases was 59 days. On multivariate regression analysis, continent cutaneous diversion (HR 1.7, 95% CI 1.001-2.895, p=0.0495) and positive margins (HR 1.658, 95% CI 1.023-2.685, p=0.04) were associated with worse overall survival while neoadjuvant chemotherapy (HR 0.592, 95% CI 0.35-1.00 p=0.05) and adjuvant chemotherapy (HR 0.197, 95% CI 0.106-0.368, p=<0.001) were associated with improved survival.

Conclusion: Metastatic UCC of the bladder is highly lethal with dismal survival rates. Our experience demonstrates that surgery has a very limited role and should likely be reserved for symptomatic palliation. Early involvement with hospice care could improve quality-of-life and should be considered.
Poster Session II – Full Abstracts

Poster #133
EFFECT OF PERIOPERATIVE BLOOD TRANSFUSION ON ONCOLOGIC OUTCOME FOLLOWING RADICAL CYSTECTOMY
Michael Metcalfe, MD; Graciela Gonzales, PhD; Kyle Potts, MD; Neema Navai, MD; Ashish Kamat, MD; Juan Cata, MD; Colin Dinney, MD and Jay Shah, MD
University of Texas, MD Anderson Cancer Center
(Presented By: Michael Joseph Metcalfe, MD)

Introduction: Radical cystectomy (RC) is a technically demanding procedure which frequently requires perioperative blood transfusion (PBT). Mixed data exist regarding the effect of PBT on oncologic outcomes following RC. We investigated the association between PBT and oncologic outcomes at a high volume cancer center, taking into account the timing and type of blood transfusion.

Methods: With IRB approval, we identified all patients who underwent RC for urothelial cancer between 1995 and 2015 at a single center. Clinical, pathological and demographic characteristics were collected including data on timing of transfusion (pre-, intra-, or post-operative(op)) and type of blood products transfused (packed red blood cells (PRBCs), cryoprecipitate (Cryo), fresh frozen plasma (FFP) or platelets (plts)). Using multivariable logistic regression models and the Kaplan-Meier method, we determined the impact of PBT on overall survival (OS), recurrence-free survival (RFS), and disease-specific survival (DSS).

Results: We identified 1778 patients, and 73.2% (1249/1778) received a PBT from time of presentation to 90 days post-op. 1.2% (18/1562) had a pre-op transfusion; 68.2% (1164/1778) received an intra-op transfusion, and 31.6% (409/1286) received a post-op transfusion. 70.2% of all patients received (PRBCs), 6.8% plts, 17.7 FFP, and 2.3% Cryo. On multivariate analysis, risk factors for receiving any PBT were: age (OR 1.04; 95% CI 1.01-1.08; p<0.017), surgery time (OR 1.01; 1-1.1; p< 0.001), pre-op Hgb (OR p<0.001), female sex (p<0.038), and pT stage (HR 3.67, 95% CI 1.17 -11.49, p=0.026). Factors associated with decreased OS were: age at RC (HR 1.03; 95% CI 1.01-1.034 p <0.001), number of lymph nodes removed (HR 0.99, 95% CI 0.97-1.00, p= 0.044), neoadjuvant chemotherapy (HR 1.51, 95% CI 1.07-2.13, p=0.020), salvage chemotherapy (2.68, 95% CI 1.28-5.62, p=0.009), positive margin (2.38; 95% CI 1.48-3.82, p<0.001), pT stage (3.19, 95% CI 2.17-4.70, p<0.001) and pN stage (OR 2.71, 95% CI 2.34-3.14, p<0.001). PBT was not significantly associated with overall survival (HR 1.21, 95% CI 0.76-1.95, p=0.42), disease-specific survival (HR 1.47, 95% CI 0.77-2.82, p=0.248) or recurrence-free survival (HR 1.30, 95% CI 0.82-2.06, p=0.268).

Conclusion: In our series, receipt of PBT is not independently associated with poor oncological outcomes around time of RC. More prospective multicenter studies are required to further delineate the association.
Introduction: There is a large unmet need for novel drug delivery systems and effective therapy for UTUC, especially for patients with chronic kidney disease and anatomic solitary kidneys. A temperature sensitive water-soluble gel formulation of Mitomycin C (MitoGel) has demonstrated increased time of drug delivery (4 to 6 hrs) and safety in the pelvicalyceal system of swine and human bladders. This report examines the efficacy and safety of MitoGel used for UTUC on a compassionate use basis.

Methods: Compassionate use approval was obtained on an individual patient basis from the respective regulatory authorities and IRBs. Eighteen patients have been approved for treatment to date from 11 institutions in 4 countries in Israel, Europe and the US. Treatment included 6 weekly MitoGel instillations via ureteral catheter or percutaneous nephrostomy, and 2 patients received maintenance treatment following a complete response (CR). MitoGel volume ranged from 5-20cc and concentration was 2-6 mg/cc. Adverse events were recorded throughout treatment. Ureteroscopy was performed 2-6 weeks following treatment completion for response determination.

Results: Median age of the cohort was 73.5 yrs, with 13 males. 14 patients had low-grade (LG) tumor, 2 high-grade (HG), and 2 indeterminate grade. 8 patients had a solitary kidney and 13 had non-resectable tumor. Thirteen (72.2%) patients completed treatment - 7 patients had a CR (38.9%; 53.8% of those who completed therapy), 4 had partial response (22.2%; 30.8%), and 1 patient had no response (5.6%; 7.7%). Three patients could not complete treatment due to adverse events (pyelonephritis, acute renal failure, pancytopenia, and unstable cardiac condition), 1 patient was diagnosed with a second non-urothelial cancer during treatment, and 1 patient died prior to the third instillation due to suspected pulmonary embolus, determined to be unrelated to treatment with MitoGel. A total of 67 adverse events were recorded with 6 events related to MitoGel and serious (requiring intervention), and 21 events related to MitoGel and not serious. CR (7) and PR (3) were observed in 10 of 11 evaluable patients completing treatment for LG tumors.

Conclusion: This compassionate use program of MitoGel for chemoablation of UTUC demonstrates proof of concept for treatment of low-grade tumors. A single arm Phase III multi-center registration trial to treat patients with low-grade renal pelvis tumors is planned for Fall, 2016.
Poster #135
FEMALE CYSTECTOMY WITH ORTHOTROPIC URINARY DIVERSION - IS FEAR OF URETHRAL RECURRENT JUSTIFIED?
Cory Hugen, MD; Hooman Djaladat, MD, MS; Anne Schuckman, MD; Jie Cai, MS; Gus Miranda, BS and Siamak Daneshmand, MD
University of Southern California, Los Angeles, CA
(Presented By: Cory Michael Hugen, MD)

Introduction: Orthotopic urinary diversion following radical cystectomy is performed significantly less frequently in female patients compared with males. Reasons for this disparity are likely related to functional outcomes as well as fear of local urethral recurrences. We present our long-term oncologic outcomes in women with orthotopic urinary diversion.

Methods: We reviewed our institutional cystectomy database to identify all female patients who underwent radical cystectomy with orthotopic urinary diversion for primary bladder cancer with curative intent from 1990-2011 with a minimum of 3 year follow-up. Demographic, pathologic, complication, and outcome data were compiled and statistical analyses were performed.

Results: From 1990-2011 a total of 191 women underwent radical cystectomy with orthotopic neobladder for bladder cancer with curative intent. Outcome data are shown in Table 1. The 30 and 90-day complication rates were 37.2 and 44.0%, respectively. The 30-day operative mortality rate was 1.6%. On multivariate logistic regression, only age was associated with 30-day (p<0.028) and 90-day (p<0.020) complication rates. There were 5 patients (2.6%) with positive urethral margins on final pathology of which 1 was also positive on frozen section. There was one single case of urethral recurrence in a patient who did not have a positive urethral margin. There was no association between primary tumor location (trigone, bladder neck, urethra) and the location of recurrence (distant vs local). The 5-year recurrence free and overall survival rates were 62.3 and 60.7%, respectively. Median overall survival was 9.4 years.

Conclusion: Radical Cystectomy with orthotopic urinary diversion can be performed safely with pathologic, survival, and recurrence rates similar to those in large published series of predominantly male patients. Urethral recurrence remains a rare event with long-term follow-up. Female patients with negative intraoperative urethral margin are candidates for orthotopic diversion.
Poster #136
IMPACT OF HISTOLOGIC SUBTYPE ON BLADDER CANCER OUTCOME
Samuel Washington, MD¹; Thomas Sanford, MD²; Michael Leapman, MD³; Maxwell Meng, MD¹ and Sima Porten, MD, MPH¹
¹University of California, San Francisco, San Francisco, CA; ²National Cancer Institute, National Institutes of Health, Bethesda MD; ³Yale University, New Haven, CT
(Presented By: Samuel L. Washington, Ill, MD)

Introduction: Urothelial carcinoma (UC) represents the dominant histological subtype in bladder cancer (BC). Variant histology is increasingly recognized but the impact on outcomes is less well known. We aim to evaluate the impact of variant histology BC outcomes using the National Cancer Database (NCDB), a U.S. population cohort capturing approximately 70% of newly diagnosed cancer cases.

Methods: Within NCDB, we identified patients with bladder cancer from 2004 to 2013 treated with radical cystectomy. We compared demographic, clinical and pathologic characteristics between pure UC and variant histology (grouped together and by individual subtypes). Univariate analysis was performed using Chi-square test for categorical variables and Independent Samples t-test for continuous variables. Multivariable Cox regression was used for survival analysis with hazard ratios (HR) and 95% confidence intervals (CI). Multivariable model was used to identify independent predictors of overall survival.

Results: A total of 40,918 patients were identified with mean age 67 years, with male (75%) and Caucasian (90.9%) predominance. Median follow-up was 36.9 months. UC was the most common histology (88.9%), followed by squamous cell carcinoma (4.4%), small cell carcinoma (1.6%) and micropapillary (0.9%). Compared to those with UC, variant histology was found more commonly in women (35.6% vs 23.4%, p<0.05), black patients (8.8% vs 5.6%, p<0.05), stage pT3 or T4 (67% vs 50.2%, p<0.05) and node positive disease (30.8% vs 26.9%, p<0.05). In adjusted models squamous cell carcinoma (HR 1.3, 95% CI 1.2-1.4), small cell carcinoma (HR 1.6, 95% CI 1.5-1.8) and black ethnicity (HR 1.2, 95% CI 1.1-1.2) were independent predictors of increased mortality risk while micropapillary was associated with decreased risk (HR 0.8, 95% CI 0.7-1.0) after controlling for age, gender, surgical margin status, pathologic T stage, pathologic N stage and history of chemotherapy. All associations remained statistically significant (p<0.05) within the multivariable model.

Conclusion: Variant histology was associated with worse overall survival in patients with BC treated with radical cystectomy; however, contrary to previous reports, micropapillary disease was associated with lower risk of death. In addition, black ethnicity was associated with worse survival. Further investigation is needed to explore the impact of variant histology and other socioeconomic factors on survival after cystectomy.
Poster #137
YOUNG PATIENTS WITH BLADDER CANCER: OUTCOMES FROM THE NATIONAL CANCER DATABASE
Samuel Washington, MD; Maxwell Meng, MD and Sima Porten, MD, MPH
University of California, San Francisco, San Francisco, CA
(Presented By: Samuel L. Washington, III, MD)

Introduction: Bladder cancer (BC) affecting young patients is not well characterized but seems to be increasingly diagnosed. We aim to describe pathologic findings and BC outcomes in patients less than 40 years old using the National Cancer Database (NCDB), a US population based cohort capturing approximately 70% of newly diagnosed cancer cases.

Methods: We identified 362,091 patients diagnosed with BC from 2004 to 2013. We compared demographic, clinical and pathologic information between those younger and older than 40 years. Univariate analysis was performed using Chi-square test for categorical variables and Independent Samples t-test for continuous variables. Multivariable Cox regression was used for survival analysis with hazard ratios (HR) and 95% confidence intervals (CI). Multivariable model was used to identify independent predictors of mortality (overall survival, OS).

Results: 3,799 patients (1.1%) were 40 or younger with mean age of 34.5 years. Fewer young patients were women (25.2% vs 30.3%, p<0.001). More identified as nonwhite (11.6% vs 7.3%, p<0.001), had lower clinical T stage (cTa 51.4% vs 38.3%, cT1 13.3% vs 19.6; p<0.001), and longer median follow-up (46.4 months IQR 23.3-73.9 vs 35.3 months IQR 16.7-61.6). Age less than 40 (HR 0.3, 95% CI 0.2-0.3), chemotherapy (HR 0.9, 95% CI 0.9-0.9) and cystectomy (HR 0.8, 95% CI 0.8-0.9) were associated with decreased mortality when controlling for clinical characteristics (p<0.001). In sub-analysis of young patients with cystectomy, more had pT0 disease (20.3% vs 18.2%, p=0.005) with squamous cell carcinoma (13.6% vs 4%) and small cell (3.2% vs 1.6%) more prevalent (p<0.001). In adjusted models, squamous cell carcinoma (HR 1.1, 95% CI 1.1-1.2), small cell carcinoma (HR 1.1, 95% CI 1.4-1.7), RT (HR 1.2, 95% CI 1.1-1.3) and black ethnicity (HR 1.1, 95% CI 1.1-1.2) were independent predictors of worse OS.

Conclusion: Younger patients with BC were more commonly non-white, men, and had low stage disease. In young patients undergoing cystectomy, squamous cell carcinoma, small cell carcinoma and black ethnicity were associated with worse OS. Further exploration in this younger patient cohort is needed to better characterize the optimal oncologic management for these patients.
Poster #138
ASSOCIATION BETWEEN METABOLIC SYNDROME AND RECURRENCES OF NON-MUSCLE INVASIVE BLADDER CANCER FOLLOWING TREATMENT WITH BACILLUS CALMETTE-GUERIN TREATMENT
Andrew Lenis, MD, MS¹; Kian Asanad BS²; Maher Blaibel, BS³; Nicholas Donin, MD¹ and Karim Chamie, MD, MSHS¹
¹Department of Urology, UCLA, Los Angeles, California; ²School of Medicine, UCLA, Los Angeles, California; ³School of Medicine, UC Riverside, Riverside, California
(Presented By: Andrew Thomas Lenis, MD, MS)

Introduction: Intravesical Bacillus Calmette-Guérin (BCG) therapy is the gold standard adjuvant treatment for patients with high-grade non-muscle-invasive bladder cancer (NMIBC). Despite the recently appreciated association between metabolic syndrome (MetS) and bladder cancer incidence, there is little data on the association between MetS and BCG failure. The objective of this study was to characterize disease recurrence following BCG in patients with and without MetS.

Methods: We retrospectively reviewed patients undergoing transurethral resection of a bladder tumor (TURBT) for NMIBC at our institution from March 2012 to March 2014, and identified those patients who received adjuvant BCG therapy. MetS was defined as three of four components: insulin resistance, hyperlipidemia, hypertension, or body mass index (BMI) ≥30. Primary outcomes were recurrence or progression, defined as pathologically confirmed disease or suspicious lesion warranting intervention, and disease-free survival (DFS). Differences in DFS were analyzed using Kaplan-Meier methods. Cox proportional hazards models were used to estimate hazards ratios for covariates of interest and DFS.

Results: MetS was present in 24/61 cases. MetS was significantly associated with disease recurrence or progression (p=0.02, Fisher's exact) and out of the four components of MetS, a BMI ≥30 was the strongest predictor on logistic regression analysis (OR 2.83, 95% CI 0.69–3.79). A difference in DFS on Kaplan-Meier analysis trended towards significance (p=0.07, log rank). On Cox analysis, we observed no association between MetS and recurrence or progression following BCG (HR 0.3, 95% CI [0.08–2.25]). However, multiple tumors at TURBT, grade, and stage were all independently associated with risk of recurrence or progression.

Conclusion: Factors contributing to BCG failure are complex and may include components of MetS. Appropriately selected patients with MetS and NMIBC should be offered intravesical BCG therapy, and counseled regarding the possible need for alternative therapy should BCG fail. Further studies are warranted to investigate the relationship between MetS, response to BCG, and other novel immunotherapeutic agents likely to enter the NMIBC space.

![Graph showing disease-free survival](image-url)
Poster #139
THE CHEMOABLATIVE EFFECT OF VESIGEL INSTILLATION IN PATIENTS WITH NMIBC – PRELIMINARY RESULTS:
Andrew Lenis, MD, MS¹; Karim Chamie¹; Boris Friedman²; Andrea Tubaro³; Ami Sidi⁴; Daniel Kedar⁵; Lorenzo Colombo⁶; Dov Engelstein⁷; Joan Palau⁸; Gregory Wirth⁹; Ilan Leibovitch¹⁰; Eddy Friedman¹¹; Ifat Klein¹²; Michal Jeshurun¹² and Fred Witjes¹³
¹Department of Urology, UCLA, Los Angeles, California; ²Urology Department, Carmel Medical Center, Haifa 34362 Israel; ³Department of Urology, S. Andrea Hospital of Rome, Roma, Italy; ⁴Department of Urology Surgery, The Edith Wolfson Medical Center, Holon, Israel; ⁵Department of Urology, Rabin MC, Beilinson Hospital, Petah Tikva, Israel; ⁶Department of Urology, Vita Salute University, San Raffaele Hospital of Milan, Italy; ⁷Department of Urology, Western Galilee Hospital, Nahariya, Israel; ⁸Department of Urology, Fundació Puigvert of Barcelona, Spain; ⁹Department of Urology, Hopital HUG of Geneva, Genève, Swiss; ¹⁰Department of Urology, Meir Medical Center, Kfar Saba, Israel; ¹¹Institute of Pathology, Sheba Medical Center Hospital - Tel Hashomer, Ramat Gan, Israel; ¹²UroGen Pharma Ra’anana, Israel; ¹³Department of Urology, Radboud University of Nijmegen Medical Center, The Netherlands
(Presented By: Andrew Thomas Lenis, MD, MS)

Introduction: The standard of care for treatment of patients with low-grade (LG) non-muscle-invasive bladder cancer (NMIBC) is transurethral resection of bladder tumor (TURBT) followed by immediate intravesical chemotherapy. However, more than 50% of patients will recur and require subsequent endoscopic treatments. Endoscopic resection is limited by incomplete imaging of all lesions, deep resections that preclude immediate intravesical therapy, and significant pain that hastens drainage of the intravesical agent. VesiGel, a novel sustained release thermosensitive hydrogel formulation of Mitomycin C (MMC), was developed to overcome these limitations. This study evaluated the primary chemoablative properties of VesiGel in the treatment of patients with LG NMIBC as an alternative to TURBT.

Methods: 64 patients with LG NMIBC who were all eligible for TURBT were enrolled in the study after informed consent was obtained. The study consisted of 3 groups: Group A - VesiGel 0.06% (40mg at 64mL gel; n=20); Group B - VesiGel 0.12% (80mg at 64mL gel; n=21), and Group C - MMC 0.1% (40mg in 40mL water; n=23). All patients underwent 6 weekly instillations. Response was evaluated 2–4 weeks after the last instillation via cystoscopy and biopsy. Patients who demonstrated complete response (CR) were followed for 12 months without any additional treatment.

Results: The observed adverse events associated with treatments were higher in the VesiGel groups but appeared to be MMC-related. Most events were transient and resolved despite continued therapy. CR rate was 45.0%, 90.5% and 69.6% in groups A, B and C, respectively. For patients with smaller tumors (size ≤1cm²), the CR rate was 50.0%, 93.3% and 77.8%, respectively. For larger tumors (>1cm²), the CR was 40%, 83.3% and 40.0%, respectively. For patients with ≤3 tumors, the CR rate was 50.0%, 86.7% and 80.0%, while for patients with >3 tumors, the CR rate was 0%, 100% and 50%, respectively.

Conclusion: These preliminary results provide an initial indication of the ablative effect of VesiGel and its potential use as an alternative to TURBT. Compared with aqueous MMC 0.1%, VesiGel 0.12% was superior in the treatment of larger and multifocal tumors.

Funding: UroGen Pharma (formerly TheraCoat)

<table>
<thead>
<tr>
<th>VesiGel 0.06%</th>
<th>VesiGel 0.12%</th>
<th>MMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluateable patients</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>Complete response</td>
<td>9 (45.0%)</td>
<td>19 (90.5%)</td>
</tr>
<tr>
<td>All Patients</td>
<td>7 (50.0%)</td>
<td>14 (93.3%)</td>
</tr>
<tr>
<td>≤ 1 cm²</td>
<td>2 (40.0%)</td>
<td>5 (83.3%)</td>
</tr>
<tr>
<td>&gt; 1 cm²</td>
<td>9 (50.0%)</td>
<td>13 (86.7%)</td>
</tr>
<tr>
<td>≤ 3 tumors</td>
<td>0 (0.0%)</td>
<td>6 (100.0%)</td>
</tr>
</tbody>
</table>

Table 1. Complete response rates by treatment group for all patients and for subgroups with tumor size ≤ 1 cm², > 1 cm², ≤ 3 tumors, and > 3 tumors.
Poster #140
DISCERNING PREDICTORS FOR GENDER DIFFERENCES IN SURVIVAL OUTCOMES FOR PATIENTS TREATED FOR BLADDER CANCER
Justin Fang, MD¹; Jinhai Huo, PhD²; Preston Kerr, MD³; Leslie Ynalvez¹; Tamer Dafashy¹; Sharon Giordano, MD, MPH³; Edwin Morales, MD⁴; Ashish Kamat, MD⁵ and Stephen Williams, MD¹
¹Division of Urology, The University of Texas Medical Branch, Galveston, TX; ²Department of Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ³Department of Medicine and Health Services Research, The University of Texas MD Anderson Cancer Center, Houston, TX; ⁴Department of Urology, The University of Texas San Antonio Health Sciences Center, San Antonio, TX; ⁵Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Justin E. Fang, MD)

Introduction: Men are more commonly diagnosed with bladder cancer, however women when diagnosed have worse survival outcomes. Radical cystectomy is an underutilized treatment option for refractory non-muscle invasive and muscle-invasive bladder cancer, and use of radical cystectomy may differ according to gender. We investigated receipt and timing of radical cystectomy as well as survival outcomes according to gender.

Methods: Patients aged 66 years or older diagnosed with clinical stage I-IV bladder cancer from 2002-2011 were identified using Surveillance, Epidemiology, and End Results-Medicare linked data. We used univariate and multivariable regression analyses to identify factors predicting use of radical cystectomy. Cox proportional hazards models were used to analyze survival outcomes. Generalized linear models were used to determine association between gender and delayed radical cystectomy.

Results: Of a total 49,974 patients diagnosed with stage I-IV bladder cancer, 36,959 (74%) were men. Women were older, non-Caucasian race, had more comorbidities and presented with more advanced disease than men (all p<0.001). Women were more likely to receive radical cystectomy across all clinical stages (stage I, relative risk [RR] 1.53, 95% confidence interval [CI] 1.27-1.84, p<0.001; stage II, RR 1.52, CI 1.37-1.70, p<0.001; stage III, RR 1.26, CI 1.15-1.39, p<0.001; stage IV, RR 1.31, CI 1.17-1.47, p<0.001). However, women had lower cancer-specific survival with stage II (hazard ratio [HR] 1.20, CI 1.09-1.32, p<0.001), stage III (HR 1.44, CI 1.23-1.68, p<0.001), and stage IV (HR 1.29, CI 1.17-1.43, p<0.001) disease. Delay from diagnosis to radical cystectomy was associated with worse survival; however there were no differences in the risk of having delayed radical cystectomy according to gender across stages, except women with stage IV disease were less likely to have delay to surgery (RR 0.77, CI 0.62-0.95, p=0.017).

Conclusion: Gender difference persist with women significantly more likely to undergo radical cystectomy independent of clinical stage. Yet after controlling for tumor characteristics as well as use of lymph node dissection and neoadjuvant chemotherapy, women have significantly worse cancer-specific survival than men. Delay from diagnosis to surgery did not account for this decreased survival among women. These findings support further research discerning the biological underpinnings of bladder carcinogenesis according to gender.
Poster #141
ASSESSMENT OF T0 RESPONSE RATE FOLLOWING NEOADJUVANT CHEMOTHERAPY FOR BLADDER CANCER UTILIZING A COMPUTERIZED VOLUME ANALYSIS SYSTEM
Amir H. Lebastchi, MD; Christopher M. Russell, MD; Kenny H. Cha; Lubomir Hadjiiski, MD; Heang-Ping Chan, MD; Rich Cohan, MD; Elaine Caoili, MD; Ajjai Alva, MBBS and Alon Z. Weizer, MD, MS
University of Michigan, Ann Arbor, MI
(Presented By: Amir H. Lebastchi, MD)

Introduction: Neoadjuvant chemotherapy (NAC) for bladder cancer is underutilized in part due to concern for disease progression during chemotherapy. In an effort to quantify lesion response during NAC, we describe the utilization of a computerized system for segmenting bladder lesions on contrast-enhanced pelvic CT scans. The accuracy of this modality is then demonstrated through a comparison of the computerized estimation of lesion volume change and pT0 status with an experienced radiologist's assessment and RECIST criteria.

Methods: Pre and post-treatment CT scans were reviewed in 82 patients receiving NAC for bladder cancer prior to cystectomy. Patient information and disease outcomes at the time of cystectomy were abstracted. Estimations of the response to treatment were obtained through either (1) the computerized volume analysis system utilizing 3D-CT segmentation of bladder lesions, or (2) using RECIST criteria as characterized by one of two independent board certified radiologists. Receiver operating characteristic (ROC) curves were generated to identify sensitivity and specificity of detecting pT0 (complete response) at the time of cystectomy and an area under the curve (AUC) was calculated.

Results: There were 67 men and 15 women with a mean age of 64 years (64.0 ± 10.6, age range 37-84 years of age). All patients had clinical stage T2-T4, N0 tumors, and received 3-6 cycles of a platinum based chemotherapy. A total of 27% of patients had pT0 disease at time of cystectomy. The AUC for correct prediction of pT0 at the time of cystectomy was 0.77±0.05 for the computer-assisted technique compared to 0.75±0.05 and 0.70±0.06 when two separate radiologists predicted pT0 disease using RECIST criteria.

Conclusion: The utilization of a computerized segmentation system for the assessment of change in tumor volume and subsequent pT0 disease following cystectomy is equivalent to that performed by experienced radiologists. Furthermore, the accurate assessment of timely treatment response during NAC may have important implications in determining duration of chemotherapy and in the utilization of bladder preservation protocols.
MOLECULAR TUMOR GRADING BASED ON WHOLE RNA SEQUENCING DELINEATES THREE MOLECULAR GRADES IN NON MUSCLE INVASIVE BLADDER CANCER

Alexandre Zlotta, MD¹; Jess Shen²; Irina Shnitsar³; Thenappan Chandrasekar, MD²; Aidan Noon⁴; Eduardo Cabeza²; Cynthia Kuk³; Christine Ilczynski³; Rouyu Ni³; Balram Sukhu³; Kim Chan³; Adrian Gunaratne³; Annette Erlich⁵; Morgan Roupret, MD⁶; Eva Comperat, MD⁷; Joan Sweet, MD⁸; Neil Fleshner, MD⁹; Girish Kulkarni, MD⁹; Azar Azad⁵; Theodorus van der Kwast, MD⁵ and Jeffrey Wrana, PhD²

¹University Health Network, Princess Margaret Cancer Centre, Dept. of Surgical Oncology, Division of Urology, Toronto, CA; ²Mount Sinai Hospital, Lunenfeld-Tanenbaum Research Institute, Toronto, CA; ³University of Toronto, Toronto, ON; ⁴University of Sheffield, Urology, Sheffield, UK; ⁵Mount Sinai Hospital, Dept. of Urology, Toronto, CA; ⁶Mount Sinai Hospital, Dept. of Pathology and Laboratory Medicine, Toronto, CA; ⁷Groupe Hospitalier La Pitié-Salpêtrière, Université Pierre et Marie Curie, Dept of Urology, Paris France; ⁸Groupe Hospitalier La Pitié-Salpêtrière, Université Pierre et Marie Curie, Dept of Pathology, Paris France; ⁹University Health Network, Dept. of Pathology, Toronto, CA

(Presented By: Thenappan Chandrasekar, MD)

Introduction: There is an unmet need for a comprehensive genomic characterization of non-muscle invasive bladder cancer (NMIBC). NMIBC comprise over 70% of all bladder cancers at presentation. They have highly variable clinical behavior that is not always adequately predicted on the basis of their histological grade (2004 World Health Organization low and high grade, LG-HG). The discrepancy between phenotype and genotype is compounded further by interobserver variability in pathological grading. We have previously established methods for whole transcriptome RNAseq from universally available formalin fixed paraffin embedded tissues (FFPE) with the goal to provide a clinically meaningful impact on daily management.

Methods: Whole transcriptomic (WT) analysis of 184 bladder tumors (164 NMIBC and 20 MIBC or metastatic) was performed from FFPE tissues incorporating messenger RNA expression, splice variants, gene fusion and mutation detection and pathway perturbation. In NMIBC, we used a discovery (n=40) and 2 validation cohorts (n= 40 and 84). These data were integrated and tested for correlations with both pathological grading and clinical outcomes. Conventional pathological grading for both WHO 1973 (grade 1, 2 and 3) and 2004 (low grade-LG vs high grade-HG) was reviewed by 3 different expert uro-pathologists and kappa statistic for interobserver variability was calculated.

Results: Unsupervised clustering of data from RNA sequencing revealed the classification of three robust-non-overlapping, significant molecular subtypes of NMIBC termed Grade Related Index - GRI1, GRI2 and GRI3. GRI1 comprised of almost exclusively LG tumors, while GRI3 clustered with HG MIBC tumors. After assessment by expert pathologists, kappa for interobserver variability in 1973 WHO histological grading was 0.40 whereas it reached 0.78 for 2004 classification. Most discrepant cases clustered in molecular subtype GRI2. Activating FGFR3 mutations and FGFR3:TACC3 fusion events were strongly enriched in GRI1 NMIBC only (11.5%). LG NMIBC in the intermediate GRI group included either very bulky tumors or extremely rare metastatic LG BC (n = 4). Multiple components of the centromere complex and APOBEC3B were upregulated in HG BC.

Conclusion: Whole transcriptomic sequencing data delineates three molecular classes of NMIBC. The current WHO classification using low and high grades does not correspond to a biological reality.
**Poster #143**

**MUSCLE INVASIVE BLADDER CANCER: MOLECULAR SUBTYPES ARE RELATED TO BENEFIT OF NEOADJUVANT CHEMOTHERAPY**

Roland Seiler, MD¹,²; Hussam Al Deen Ashab, MSc³; Nicolas Erho, MSc³; Brian Winters, MD⁴; James Douglas, MD⁵; Bas W.G. van Rhijn, MD⁶; Gottfrid Sjödahl, PhD⁷; Qiqi Wang, MSc⁸; Voleak Cheourung, MSc⁹; Christine Buerki, PhD²⁰; Beatrix Palmer-Aronsten, BSc²¹; Seth P. Lerner, MD²²; Katherine Hoadley, PhD²³; Scott North, MD²⁴; David J. McConkey, PhD²⁵; Kim van Kessel, MD²⁶; Woonyoung Choi, PhD²⁷; William Y. Kim, MD²⁸; Ellen C. Zwarthoff, MD, PhD²⁹; Matthew Sommerlad, MD³⁰; George N. Thalmann, MD³¹; Elai Davicioni, PhD³²; Simon J. Crabb, MD³³; Joost L. Boormans, MD, PhD³⁴; Marc Dall’Era, MD³⁵; Jonathan Wright, MD³⁶; Michiel S. van der Heijden, MD³⁷ and Peter Black, MD³⁸

¹Department of Urologic Sciences, University of British Columbia, Vancouver, British Columbia, Canada; ²Department of Urology, University of Bern, Switzerland; ³GenomeDx Biosciences Inc., Vancouver, BC, Canada; ⁴Department of Urology, University of Washington School of Medicine, Seattle, Washington; ⁵Department of Urology, University Hospital of Southampton, Hampshire, UK; ⁶Department of Surgical Oncology, Division of Urology, Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital, Amsterdam, The Netherlands; ⁷Division of Urological Research, Department of Translational Medicine, Lund University, Malmö, Sweden; ⁸Department of Urologic Oncology, Baylor College of Medicine, Houston, TX, USA; ⁹Lineberger Comprehensive Cancer Center, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA; ¹⁰Department of Oncology, University of Alberta Cross Cancer Institute, Edmonton, AB, Canada; ¹¹Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX, USA; ¹²Department of Urology, Erasmus MC, University Medical Center Rotterdam, Rotterdam, The Netherlands; ¹³Department of Medical Oncology, University Hospital of Southampton, Hampshire, UK; ¹⁴UC Davis Comprehensive Cancer Center, Sacramento, CA, USA

(Presented By: Peter Colin Black, MD)

**Introduction:** Molecular subtypes of muscle-invasive bladder cancers (MIBC) have recently been discovered based on gene expression. We investigated the impact of four different subtyping methods on response to neoadjuvant cisplatin-based chemotherapy (NAC) and developed a single sample model for subtyping.

**Methods:** DNA microarray analysis was conducted on pre-NAC transurethral resection (TUR) specimens of 223 patients with MIBC who received NAC followed by cystectomy at 5 centers. The specimens were classified according to the four published methods for molecular subtyping (UNC, MDA, TCGA, Lund) using the original models. To determine the clinical significance and benefit of NAC, the overall survival (OS) for each subtype was analyzed in NAC patients and compared to non-NAC patients from the provisional TCGA. Based on the clinical significance, a genomic subtyping classifier (GSC) was trained to predict the subtype in a single sample model and validated in independent NAC (2 centers) and non-NAC datasets.

**Results:** The models generated subtype calls similar to previously published ratios. Concordance of a given subtype (e.g. UNC luminal, MDA luminal, TCGA cluster I) between the different methods was high. Luminal tumors had the best OS with and without NAC. Patients with tumors classified as UNC basal, MDA basal and TCGA cluster III experienced the greatest improvement in OS after NAC compared to surgery alone. Tumors assigned as UNC claudin-low had the worst OS irrespective of treatment regimen (p=0.005). GSC was trained to predict four classes (luminal, luminal-infiltrated, basal, claudin-low). It significantly predicted all classes, and the differential impact of a basal subtype on patient OS in NAC (3-yr survival of 75.2%; p=0.001) and non-NAC (3-yr survival of 42.4%; p=0.014) cohorts could be validated.

**Conclusion:** The benefit of NAC varies between molecular subtypes. The good prognosis of luminal/cluster I tumors could not be improved with NAC, which suggests that these patients may be managed best with surgery alone. The prognosis of patients with basal tumors improved the most when treated with NAC compared to surgery alone. The poor OS of claudin-low tumors even after NAC implies that these tumors are resistant to cisplatin-based chemotherapy, and these patients should be included in protocols investigating alternative treatment options like immunotherapy. Our findings require validation prior to clinical implementation.
Poster #144
SURGICAL MANAGEMENT OF UROTHELIAL CARCINOMA IN PATIENTS WITH UPPER TRACT AND LOWER TRACT DISEASE: IMPACT OF SURGICAL SEQUENCE
Tanner Miest, MD, PhD; Amir Toussi, MD; R. Jeffery Karnes, MD; Stephen Boorjian, MD; R. Houston Thompson, MD; Igor Frank, MD and Matthew Tollefson, MD
Department of Urology, Mayo Clinic, Rochester, MN
(Presented By: Tanner Miest, MD, PhD)

Introduction: Urothelial carcinoma can occur throughout the upper and lower tracts of the urinary system, however the natural history of disease recurrence and outcomes in patients who ultimately require both radical cystectomy (RC) and radical nephroureterectomy (RNU) is poorly understood. We aim to define outcomes in these populations to better inform surveillance strategies following upper and lower tract surgery for urothelial carcinoma.

Methods: We retrospectively reviewed the medical records of patients who underwent both RC and RNU at the Mayo Clinic between 1995 and 2009. Patients who had undergone both RC and RNU were grouped by surgical sequence. Time between surgeries and pathology data at the time of resection were determined, and Kaplan-Meier analysis was used to evaluate disease specific and overall survival.

Results: Of 524 patients that underwent RNU at our institution, 100 (19%) patients also underwent RC. 49/100 (49%) underwent initial RC followed by RNU (RC -> RNU), 24/100 (24%) underwent RNU followed by RC (RNU -> RC), and 27/100 (27%) underwent simultaneous RC and RNU (RC+RNU). The median time between major procedures was shorter for patients undergoing RNU -> RC (14.6 months, IQR 9.32-43.6) compared to patients undergoing RC -> RNU (42.6 months, IQR 24.1-97.4). Recurrent upper tract disease after RC (RC -> RNU) was more likely to be Grade 3 (80.0%) and T3 or T4 (22.7%) than recurrent lower tract disease after RNU (RNU -> RC; Grade 3: 58.3%; T3 or T4: 12.5%). Finally, after the final procedure there was no significant difference in median disease specific survival (DSS, Log-Rank, P=0.28) or overall survival (OS, Log-Rank, 0.74) between groups RC -> RNU (DSS: 83.7 months; OS: 110.1 months), RNU -> RC (DSS: 74.3 months; OS: 149.9 months) and RC+RNU (DSS: 62.5 months; OS: 109.2 months).

Conclusion: Our data highlight the high frequency of concurrent and sequential upper and lower tract urothelial carcinoma, with nearly 20% of patients requiring RNU also undergoing RC. Disease recurrence in the bladder after RNU occurred more rapidly than upper tract recurrence after RC. However, patients with upper tract recurrence after RC presented later and with higher grade and stage disease compared to patients presenting with lower tract recurrence after RNU. Although DSS and OS were not statistically different between the groups, these data highlight the importance of long-term oncologic surveillance after both RC and RNU.
Poster #145
DOES LIPOSOMAL BUPIVACAINE (EXPAREL) USE INTRAOPERATIVELY DECREASE POSTOPERATIVE NARCOTIC USE IN RADICAL CYSTECTOMY PATIENTS?
Courtney Chang, BS¹; Janet Baack Kukreja, MD, MPH²; Mohamed Seif, MD²; Neema Navai, MD²; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD²
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)

Introduction: Exparel is a bupivacaine liposome injectable suspension (LB) that can be used to help control postoperative pain. It slowly releases bupivacaine for up to 96 hours after injection. This study sought to determine if the use of LB intraoperatively for radical cystectomy (RC) patients decreases postoperative narcotic use.

Methods: A retrospective cohort study was performed. 281 patients underwent RC between November 2013 and May 2016, 203 received LB. LB was administered after fascial closure but before skin closure by performing suprafascial and subfascial injection with 20ml of LB. Patient demographics, BMI, renal function, operative characteristics, and the total postoperative intravenous morphine equivalents were reviewed. Where appropriate chi-squared, Mann-Whitney and t-tests were used for statically analysis. Multivariable analysis and linear regression models were performed. Because enhanced recovery principles were used simultaneously, enhanced recovery status was also used to adjust for predictors of post-operative opioid use.

Results: There was no difference in baseline demographics, BMI, renal function or baseline opioid use between the LB and non-LB group. The operative time was longer in those who had LB administered and there were more open RCs performed in the LB group. Total morphine equivalents averaged to 8.0 mgs for the LB group and 50.7 mgs for the non-LB group, p-value <0.001. More patients had epidurals and IV PCA pumps in the non-LB group, (p=0.001 and <0.001, respectively). There were 42 patients whom did not require any IV morphine equivalents in the LB group compared to only 4 in the non-LB group (p=0.002). After adjusting for modality, and operative time, the linear regression model was predictive of less IV morphine equivalents in those with LB, p=0.044 (Figure 1).

Conclusion: The addition of LB to enhanced recovery principles increases the number of patients with zero narcotic use postoperatively. Irrespective of open or robotic modality and operative time, LB use decreases opioid use after RC.

Funding: Bladder Cancer SPORE Career Development Award
Poster #146
PATIENT REPORTED OUTCOMES: MEASURING AND IMPROVING SYMPTOM BURDEN IN RADICAL CYSTECTOMY PATIENTS UNDERGOING TRADITIONAL CARE COMPARED TO ENHANCED RECOVERY
Courtney Chang, BS¹; Janet Baack Kukreja, MD, MPH²; Ting Yu Chen, MS³; Qiuling Shi, MD, PhD, MSc³; Xin Shelley Wang, MD, MPH³; Neema Navai, MD³; Ashish Kamat, MD³; Colin Dinney, MD³ and Jay Shah, MD³
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)

Introduction: Bladder cancer is a disease of the elderly associated with high morbidity in those undergoing radical cystectomy (RC). The Optimized Surgical Journey (OSJ) uses enhanced recovery after surgery (ERAS) principles for RC patients to improve postoperative pain, shorten hospital stay, and hasten recovery. There have been few patient reported outcomes studied in OSJ and ERAS patients. The MD Anderson Symptom Inventory (MDASI) is patient reported outcome measures used for clinical and research purposes related to cancer and its treatment. Our objective was to determine if patient reported outcomes using MDASIs are different in patients following the OSJ compared to a traditional care pathway.

Methods: From July 2013 to November 2015, MDASIs were collected from 160 RC patients preoperatively and on postoperative days (POD) 1 through 3. The MDASI consists of 19 core symptom burden related questions and 6 questions analyzing how symptoms have interfered with the patient’s life. Using a 0-10 scale, patient’s rate their symptoms. SAS 9.4 was used for cross sectional analysis. T-test, and Man-Whitney tests were used where appropriate. Logistic regression was used for multivariable analysis.

Results: The most bothersome symptoms were abdominal discomfort, disturbed sleep, dry mouth, fatigue, and drowsiness. Nausea, vomiting, bowel pattern, bowel control and appetite were all found to be insignificant. Abdominal discomfort was reported significantly less in OSJ patients on PODs 1 and 2 (p=0.032 and 0.001, respectively). In multivariable analysis OSJ status was predictive of less abdominal pain (p<0.001). Dry mouth was also significantly burdensome on PODs 1 and 2 (p=0.022 and <0.001, respectively) in non-OSJ patients. Less dry mouth was also predicted by OSJ status in multivariable analysis (p=0.014). Disturbed sleep, fatigue, and drowsiness were significantly less in patients on the OSJ POD 2. Mood was better in OSJ patients PODs 2 and 3 (p=0.016).

Conclusion: The OSJ can significantly reduce the burden of symptoms in RC patients immediately postoperatively. MDASIs maybe a helpful tool to measure symptom burden. This information can be used in the future to create additional interventions for improvement in RC patient recovery experiences.

Funding: MD Anderson Clinical Innovator Award
Poster #147
INTRATUMORAL HETEROGENEITY OF HER-2/NEU EXPRESSION IN UROTHELIAL CARCINOMA WITH MICROPAPILLARY MORPHOLOGY
Sumit Isharwal, MD¹; Hongying Huang, MD²; Gouri Nanjangud, PhD³; François Audenet, MD¹; Ying-Bei Chen, MD, PhD³; Anuradha Gopalan, MD²; Samson Fine, MD²; Satish Tickoo, MD²; Gopakumar Iyer, MD²; Guido Dalbagni, MD¹; Bernard Bochner, MD¹; David Solit, MD²; Victor Reuter, MD² and Hikmat Al-Ahmadiane, MD²
¹Urology Service, Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY; ²Department of Pathology, Memorial Sloan-Kettering Cancer Center, New York, NY; ³Molecular Cytogenetics Core Facility, Memorial Sloan-Kettering Cancer Center, New York, NY; ⁴Genitourinary Oncology Service, Department of Medicine, Memorial Sloan-Kettering Cancer Center, New York, NY
(Presented By: Sumit Isharwal, MD)

Introduction: Micropapillary (MP) bladder cancer is a rare but reportedly an aggressive variant of urothelial carcinoma. Histologically, most of these tumors are associated with variable amounts of “not otherwise specified (NOS)” urothelial carcinoma. MP bladder cancer has been previously shown to be associated with Her-2/neu protein overexpression and gene amplification. However, Her-2/neu expression in the NOS component of these mixed urothelial tumors has not been addressed. Therefore, we evaluated the Her-2/neu expression in MP and NOS components by immunohistochemistry (IHC) and fluorescence in situ hybridization (FISH).

Methods: We identified 44 cases of MP bladder cancer that had tissue available for IHC and FISH at our institute. Of these 44 cases, 37 cases also had urothelial NOS component sufficient for both IHC and FISH. Her-2/neu protein expression and gene amplification were assessed using the updated ASCO/CAP Guidelines for breast cancer. Her-2/neu was considered to be overexpressed when the IHC score was 2+ or 3+. Her-2/neu gene amplification was defined by a HER2/CEP17 ratio of ≥2.0.

Results: In urothelial tumors with both MP and NOS components (n = 37), Her-2/neu protein overexpression in MP and NOS components was 68% and 35% respectively. Of cases with Her-2/neu overexpression in MP component (n = 25), only 36% cases showed overexpression (2+ to 3+) in the NOS component. In these mixed urothelial tumors (n = 37), Her-2/neu gene amplification in MP and NOS components was 68% and 43% respectively. In addition, Her-2/neu gene amplification strongly correlated with IHC expression in both MP (rho = 0.65, p<0.001) and NOS (rho = 0.74, p<0.001) components. In this cohort (n = 44), tumor stage and lymph node status were significant predictors for overall survival (p = 0.01, <0.001 respectively). However, Her-2/neu protein overexpression and gene amplification in MP component were not associated with patients’ survival outcome (p = 0.75, 1.00 respectively).

Conclusion: In micropapillary urothelial carcinoma, Her-2/neu overexpression and amplification were preferentially but not exclusively identified in MP component compared to NOS component. Our findings provide evidence for intratumoral heterogeneity of Her-2/neu expression and amplification in micropapillary urothelial carcinoma.
**Poster #148**
PRE-SURGERY NEUTROPHIL-TO-LYMPHOCYTE RATIO IS SIGNIFICANTLY ASSOCIATED WITH SURVIVAL OUTCOMES IN PATIENTS WITH UROTHELIAL CARCINOMA TREATED WITHOUT NEOADJUVANT CHEMOTHERAPY AND WITH RADICAL CYSTECTOMY

Jason Podolnick, BS¹; Janet Baack Kukreja, MD, MPH²; Xuemei Wang, MS³; Hsiang-Chun Chen, PhD²; Neema Navai, MD²; Ashish Kamat, MD²; Colin Dinney, MD² and Jay Shah, MD²
¹University of Texas Medical School at Houston; ²MD Anderson Cancer Center, Houston, TX
(Presented By: Janet Baack Kukreja, MD)

**Introduction:** There is growing interest in finding inexpensive, easily reproducible biomarkers to predict outcomes in patients with urothelial bladder carcinoma (BC). An elevated preoperative neutrophil-to-lymphocyte Ratio (NLR) has been found to be an independent prognostic factor for decreased survival, predictive of upstaging at radical cystectomy (RC), and predictive of recurrence and progression. This study investigated the utility of the preoperative NLR predicting long-term outcomes in chemotherapy naïve patients undergoing RC for BC at a large tertiary care center.

**Methods:** In a retrospective cohort study, 849 RC patients with BC were identified between 2000 and 2011. NLR data for these patients was obtained within 30 days prior to RC. Univariate CART analysis was used to determine an NLR cutoff point that was significantly associated with both overall survival (OS) and disease specific survival (DSS). OS and DSS were estimated using Kaplan-Meier curves.

**Results:** The median follow-up time among survivors was 7.3 years. 597 (70%) patients died and 252 (30%) were alive at last follow. Using CART analysis, a preoperative NLR cutoff point of 3.19 was identified to have the strongest association with both OS and DSS (p<0.001). 562 (66%) patients had a preoperative NLR < 3.19 and 475 (34%) had a preoperative NLR ≥ 3.19. The median OS and DSS for patients with preoperative NLR < 3.19 was 5.96 years and 15.64 years, respectively. The median OS and DSS for patients with a NLR ≥ 3.19 was 4.44 years (95% CI: 3.18-4.81 years) and 8.23 years (95% CI: 5.15-11.87 years). DSS Kaplan-Meier curve is seen in Figure1. Patients with a NLR < 3.19 had a 5-year OS and DSS of 59% and 77%, respectively. RC patients with a NLR ≥ 3.19 had a 5-year OS and DSS of 43% and 56%.

**Conclusion:** A preoperative NLR ≥ 3.19 is significantly associated with decreased OS and DSS in patients treated with RC for UC. This finding further validates NLR as a biomarker in BC prognosis. NLR can help to determine patients with a poor prognosis who may benefit from more aggressive, adjuvant therapy following RC.

![Figure 1](image-url)
Poster #149
GENOMIC DIFFERENCES BETWEEN “PRIMARY” AND “SECONDARY” MUSCLE INVASIVE BLADDER CANCER (MIBC): IMPLICATIONS FOR NEOADJUVANT CHEMOTHERAPY
Eugene Pietzak, MD; Aditya Bagrodia, MD; Hikmat Al-Ahmadie, MD; Qiang Li, MD; Harry Herr, MD; Samuel Funt, MD; David Barron, MD, PhD; Ahmet Zehir, PhD; Michael Berger, PhD; David Solit, MD; Maria Arcila, MD; Dean Bajorin, MD; Jonathan Rosenberg, MD; Eugene Cha, MD; Bernard Bochner, MD and Gopa Iyer, MD
Memorial Sloan Kettering Cancer, New York, NY
(Presented By: Eugene J. Pietzak, III, MD)

Introduction: We recently reported a substantial difference in clinical outcomes with neoadjuvant chemotherapy between primary and secondary MIBC patients (Pietzak et al AUA 2016). We subsequently used Next Generation Sequencing to investigate genetic differences between primary and secondary MIBC specimens.

Methods: We examined MIBC specimens from TCGA (n=131), our institutional genomic research database (n=569), and a prospective clinical sequencing protocol (n=214) to identify 342 chemotherapy-naïve urothelial MIBC specimens (276 Primary and 72 Secondary) that underwent whole-exome or targeted exon-capture sequencing. Primary and secondary MIBC specimens were compared for genomic alterations in 341 known cancer genes. Primary MIBC was defined as clinical stage ≥T2 on either initial or re-staging TUR on first bladder tumor diagnosis. Patients with a history of NMIBC (Tis, Ta, or T1 with uninvolved detrusor muscle in specimen) confirmed by a second cystoscopy prior to the eventual diagnosis of clinical stage ≥T2 were considered to have secondary MIBC.

Results: We compared 276 primary and 72 secondary MIBC specimens for differences in genomic alterations in 341 cancer-associated genes. We identified significantly different rates of ERCC2, APC, and FGFR3 alterations. FGFR3 activating mutations (S249C, Y373C) occurred more frequently in secondary MIBC specimens (18% [13/72] vs. 7% [24/270], p=0.03). APC mutations were only seen in primary MIBC specimens (5%, 14/270 vs. 0%, 0/72, p=0.047). Surprisingly, ERCC2 missense mutations, which are associated with extreme sensitivity to cisplatin chemotherapy, only occurred in primary MIBC specimens (12% [32/270] vs. 0% [0/72], p<0.001). After adjusting for multiple comparisons using Benjamini-Hochberg false discovery rate method, only ERCC2 mutations remained significant (adjusted p-value=0.016).

Conclusion: ERCC2 is involved in repair of cisplatin-induced DNA damage and mutations in ERCC2 are associated with clinical responses to cisplatin. The different rates of ERCC2 mutations seen in this study likely account for the contrasting clinical outcomes observed between primary and secondary MIBC patients treated with neoadjuvant chemotherapy.

Volcano plot of log odds ratio by log 10 p-value for mutations associated with secondary vs primary MIBC. Results are from exact logistic regression. The horizontal dotted line indicates an unadjusted p-value < 0.05. Only genes significant in unadjusted analysis have bubble sizes that are proportional to their total mutations.
Introduction: Pure squamous cell cancer of the bladder is uncommon in the United States. Because squamous cell bladder cancer is rare, there are no large studies with details on optimal preoperative neoadjuvant therapies and long-term outcomes. To improve the overall knowledge of the disease this study sought to provide a contemporary update in a single center cohort.

Methods: A retrospective cohort study was performed. 57 patients had a radical cystectomy (RC) for pure nonbilharzial squamous cell bladder cancer between 1995 and 2015. Demographics, risk factors for squamous cell bladder cancer, pathology, and outcomes were reviewed and compared with descriptive statistics. Advanced disease was defined as T4 disease and any positive lymph node metastasis. Logistic regression was used to identify predictors of overall survival (OS), disease specific survival (DSS) and recurrence free survival (RFS). Kaplan-Meier curves were used for survival prediction.

Results: With a median follow up of 24 months (IQR 9.7-131.8 months), 12 (21.4%) had a recurrence. The median time to recurrence was 15.5 months (IQR 5.0-20.0 months). Recurrence was most common in the pelvis, n=5(62.5%). 20 had neoadjuvant chemotherapy (NAC), 16 of which it was combined with external beam radiation (XRT). 50.8% of patients had advanced pathology. 5-year OS was 59.7%. To predict RFS all of the following were adjusted for: age, stage, advanced pathology, nonbilharzial squamous cell risk factors, lymphovascular invasion, and number of lymph nodes removed at RC. Predictors of RFS were combined NAC and XRT, pathologic T-stage, advanced disease (p=<0.01, p=0.02 and p=0.02, respectively). Predictors of DSS were pathologic T-stage and node positive disease (p=0.04 and <0.01, respectively). OS was best predicted by clinical stage, p <0.001, see figure 1.

Conclusion: The combination of NAC and preoperative XRT may provide a RFS advantage in nonbilharzial squamous cell bladder cancer. Those with clinically advanced disease continue to have a poor prognosis. However, OS does seem to have an improved prognosis compared to previous reports.
ABSENCE OF TUMOR ON REPEAT TURBT DOES NOT PREDICT FINAL PATHOLOGIC T0 STAGE IN MUSCLE INVASIVE BLADDER CANCER TREATED WITH RADICAL CYSTECTOMY
Janet Baack Kukreja, MD, MPH¹; Sima Porten, MD²; Vishnukamal Golla, MD³; Graciela Noguera-Gonzalez, MPH¹; Neema Navai, MD¹; Ashish Kamat, MD¹; Colin Dinney, MD¹ and Jay Shah, MD¹
¹MD Anderson Cancer Center, Houston, TX; ²University of California San Francisco, San Francisco, CA; ³University of California Los Angeles, Los Angeles, CA
(Presented By: Janet Baack Kukreja, MD)

Introduction: For patients receiving neoadjuvant chemotherapy (NAC), complete absence of tumor at radical cystectomy (RC) - pathological stage 0 (pT0) - is associated with better survival. It is unclear how much of the p0 status can be attributed to aggressive transurethral resection of bladder tumors (TURBT) and how much is due to NAC. Here, we review final pathologic outcomes in patients that were confirmed to be clinical stage 0 (cT0) immediately prior to RC to determine how often maximal TURBT results in complete tumor eradication.

Methods: We reviewed our institutional data base of 1897 patients to identify patients who had no residual disease on the last TURBT before RC (stage cT0). Pathology reports from the diagnostic TURBT along with clinical staging information were reviewed. The primary endpoint was pathological tumor stage at RC with additional analyses to determine recurrence-free survival (RFS) and cancer specific survival (CSS). Logistic regression analyses identified histopathological factors associated with disease presence in the RC specimen.

Results: 159 patients with cT0 bladders immediately prior to RC were identified. 72/159 (45.3%) had undergone NAC. RC pathological tumor stage was pT0 in 53 (33.3%), pTa/pTis in 52 (32.7%), pT1 in 12 (7.5%), pT2 in 15 (9.4%), pT3-pT4 in 27 (17%). On multivariate analysis accounting for clinical stage, grade, NAC, lymphovascular invasion (LVI) and CIS, only LVI (p=0.017) and CIS (p=0.010) on initial TURBT were associated with residual disease at RC. Notably, 20/159 (12.6%) patients were found to have positive lymph nodes at RC. Importantly, 66.7% of the patients that were cT0 on last TURBT had residual tumor at RC. Of those with residual disease, 41% had pathological stage ≥ T2. There was no statistical difference in achieving pT0 status, RFS and CSS rates for those who did and did not undergo NAC. Wit a median follow-up of 3.7 years, the 5-year CSS for the entire cohort was 85% and the 5-year RFS was 71%. No significant differences in CSS and RFS were seen between the pT0 and non pT0 groups.

Conclusion: Complete removal of tumor at TURBT does not predict pT0 at RC. A notable fraction of patients with cT0 bladders have locally advanced and/or lymph node positive disease. These findings may be of value when counseling patients on bladder preservation strategies for muscle invasive bladder cancer.

Funding: Cancer Center Support Grant (NCI Grant P30 CA016672).
Poster #152
IS NEOADJUVANT CHEMOTHERAPY BENEFICIAL BEFORE RADICAL CYSTECTOMY? EXAMINING THE EXTERNAL VALIDITY OF THE SWOG-8710 TRIAL
Nawar Hanna, MD, MSc¹; Quoc-Dien Trinh, MD¹; Jesse Sammon, MD²; Thomas Seisen, MD¹; Malte Vetterlein, MD¹; Raphael B. Moreira, MD³; Mark A. Preston, MD, MPH¹; Stuart R. Lipsitz, ScD¹; Joaquim Bellmunt, MD, PhD³; Mani Menon, MD²; Toni K. Choueiri, MD³ and Firas Abdollah, MD²
¹Division of Urological Surgery and Center for Surgery and Public Health, Brigham and Women’s Hospital/Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA; ²Henry Ford Hospital, Vattikuti Institute of Urology, Center for Outcomes Research, Analytics and Evaluation, Detroit, MI, USA; ³Department of Medical Oncology, Dana-Farber Cancer Institute, Brigham and Women’s Hospital, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA
(Presented By: Nawar Hanna, MD)

Introduction: The use of neoadjuvant chemotherapy (NAC) before radical cystectomy (RC) is supported by results from several randomized control trials, including SWOG-8710. We sought to test the applicability of the SWOG-8710 study in the general population.

Methods: We used the National Cancer Data Base (NCDB) to identify patients with non-metastatic muscle-invasive urothelial carcinoma of the bladder who underwent RC between 2004 and 2012. The primary endpoint was overall survival (OS). Secondary endpoints were rates of downstaging (pT0), positive pathologic lymph nodes (pN+), margin status, postoperative readmission, length of hospital stay (LOS), and 30 and 90-day postoperative mortality rates. OS comparison using Cox regression analysis was conducted. Furthermore, logistic regression models examining secondary outcomes were fitted. To adjust for potential selection bias, propensity score weighted analyses were performed.

Results: Of 8732 patients who underwent RC, 1619 (19%) received NAC. Compared to the SWOG-8710 cohort, our population was older, more commonly female (p<0.002), and had higher clinical stage (p<0.001). Following propensity score adjustment, receipt of NAC was associated with an OS benefit (Hazard Ratio [HR]: 0.88, p=0.017). On secondary outcome analysis, higher downstaging rates (Odds Ratio [OR]: 5.03, p<0.001) and lower 30-day (OR: 0.49, p=0.019) and 90-day (OR: 0.61, p=0.009) postoperative mortality rates were recorded in patients who received NAC.

Conclusion: Despite baseline differences between patients from the SWOG-8710 trial and general urologic practice, NAC is associated with an OS advantage relative to RC alone. Continued efforts should focus on promoting the use of NAC in appropriate patients.
COMPARATIVE EFFECTIVENESS OF ROBOT-ASSISTED VS. OPEN RADICAL CYSTECTOMY

Nawar Hanna, MD, MSc¹; Jeffrey J. Leow, MBBS, MPH²; Maxine Sun, MPH³; Firas Abdollah, MD²; Mani Menon, MD²; Adam S. Kibel, MD¹; Joaquim Bellmunt, MD, PhD³; Toni K. Choueiri, MD³ and Quoc-Dien Trinh, MD⁴

¹Division of Urological Surgery and Center for Surgery and Public Health, Brigham and Women’s Hospital/Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA; ²Henry Ford Hospital, Vattikuti Institute of Urology, Center for Outcomes Research, Analytics and Evaluation, Detroit, MI, USA; ³Department of Medical Oncology, Dana-Farber Cancer Institute, Brigham and Women’s Hospital, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, USA

(Presented By: Nawar Hanna, MD)

Introduction: Over the past decade, robotic-assisted radical cystectomy (RARC) has slowly gained acceptance in the urology community. However, the benefits of RARC over ORC remain controversial. Our objective was to conduct a comparative effectiveness analysis between RARC and ORC using data from the National Cancer Data Base (NCDB).

Methods: Within the NCDB, we identified patients with non-metastatic muscle-invasive bladder cancer (BC) who underwent RC between 2010 and 2013. Patients were stratified according to surgical approach: ORC or RARC. Oncologic endpoints measured included the presence of positive surgical margins, the performance of a pelvic lymph node dissection, and number of lymph nodes removed. Perioperative outcomes measured included length of stay (LOS), 30-day and 90-day postoperative mortality rates, as well as 30-day readmission following surgery. To minimize selection bias, observed differences in baseline characteristics between patients who received RARC vs. ORC were controlled for using a weighted propensity score analysis. Using weighted data, all endpoints were assessed using propensity-adjusted logistic regression analyses.

Results: Of 9,561 patients who underwent RC, 2,048 (21.4%) and 7,513 (78.6%) underwent RARC and ORC, respectively. The use of RARC has increased over time, from 16.7% in 2010 to 25.3% in 2013. With regard to oncologic outcomes, RARC was associated with similar positive surgical margins (9.4% vs. 10.7% OR:0.86, 95%CI 0.72-1.04, p=0.12), higher rates of lymphadenectomy (96.4% vs. 92.0%, OR: 2.31, 95%CI 1.68-3.19, p<0.001), higher median lymph node count (17 vs. 12, p<0.001) and higher rates of lymph node count above the median (56.8% vs. 40.4%, OR: 1.95, 95%CI 1.56-2.43, p<0.001). With regard to postoperative outcomes, receipt of RARC was associated with a shorter median LOS (7 vs. 8, p<0.001), lower rates of pLOS (45.1% vs. 54.8%, OR: 0.68, 95%CI 0.58-0.79, p<0.001), lower 30-day (1.5% vs. 2.8%, OR: 0.49, 95%CI 0.29-0.82, p=0.007) and 90-day postoperative mortality (5.0% vs. 6.8%, OR: 0.72, 95%CI 0.54-0.95, p=0.023).

Conclusion: Our large contemporary study shows the increased adoption of RARC between 2010 and 2013, with currently more than 1 out of 4 patients undergoing RARC. RARC was associated with higher LN counts, shorter LOS and lower postoperative mortality.
Poster #154
RESULTS OF SECOND LINE TOPICAL THERAPY FOR UPPER TRACT UROTHELIAL CARCINOMA (UTUC)
Adithya Balasubramanian, BA¹; Michael J. Metcalfe, MD²; Gavin Wagenheim, MD²; Lianchun Xiao, MS³; John Papadopoulos, MD²; Neema Navai, MD²; John W. Davis, MD²; Jose A. Karam, MD²; Ashish M. Kamat, MD²; Christopher G. Wood, MD²; Colin P. Dinney, MD² and Surena F. Matin, MD²
¹Baylor College of Medicine, Houston, TX; ²Department of Urology, MD Anderson Cancer Center, Houston, TX; ³Department of Biostatistics, MD Anderson Cancer Center, Houston TX
(Presented By: Adithya Balasubramanian, BA)

Introduction: Topical therapy (TT) for UTUC has been explored as a kidney sparing approach to treat CIS and to decrease recurrence and progression for endoscopically treated Ta-1 tumors. In bladder cancer data supports use of 2nd line TT for repeat induction but this approach has yet to be investigated for UTUC. This study looks at outcomes following a 2nd line use of induction TT for UTUC in patients (Pts) ineligible for or refusing nephroureterectomy.

Methods: After IRB approval charts of Pts receiving TT for UTUC from 3/2005-6/2015 at MD Anderson Cancer Center were retrospectively reviewed. Pts received TT via percutaneous nephrostomy tube or cystoscopically placed ureteral catheters per Pt choice. All Pts were offered induction and maintenance TT. Follow up was every 3 months with upper tract imaging or ureteroscopy in the 1st year and then at a minimum 6 mos interval. Response was defined as no evidence of disease after 6 mos, failure/refractory cases as recurrence within 6 mos, and relapse as recurrence after 6 mos, after start of TT. Salvage TT was defined as therapy reinitiation following primary TT failure.

Results: 51 Pts with 58 renal units (RUs) received TT. 32/58 (55%) RUs had low grade UTUC, 13/58 (22%) had high grade UTUC, 10/58 (17%) had CIS, and 3/58 (5%) had unknown disease grade due to insufficient tissue but presumed low grade. Median follow up was 28.5 mos (Range 2-133). Summary of 1st line TT and RU response can be found in Table 1. 18 RUs received 2nd line TT, 8 (44%) as salvage therapy for refractory disease and 10 (56%) as re-induction. Results of 2nd line TT and corresponding responses can be found in Table 1. 60% of our cohort with CIS responded to 1st line TT, but responses of refractory/recurrent CIS to 2nd line TT were poor. Pts receiving adjuvant TT had a 71% response to 1st line TT and 62% response to 2nd line TT.

Conclusion: Within the limitations of small subgroups, our data suggests that UTUC refractory/recurrent after 1st line adjuvant TT may be associated with response to a 2nd line agent. However, refractory/recurrent CIS was much less responsive to 2nd line TT.

Funding: Supported in part by Monteleone Family Fdn for Research in Kidney and Bladder Cancer and Eleanor and Scott Petty Fund for UTUC Research

<table>
<thead>
<tr>
<th>Indication: First line</th>
<th>No. Total renal units (n)</th>
<th>No. Responsive (%)</th>
<th>No. Failure/refractory (%)</th>
<th>No. Recurrence (%)</th>
<th>No. Interim (%)</th>
<th>No. To Be Determined (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>10</td>
<td>6 (60%)</td>
<td>4 (40%)</td>
<td>1 (10%)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MMC</td>
<td>1</td>
<td>0%</td>
<td>1 (100%)</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BCG</td>
<td>4</td>
<td>1 (25%)</td>
<td>2 (50%)</td>
<td>0%</td>
<td>0</td>
<td>1 (25%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indication: Adjuvant</th>
<th>No. Total renal units (n)</th>
<th>No. Responsive (%)</th>
<th>No. Failure/refractory (%)</th>
<th>No. Recurrence (%)</th>
<th>No. Interim (%)</th>
<th>No. To Be Determined (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>48</td>
<td>34 (71%)</td>
<td>6 (13%)</td>
<td>11 (23%)</td>
<td>1 (2%)</td>
<td>7 (15%)</td>
</tr>
<tr>
<td>MMC</td>
<td>31</td>
<td>21 (68%)</td>
<td>5 (16%)</td>
<td>7 (23%)</td>
<td>0</td>
<td>5 (16%)</td>
</tr>
<tr>
<td>BCG</td>
<td>17</td>
<td>13 (76%)</td>
<td>1 (6%)</td>
<td>4 (24%)</td>
<td>1 (6%)</td>
<td>2 (12%)</td>
</tr>
<tr>
<td>MMC</td>
<td>5</td>
<td>4 (80%)</td>
<td>1 (20%)</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>BCG</td>
<td>5</td>
<td>2 (40%)</td>
<td>2 (40%)</td>
<td>0%</td>
<td>0</td>
<td>1 (20%)</td>
</tr>
<tr>
<td>Gem</td>
<td>2</td>
<td>1 (50%)</td>
<td>1 (50%)</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mitogel</td>
<td>1</td>
<td>1 (100%)</td>
<td>0%</td>
<td>0%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

BCG: Bacillus Calmette–Guérin; Gem: Gemcitabine; MMC: Mitomycin-C

Table 1: Summary of First and Second Line Topical Therapy For UTUC
**Poster #155**

**A PROPENSITY SCORE ANALYSIS OF RADICAL CYSTECTOMY VERSUS BLADDER-SPARING TRIMODAL THERAPY IN THE SETTING OF A MULTIDISCIPLINARY BLADDER CANCER CLINIC**

Girish Kulkarni, MD¹; Thomas Hermanns, MD¹; Yanliang Wei, MD¹; Bimal Bhindi, MD¹; Thenappan Chandrasekar, MD²; Raj Satkunasivam, MD¹; Paul Athanasopoulos, MD¹; Peter Bostrom, MD¹; Cynthia Kuk³; Kathy Li, MD¹; Arnoud Templeton, MD³; Srikala Sridhar, MD³; Theodorus van der Kwast, MD⁵; Peter Chung, MD⁶,⁷; Robert Bristow, MD⁶,⁷; Michael Milosevic, MD⁶,⁷; Padraig Warde, MD⁶,⁷; Neil Fleshner, MD¹; Michael Jewett, MD¹; Shahina Bashir⁸ and Alexandre Zlotta, MD¹

¹Princess Margaret Cancer Centre, Department of Surgery, Division of Urology, University Health Network, University of Toronto, Toronto, Canada; ²University of Toronto, Toronto, ON; ³Department of Surgery, Division of Urology, Mount Sinai Hospital, University of Toronto, Toronto, Canada; ⁴Princess Margaret Cancer Centre, Department of Medical Oncology, University of Toronto, Toronto, Canada; ⁵Department of Pathology, University Health Network, University of Toronto, Toronto, Canada; ⁶Radiation Medicine Program, Princess Margaret Cancer Centre and University Health Network; ⁷and Department of Radiation Oncology, University of Toronto, Toronto, Canada; ⁸Department of Biostatistics, Princess Margaret Cancer Centre, University of Toronto, Toronto, Canada

(Presented By: Thenappan Chandrasekar, MD)

**Introduction:** Multidisciplinary management improves complex treatment decision making in cancer care, but its impact for bladder cancer (BC) has not been documented. While radical cystectomy (RC) is currently viewed as the standard of care for muscle-invasive bladder cancer (MIBC), radiotherapy-based, bladder-sparing trimodal therapy (TMT) has emerged as a valid treatment option. In the absence of randomized studies, we compared the oncological outcomes between patients managed by RC or TMT.

**Methods:** Patients seen in our multidisciplinary bladder cancer clinic (MDBCC) from 2008 to 2012 were retrospectively reviewed and those who received TMT for MIBC were identified and matched, using propensity scores, to patients who underwent RC. Overall survival and disease-specific survival (DSS) were assessed with Cox Proportional hazards modeling and competing risk analysis, respectively.

**Results:** 162/248 (65%) patients assessed in the MDBCC had MIBC. After MDBCC review and further imaging, pathological review or additional pathological sampling, 89 (36%) had a change in tumour stage and 83 (33%) had a change in treatment plan. 80 patients opted for bladder-sparing therapy and 49 underwent TMT as primary therapy. We matched 48 TMT with 48 RC patients. Median age was 67.5 years and 29.2% were cT3/cT4. At a median follow up of 3.62 years, there were 19 (39.6%) deaths (7 from BC) in the RC group and 15 (31.3%) deaths (6 from BC) in the TMT group. 5 year DSS was 84.7% and 85.2%, in the RC and TMT groups, respectively (p>0.05).

**Conclusion:** In the setting of an MDBCC, TMT yielded survival outcomes similar to matched RC patients. Appropriately selected MIBC patients should be offered the opportunity to discuss treatment options including organ-sparing TMT.
GENOMIC DIFFERENCES BETWEEN MALES AND FEMALES WITH HIGH GRADE UROTHELIAL BLADDER CANCER

David Paulucci, BA; Balaji Reddy, MD; Ketan Badani, MD and John Sfakianos, MD
Icahn School of Medicine at Mount Sinai, New York, NY
(Presented By: David Joseph Paulucci, BA)

Introduction: Although less prevalent in females, survival for cancer of the urinary bladder is worse in women. Genomic evidence to account for these disparities is limited. The present study assessed gene-level expression and non-silent somatic mutations between men and women with high grade transitional cell carcinoma (TCC) of the urinary bladder.

Methods: The present study used The Cancer Genome Atlas data set to identify 347 patients with high grade TCC of the urinary bladder. Males and females were nearest neighbor 1 to 1 propensity score matched on age, year of diagnosis, smoking history, history of non-muscle invasive bladder cancer or other malignancies and papillary subtype. Significance analysis of microarrays (SAM) was applied to log2 transformed and quantile normalized TCGA urothelial bladder cancer gene expression data for the propensity-matched cohort of 65 male and 65 female patients. Non-silent somatic mutations in PIK3CA, TP53, and CDKN2A were compared. Pathway analysis using GeneMANIA was then conducted to identify the biologic significance of genes differentially expressed between Black and White patients. Non-silent somatic mutations in PIK3CA, TP53, and CDKN2A were compared. Pathway analysis using GeneMANIA was then conducted to identify the biologic significance of genes differentially expressed between Black and White patients. Non-silent somatic mutations in PIK3CA, TP53, and CDKN2A were compared.

Results: The risk of death was lower for males (HR=0.55, p=.045) adjusting for age, BMI, papillary subtype, pathologic TNM stage and lymphovascular invasion. In the propensity score matched cohort, no differences in history of non-muscle invasive bladder cancer (p=.795), smoking (p=.856), AJCC pathologic tumor stage (p=.639) or age (p=.286) were observed. No differences in PIK3CA (p=.999), TP53 (p=.572), and CDKN2A (p=.150) non-silent somatic mutations were observed. Our analysis identified 41 differentially expressed genes after false discovery rate correction (q < .05) with 11 genes overexpressed in females and 30 genes overexpressed male patients. Pathway analysis did not identify any biologic significance of genes overexpressed between males and females.

Conclusion: No significant differences in the genomic makeup of these tumors between males and females suggests that treatment delays and misdiagnosis may underlie disparities in survival between males and females with high grade urinary bladder cancer.
Poster #157
PERIOPERATIVE TRANSFUSION OF LEUKOCYTE DEPLETED BLOOD PRODUCTS IN RADICAL CYSTECTOMY PATIENTS DOES NOT ADVERSELY IMPACT SURVIVAL: A RETROSPECTIVE ANALYSIS ON 1,026 PATIENTS.
Juan Chipollini, MD¹; Dominic Tang, MD¹; Ali Antar²; Scott Gilbert, MD¹; Julio Pow-Sang, MD¹; Wade Sexton, MD¹; Philippe Spiess, MD¹; Sephalie Patel, MD¹ and Michael Poch, MD¹
¹Moffitt Cancer Center, Tampa, FL; ²USF Morsani College of Medicine, Tampa, FL
(Presented By: Juan Chipollini, MD)

Introduction: Several studies on radical cystectomy (RC) patients have shown increased mortality in patients receiving perioperative blood transfusion (PBT); however, the leukoreduced status of blood units is not clarified in the literature. We hypothesized that leukoreduced blood transfusions can negate immunologic adverse effect PBT can have on survival outcomes.

Methods: Data from 1,026 patients who underwent radical cystectomy (RC) at Moffitt Cancer Center from 2008 to 2015 was analyzed. PBT was defined as transfusion of leukoreduced packed red blood cells intraoperatively or within the postoperative period. Univariate analyses were performed to measure the association between PBT and patient variables, with p < 0.05 considered significant. Kaplan-Meier survival curves and proportional regression were applied to determine the association of PBT and clinical risk factors for overall survival (OS), disease specific survival (DSS) and recurrence free survival (RFS). A subgroup analysis among transfused patients was also performed to look for differences between intra versus (vs) postoperative transfusion outcomes to see if timing of blood transfusion would be meaningful.

Results: Overall, 33.2% of patients received leukoreduced PBT. Patients receiving PBT were more likely to be female, had higher estimated blood loss (EBL), lower preoperative hemoglobin, more likely to have had neoadjuvant chemotherapy or undergone a continent urinary diversion. Moreover, those with higher pathologic tumor and nodal stage were observed more frequently in patients who received PBT. On multivariate analysis, PBT was not associated with worse OS, DSS, or RFS (all, p > 0.5). KM curves for OS, DSS, and RFS did not show any significant differences (all, p > 0.5) between the groups. Tumor and nodal stage were significantly associated with worse OS, DSS, and RFS (all, p <0.0001). No differences were found between intraoperative vs postoperative transfusion groups (all, p > 0.3).

Conclusion: This large, contemporary cohort demonstrates no significant association between leukoreduced PBT and oncologic outcomes in RC patients. However, prospective external validation is warranted.
Poster #158
ASSESSMENT OF UPPER TRACT UROTHELIAL CARCINOMA INVASIVENESS USING HIGH-FREQUENCY ENDOLUMINAL ULTRASONOGRAPHY
Jeffrey Farnum, MD; Raghu Vikram, MD; Surena Matin, MD; Colin Dinney, MD and Arvind Rao, PhD
Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX
(Presented By: Jeffrey Farnum, MD)

Introduction: The staging of upper tract urothelial carcinoma (UTUC) remains a diagnostic dilemma due to cross-sectional and ureteroscopic (URS) biopsy limitations leading to understaging. Few studies have evaluated endoluminal ultrasound (ELUS) regarding feasibility and accuracy in staging of UTUC. The objective is to determine the accuracy of ELUS for staging of UTUC.

Methods: Patients evaluated for UTUC underwent retrograde pyelography and URS to identify the location of any lesions. ELUS was performed prior to intervention using mechanical radial scanning at 20 MHz in B-mode with a 1.7-mm-diameter (5F) probe. Cine clips were stored for evaluation by 2 radiologists blinded to endoscopic and pathologic findings. ELUS results were compared to pathology in patients with a conclusive ELUS interpretation who either underwent NU without pretreatment or were managed endoscopically for cT1a disease without sign of recurrence for a minimum of 1 year.

Results: From 9/2008 to 9/2013, 53 patients underwent ELUS without complication. Inclusion criteria were met by 32 patients, 27 of whom had conclusive ELUS imaging. Median time between ELUS and NU was 30 days. ELUS accurately identified 1 of 6 patients with at least muscle-invasive (MI) disease (2 pT2, 4 pT3) and 16 of 21 patients with non-MI disease (18 pTa, 2 pT1, 1 CIS). No significant association between ELUS and pathology was found for pT2 disease (P=0.109) or pT3 disease (P=0.124). For pT2 disease, the positive predictive value (PPV) was 16.7% and the negative predictive value (NPV) was 76.2%. For pT3 disease, the PPV was 0% and the NPV was 81.8%.

Conclusion: With current technique and instrumentation, ELUS has an acceptable NPV for T2 or T3 disease but poor PPV, likely due to poor assessment of the muscularis. While it may prove useful in select cases to confirm findings of non-MI disease, improvement of current instrumentation is needed, possibly with use of a larger, higher resolution probe before recommending its routine use to confidently rule out MI or non-organ-confined disease.

Funding: Supported in part by the Monteleone Family Foundation for Research in Kidney and Bladder Cancer, and the Eleanor and Scott Petty Fund for UTUC Research.
Poster #159
FAMILIAL BLADDER CANCER: A POPULATION BASED ANALYSIS
Piyush Pathak, BS; William Lowrance, MD, MPH; Zhe Yu, BS; Ken Smith, PhD and Heidi Hanson, PhD
University of Utah Huntsman Cancer Institute, Salt Lake City, UT
(Presented By: Piyush Pathak, BS)

Introduction: Family history confers increased bladder cancer risk, but it is unclear whether this represents shared genetic or environmental risk. A genetic predisposition to bladder cancer is suggested by the development of bladder cancer in association with several well-described Mendelian disorders, such as Lynch syndrome and retinoblastoma. We present a population-based study of cancer risk in relatives of bladder cancer patients.

Methods: Utah residents who were diagnosed with bladder cancer between 1966 and 2014 were identified from the Utah Cancer Registry (UCR). Population controls were selected randomly from the Utah Population Database (UPDB) and matched 5:1 to index cases by sex and birth year. First degree relatives (FDR; includes parents, children, and siblings); second degree relatives (SDR; includes grandparents, grandchildren, aunts, uncles, nieces, and nephews), first cousins (FC), and spouses were evaluated for relative risk of bladder cancer, any cancer, smoking related cancers, Lynch syndrome, melanoma, thyroid, lung, prostate, and pancreatic cancers. Cox regression models with sex and birth year as covariates were used for analysis.

Results: A total of 9,027 individuals with a bladder cancer and 45,095 matched controls were used for the analysis. An increased risk of bladder cancer in FDR, SDR, and FC (HR=1.68, 1.40, 1.07, respectively) of individuals with bladder cancer was observed. Increased risk of any cancer in FDR (HR=1.06), and SDR (HR=1.03), as well as increased risk of smoking related cancers in FDR, SDR, FC, and spouses was seen (HR=1.11, 1.04, 1.02, 1.1, respectively). Familial risk of lung cancer, after excluding families with strong family history of smoking related cancers, was still increased for FDR, SDR, and spouses (HR = 1.35, 1.1, 1.01, respectively). We found no significant differences in familial risk of melanoma, Lynch syndrome, melanoma, thyroid, prostate, or pancreatic cancer.

Conclusion: Our result suggest increased familial bladder cancer, lung cancer, smoking related cancer, and overall cancer risk in relatives of patients with bladder cancer. We did not see an increased risk of Lynch syndrome in bladder cancer patient relatives, likely due to low prevalence in the general population. Our findings may help further understanding of the familial implications and genetic basis of bladder cancer.
Introduction: Blue Light Cystoscopy (BLC) using hexaminolevulinate (Cysview) improves the detection of non-muscle invasive bladder cancer (NMIBC). We report on our experience from the prospective BLC Registry and its utility.

Methods: Under IRB approval, we prospectively enrolled consecutive patients undergoing transurethral resection of bladder lesions into the registry at 9 different centers. Patients who refused catheter insertion (8), had pure upper tract or prostatic urethral lesions (7) or were lost to follow up (10) were excluded from the study.

Results: A total of 1060 separate lesions were identified from 415 BLC procedures on 338 patients between April 2014 and July 2016. Mean age was 72 years with 82% being male. 62 patients underwent repeat use (2-4). Using final pathology as the reference standard, the sensitivity of WL, BL and the combination for any malignant lesion was 73%, 89% and 98% respectively. The addition of BL to standard WLC increased the detection rate by 12% for any papillary lesions and 45% for CIS (Table 1). BL resulted in upgrading or upstaging in 52 (15%) patients, resulting in a change in management. Overall false-positive (FP) rate was 22% for WL and 26% for BL. 122 (36%) patients received BCG at least 6 weeks prior to BLC, with a positive predictive value (PPV) of 59% for malignancy (FP=30%). 75 biopsies were taken from margins of a previous resection site (with more than 6 weeks’ interval), wherein the PPV of BL was 52% for malignancy (FP=30%). Among the positive/suspicious cytology patients who had no lesions on WL (113 total), BL was able to detect an extra 50 malignant lesions in 32 patients (sensitivity 91%). There were no hypersensitivity reactions noted. 40 (12%) patients eventually underwent cystectomy, 4 (10%) of whom exclusively because of lesions detected by BLC.

Conclusion: BLC significantly increases detection rates of CIS and papillary lesions over WL cystoscopy alone and can result in a change in management in 15% of patients. Recent BCG therapy appears to have no effect on BLC accuracy. Repeat use of Cysview for BLC appears to be safe.

Table 1- Detection rate of different bladder lesions using white and blue light cystoscopy.

<table>
<thead>
<tr>
<th>Detection rate (sensitivity)</th>
<th>Any malignancy</th>
<th>Any papillary</th>
<th>Low Grade papillary</th>
<th>High Grade papillary</th>
<th>CIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>White light only</td>
<td>73%</td>
<td>87%</td>
<td>82%</td>
<td>87%</td>
<td>52%</td>
</tr>
<tr>
<td>Blue light only</td>
<td>89%</td>
<td>89%</td>
<td>87%</td>
<td>91%</td>
<td>91%</td>
</tr>
<tr>
<td>Either white or blue light</td>
<td>98%</td>
<td>99%</td>
<td>98%</td>
<td>99%</td>
<td>97%</td>
</tr>
</tbody>
</table>
Poster #161
EFFECT OF PRECYSTECTOMY EPITHELIAL TUMOR MARKER RESPONSE TO NEOADJUVANT CHEMOTHERAPY ON ONCOLOGICAL OUTCOMES IN UROTHELIAL BLADDER CANCER
Soroush Bazargani, MD¹; Hooman Djaladat, MD, MS¹; Anne K. Schuckman, MD¹; Sarmad Sadeghi, MD²; Tanya Dorff, MD²; David Quinn, MD² and Siamak Daneshmand, MD¹
¹USC Institute of Urology, Los Angeles, CA; ²USC Department of Internal Medicine, Hematology and Oncology
(Presented By: Soroush T. Bazargani, MD)

Introduction: We have previously reported that elevated pre-cystectomy serum levels of epithelial tumor markers predict worse oncological outcome in patients with invasive urothelial bladder cancer (UBC). Herein, we evaluated the effect of neoadjuvant chemotherapy (NACHT) on elevated tumor marker levels and their association with oncological outcomes.

Methods: Under IRB approval, serum levels of Carbohydrate Antigen 125 (CA-125), Carbohydrate Antigen 19-9 (CA 19-9) and Carcinoembryonic Antigen (CEA) were prospectively measured in 368 patients with invasive UBC from August 2011 through December 2015. In the subgroup undergoing NACHT, markers were measured prior to the first and after the last cycle of chemotherapy (prior to cystectomy).

Results: 93 (25%) patients underwent NACHT, of whom 51 had a complete tumor marker profile before and after therapy and 24 (47%) had one or more elevated pre-NACHT tumor markers. Mean age was 67 years (33-82), 12 (57%) of whom were males. Following completion of chemotherapy, 10/21 (42%) patients normalized their tumor markers, while 14/21 (58%) had one or more persistently elevated markers. There was no difference in pathological stage between groups (p=0.16). Further analysis showed a significantly lower rate and longer median time to recurrence/progression in the responder group (50% in responders vs. 93% in non-responders at a median time 145 vs. 76 days respectively; p=0.01). There was also significant difference in mortality rates and median overall survival between the study groups (20% in responders vs. 78% in non-responders at a median time 457 vs. 187 days respectively; p=0.005) (Figure 1). The two patients that died in the normalized tumor marker group both had tumor marker relapse at recurrence prior to their death.

Conclusion: To our knowledge, this is the first pilot study showing tumor marker response to NACHT. Patients with persistently elevated markers following NACHT have a very poor prognosis following cystectomy, which may help identifying chemotherapy-resistant tumors. A larger, controlled study with longer follow up is needed to determine their role in predicting survival.

Figure 1- RFS and OS for tumor marker response groups after NACHT
Poster #162

EFFICACY OF MYCOBACTERIUM PHLEI CELL WALL-NUCLEIC ACID COMPLEX (MCNA) IN BCG- UNRESPONSIVE PATIENTS

Roger Li, MD¹; John Amrhein, MSc PStat²; Zvi Cohen³; Monique Champagne, BPharm, MSc⁴ and Ashish Kamat, MD, MBBS, FACS¹

¹The University of Texas, MD Anderson Cancer Center; ²Kinston and McDougall Scientific Ltd., Toronto, Ontario, Canada; ³Bioniche Therapeutics Corp, Pinte-Claire, Quebec Canada; ⁴Telesta Therapeutics Inc., Saint-Laurent, Quebec, Canada

(Presented by: Roger Li)

Introduction: Previously, we reported the results of a single-arm, multi-institutional study on the efficacy of MCNA in patients who failed intravesical BCG treatment (Morales et al, 2015; J Urol 193: 1135). Since that publication, a new standardized definition for BCG-unresponsiveness has been established to enable the urologic oncology community to assess the efficacy of salvage treatments for patients in a uniform manner. Here, we reanalyzed the oncologic outcomes following intravesical MCNA in patients classified as ‘BCG Unresponsive’ according to the new definition.

Methods: Patients with recurring high grade NMIBC (papillary and/or carcinoma in situ [CIS]) after intravesical BCG were enrolled in the trial. For this analysis, we focused on those patients who were enrolled with high grade tumor recurrence after a minimum criterion for adequate BCG treatment (2 courses with at least 5 of 6 induction instillations and 2 of 3 maintenance instillations, or 2 induction courses). The treatment course included 6 weekly induction instillations of 8 mg MCNA followed by 3 weekly instillations at Months 3, 6, 12, 18 and 24. Clinical efficacy assessments included cystoscopy, urine cytology and biopsy. Patients with the absence of high grade disease confirmed by central review of biopsy were deemed disease-free.

Results: Out of the 129 patients enrolled, 94 fit the criteria for the new BCG-unresponsive definition. Of these 94 patients, 68 (72.3%) had CIS, with or without papillary tumors, and 26 (27.7%) had only papillary tumors at study entry. In the group with papillary tumors, the disease-free survival rates measured at Months 6, 12, and 24 were 61.2% (38.2-77.8%), 61.2 (38.2-77.8%), and 50.1% (27.5-69%). In the CIS-containing group, the corresponding complete response rates measured at Months 6, 12, and 24 were 39.7% (28-52.3%), 23.5% (14.1-35.4%), and 13.2% (6.2-23.6%), respectively.

Conclusion: Intravesical MCNA therapy has demonstrable activity in patients with BCG Unresponsive disease and has the potential to offer 24% of patients with CIS and 60% of patients with papillary tumors a chance to safely preserve their bladder for at least 1 year. The efficacy in patients classified according to this new definition is higher than that reported with all comers, suggesting that adequate priming with BCG might be required for further immune-based response.
Poster #163
CLINICAL AND IMMUNOLOGIC OUTCOMES OF BCG PRIMING PRIOR TO INTRAVESICAL INDUCTION IMMUNOTHERAPY FOR NON-MUSCLE INVASIVE BLADDER CANCER
Niannian Ji, PhD¹; Edwin E. Morales, MD¹; Neelam Mukherjee¹; Vincent Hurez, DVM, PhD¹; Tyler J. Curiel, MD¹; Getahun Abate, MD, PhD²; Daniel F. Hoft, MD, PhD² and Robert S. Svatek, MD¹
¹San Antonio, Texas; ²Saint Louis, Missouri
(Presented By: Edwin E. Morales, MD)

Introduction: Recently, it was demonstrated that parenteral BCG vaccination, prior to intravesical BCG substantially enhances tumor immunity in an animal model of bladder cancer. Thus one strategy for improving response to BCG involves the use of priming by administering percutaneous BCG in advance of intravesical instillation.

Methods: We performed a pilot study of percutaneous BCG vaccination given 3 weeks prior to intravesical instillation to evaluate safety and feasibility and to monitor immune responses. Eligible patients were BCG naïve, PPD-negative with high-grade non-muscle-invasive bladder cancer (NMIBC). State-of-the-art immunological assays were used to study BCG-specific immune responses induced by vaccination. For comparison, immune assays were conducted on control patients not receiving percutaneous BCG (n=5).

Results: A total of 13 patients received percutaneous BCG at a median follow-up of 20.4 months. No patient experienced dose-limiting toxicity or a Grade 3-4 adverse event. No patients progressed to muscle-invasive disease or underwent cystectomy. 9 patients (69.2%) successfully converted PPD (defined as ≥10 mm of induration). 5 of 13 (38.5%) patients experienced high-grade bladder cancer recurrence. BCG treatment rendered an increase in BCG-specific T cell lymphoproliferation, IFN-γ ELISPOT response, and direct ex vivo IFN-γ response. Flow cytometric studies demonstrated that BCG significantly enhanced CD4+ and CD8+ T cells capable of concurrent expansion and effector function in most patients. Compared to control patients, primed patients exhibited an increase in IFN-γ release in response to BCG ex vivo at both 3 and 6 months. Priming resulted in an earlier and more robust increase in urinary IL-2, IL-17, and IL-8 compared to control patients suggesting a potential benefit from earlier and higher activation of local immune responses.

Conclusion: Vaccination with percutaneous BCG prior to intravesical instillation in boosted BCG-specific immunity and elevated BCG-induced urinary cytokine release. Priming may represent a method to increase the efficacy of BCG immunotherapy for high-risk NMIBC but requires formal testing with a randomized trial.
Poster #164
INTRAVESICAL BCG INDUCES CD4+ EXPANSION BUT NOT DIFFERENTIATION IN A CLINICALLY RELEVANT IMMUNE COMPETENT MODEL OF BLADDER CANCER
Max Kates, MD; Thomas Nirschl; Nikolai Sopko; Noah Hahn; Alex Baras; Charles Drake and Trinity Bivalacqua, MD, PhD
(Presented By: Max Kates, MD)

Introduction: Intravesical BCG Immunotherapy is the standard of care in treating non-muscle invasive bladder cancer, yet its mechanism of action remains elusive. Both innate and adaptive immune responses have been implicated in BCG activity. While prior research has indirectly demonstrated the importance of T cells and shown a rise in CD4+ T cells in bladder tissue after BCG, T cell subpopulations have not been fully characterized. We investigated the relationship between effector and regulatory T cells in an immune competent, clinically relevant rodent model of bladder cancer.

Methods: Fischer 344 rats aged 7 weeks received 1.5mg/kg N-Nitroso-N-methylurea (MNU) every other week for 6 weeks (4 doses). Dysplasia begins by week 8 and by week 16 the majority of rats have a NMIBC phenotype. Beginning week 8 following the first MNU dose, rats were intravesically administered 0.3ml of BCG (Tice®), cisplatin (1mg/ml), Mitomycin C (2mg/ml), MMC+ BCG, or saline (n=10 for all groups) weekly for 6 total doses. Animals were sacrificed at week 16, and bladders were processed for histopathology and digested into single cell suspensions for flow cytometry. T lymphocyte subpopulations were then compared using unpaired two-tailed t tests.

Results: Our data demonstrate that the MNU rat model of bladder cancer is characterized by a decline in the CD8/FoxP3 ratio. In this tumor model, intravesical BCG leads to a large, temporary rise in the CD4+ T cell population in the urothelium, and is more effective and immunogenic compared to intravesical chemotherapy. However, whole transcriptome expression profiling of sorted CD4+ and CD8+ T cells revealed minimal differences in differential gene expression after BCG treatment.

Conclusion: In an immune competent murine model of bladder cancer, our analysis of lymphocytes in the bladder wall suggests that while BCG induces CD4+ T cell recruitment to the bladder, the T cell phenotype does not change. Therapeutic efforts should target signals that promote effector T cell recruitment and not differentiation.
Propensity Matched Comparative Analysis of Survival Following Chemoradiation and Radical Cystectomy in Patients with Muscle Invasive Bladder Cancer

Chad Ritch, MD, MBA¹; Nachiketh Soodana Prakash, MBBS, MS¹; Raymond Balise, PhD²; Bruno Nahar, MD¹; David Alonzo, MD¹; Katherine Almengo, BS¹; Vivek Venkatramani, MD¹; Sanjaya Swain, MD¹; Sanoj Punnen, MD¹; Dipen Parekh, MD¹ and Mark Gonzalgo, MD¹

¹Department of Urology, University of Miami, Miami, Florida; ²Department of Urology and Biostatistics, University of Miami, Miami, Florida

(Presented By: Chad R. Ritch, MD, MBA)

Introduction: There is growing interest in bladder preservation with primary chemoradiation (CRT) for muscle-invasive bladder cancer (MIBC). However, due to differences in patient selection, data comparing CRT to the current standard of care, radical cystectomy (RC), are limited. We performed a propensity matched comparative analysis of overall survival (OS) following CRT and RC in MIBC patients using the National Cancer Database (NCDB).

Methods: A retrospective analysis was performed using MIBC patients who underwent either primary RC or primary CRT in the NCDB between 2004-2013. Exclusion criteria were: clinical stage <T2, cN+, cM+ disease, and diagnosis at the time of autopsy or death. Primary CRT was defined as total radiation dose ≥40Gy along with chemotherapy within 90d. Descriptive statistics were used to compare demographic and clinical features. A propensity score model was developed to match RC and CRT patients using age, stage, grade, histology, gender, race and income. Kaplan Meier analysis was used to compare OS among the matched cohort. Multivariable logistic regression model was used to determine predictors of OS.

Results: 8,379 (6,606 RC and 1773 CRT) patients met inclusion criteria. The majority of patients were male (66%). Median age was 67 years for RC and 77 years for CRT, (p < .0001). There were more CRT patients compared to RC patients with Charlson score 2 (11 vs 7%, p < .0001). 1683 patients in each group were propensity matched. On multivariable Cox analysis, significant predictors of decreased OS were age (HR 1.4; CI [1.3 - 1.6] p<0.001), Charlson score 1 (HR 1.1; CI [1.01-1.2] p=0.02), Charlson score 2 (HR 1.5; CI [1.3-1.7] p<0.001), stage cT3-4 (HR 1.4; CI [1.3-1.6] p<0.001), urothelial histology (HR 1.2; CI [1.1-1.3], p<0.001). Compared to RC, treatment with CRT was a statistically significant independent predictor of decreased OS (HR 1.2; CI [1.1-1.3] p<0.001). Median 5 year OS was lower for CRT versus RC patients (30% vs 38%, p=0.004). (Figure)

Conclusion: Using a propensity score matched model, patients undergoing CRT have decreased OS compared to those undergoing RC. Additional predictors of OS include: older age, advanced stage, urothelial histology and higher Charlson score.
Poster #166
IN VITRO INFECTIVITY AND CELL KILLING BY TWO ONCOLYTIC VIRUSES AGAINST UROTHELIAL CARCINOMA
Tanner Miest, MD, PhD¹; Mike Steele²; Yumei Zhou, PhD²; R. Jeffery Karnes, MD¹; Stephen Boorjian, MD¹; R. Houston Thompson, MD¹; Matthew Tollefson, MD¹; Igor Frank, MD¹; Kah Whye Peng, PhD²; Stephen Russell, MD, PhD² and Bradley Leibovich, MD¹
¹Department of Urology, Mayo Clinic, Rochester, MN; ²Department of Molecular Medicine, Mayo Clinic, Rochester, MN
(Presented By: Tanner Miest, MD, PhD)

Introduction: Oncolytic virotherapy uses replication competent viruses for lytic destruction of cancer cells. This therapeutic strategy has gained increasing clinical presence punctuated by recent FDA approval of the herpes virus Imlygic for metastatic melanoma. We have developed two genetically optimized oncolytic viruses, a measles virus (MV-NIS) and vesicular stomatitis virus (VSV-hIFNß-NIS), both currently under testing in clinical trials against multiple tumor types. We determined infectivity and cell killing of these therapeutic viruses in both low and high-grade urothelial carcinoma cell lines in support for future bladder cancer clinical trials.

Methods: RT-4 (low-grade) and UM-UC-3 (high-grade) urothelial carcinoma cell lines were obtained from ATCC, and MV-NIS and VSV-hIFNß-NIS were generated at Mayo Clinic facilities. In vitro infectivity studies were performed at multiplicity of infections (MOI) of 0.1, 1 and 3 with virus incubation times of 1 to 2 hours. Virus infectivity was determined by cytopathic effect at 40x magnification 72 hours after infection. Equivalent MV and VSV viruses expressing green fluorescent protein (GFP) were used to characterize virus spread using fluorescent microscopy. The MTS cell proliferation assay was used to quantify cell killing.

Results: MV-NIS and VSV-hIFNß-NIS both achieved robust infection of both RT-4 and UM-UC-3 cell lines. We used equivalent viruses expressing green fluorescent protein (MV-GFP and VSV-GFP) to visualize more rapid and widespread infection of high-grade UM-UC-3 cells compared to low-grade RT-4 cells. VSV-hIFNß-NIS achieved nearly 80% and MV-NIS achieved nearly 40% cell killing relative to negative controls in RT-4 and UM-UC-3 cell lines, respectively.

Conclusion: Our data show robust infectivity and cell killing by two clinically-tested oncolytic viruses in low and high-grade urothelial carcinoma cell lines. These data highlight the potential of oncolytic virotherapy as a novel therapeutic strategy for both invasive and superficial urothelial carcinoma. We aim to combine oncolytic virotherapy with check point inhibition, exploiting the lytic and immuno-stimulatory effects of virus infection with the T-cell activating effects of check-point inhibition to achieve synergistic tumor killing. A Phase I clinical trial using intravesical MV-NIS together with atezolizumab prior to cystectomy in patients ineligible for standard-of-care neoadjuvant chemotherapy is currently in development.
DEFINITIVE TREATMENT OF BLADDER CANCER IN OCTOGENARIANS: BALANCING INCREASED PERIOPERATIVE MORTALITY WITH SUPERIOR OVERALL SURVIVAL

William Boysen, MD; Vignesh Packiam, MD; Joseph Rodriguez III, MD; Melanie A. Adamsky, MD; Norm Smith, MD and Gary D. Steinberg, MD
University of Chicago, Chicago IL
(Presented By: William Boysen, MD)

Introduction: Radical cystectomy (RC) is the gold standard treatment for muscle invasive bladder cancer (MIBC), but is sometimes avoided in the elderly due to concern for increased morbidity. We sought to quantify the perioperative risks of RC among octogenarians and analyze the survival benefit of available treatment modalities in a national database.

Methods: Using the National Cancer Database, we identified patients with non-metastatic MIBC from 2004 to 2013. Patients were stratified by age less than 80 and age 80-89. We assessed trends in management, perioperative mortality, and overall survival. Analysis was performed using chi-square test, multivariate-regression, and Cox regression.

Results: A total of 54,201 patients with non-metastatic MIBC were identified, of whom 15,581 (28.8%) were ages 80-89. Compared to younger patients, octogenarians were less likely to undergo RC (18.0% vs. 47.9%, p<0.01) and more likely to be treated with combination chemotherapy and radiation (13.7% vs. 10.1%, p <0.01). On multivariate analysis controlling for Charlson comorbidity index (CCI), race, and facility type, age greater than 80 was independently associated with decreased odds of undergoing RC (OR 0.25, p<0.01). Octogenarians treated with RC have a higher 30-day (5.7% vs. 2.2%, p<0.01) and 90-day mortality (14.5% vs. 6.1%, p<0.01) than younger patients. On multivariate analysis controlling for race, CCI, and facility type, age over 80 is independently associated with 30- and 90-day mortality (OR 2.9 and 2.6, p<0.01). On Cox multivariate analysis controlling for age, race, CCI, stage, tumor size, payer status, grade and facility type, overall survival was highest among octogenarians treated with RC, and sequentially worse for those treated with combination chemoradiation, radiation, and chemotherapy (HR 0.54 vs 0.60 vs 0.75 vs 0.77, respectively; p<0.01; Table 1), compared to TURBT alone.

Conclusion: Despite the survival benefit of RC in MIBC, octogenarians are less likely to undergo RC than younger patients. RC in octogenarians confers a higher 30- and 90-day mortality, but is associated with improved overall survival. Quantifying these risks and benefits improves counseling for octogenarians on optimal management strategies.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Hazard ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charlson comorbidity index</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>REF</td>
<td>REF</td>
<td>REF</td>
</tr>
<tr>
<td>1</td>
<td>1.27</td>
<td>1.18-1.37</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>&gt;1</td>
<td>1.53</td>
<td>1.37-1.71</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Clinical T Stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cT2</td>
<td>REF</td>
<td>REF</td>
<td>REF</td>
</tr>
<tr>
<td>cT3</td>
<td>1.38</td>
<td>1.24-1.53</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>cT4</td>
<td>1.44</td>
<td>1.28-1.62</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TURBT</td>
<td>REF</td>
<td>REF</td>
<td>REF</td>
</tr>
<tr>
<td>TURBT + chemotherapy</td>
<td>0.77</td>
<td>0.67-0.89</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>TURBT + radiation</td>
<td>0.75</td>
<td>0.66-0.88</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>TURBT + chemotherapy + radiation</td>
<td>0.60</td>
<td>0.53-0.68</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Radical cystectomy</td>
<td>0.54</td>
<td>0.49-0.59</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*Controlling for age, race, facility type, payer status, tumor size, histologic grade, year of diagnosis, stage
Poster #168
DOES SOCIOECONOMIC STATUS IMPACT LIFESTYLE BEHAVIORS AND HEALTH-RELATED QUALITY OF LIFE IN BLADDER CANCER SURVIVORS?
Ajay Gopalakrishna, MHS; Thomas Longo, MD; Joseph Fantony, MD; Steven Brousell, MD and Brant Inman, MD
Duke University Medical Center, Durham, NC
(Presented By: Ajay Gopalakrishna, BS, BA)

Introduction: Lifestyle behaviors have been associated with improved health-related quality of life (HRQOL) in bladder cancer survivors. Our objective was to determine the impact of socioeconomic status (SES) on lifestyle behaviors, namely physical activity and diet quality, and HRQOL in a large cohort of bladder cancer survivors.

Methods: Bladder cancer survivors identified through an institutional database were mailed a survey that included the Functional Assessment of Cancer Therapy Bladder Cancer (FACT-BL), the International Physical Activity Questionnaire (IPAQ-L), and the Diet History Questionnaire II (DHQ2). Demographics and cancer-related details were abstracted from electronic medical records. Median household incomes by zip code were abstracted from the American Community Survey data and matched to subjects’ addresses to estimate their SES. Stratified analyses according to quartiles of incomes and local polynomial regression models were used to evaluate the association between SES and lifestyle behaviors and HRQOL.

Results: A total of 472 subjects (49% response rate) completed the survey. The mean age was 74 years, 87% were Caucasian, and 81% were male. The mean household income was $54,770. When household incomes were divided into quartiles, there were no differences in physical activity (p = 0.875), diet quality (p = 0.455), or HRQOL (p = 0.343). This is shown graphically in Figure 1.

Conclusion: SES was not associated with physical activity, diet quality, or HRQOL in bladder cancer survivors. Our findings are reassuring and encouraging and can help oncologists to counsel their patients on the potential benefits of positive lifestyle behaviors regardless of socioeconomic status.

![Figure 1](image-url)
Poster #169
PATTERNS OF CARE FOR THE EVALUATION OF HEMATURIA AMONG INSURED NON-ELDERLY PATIENTS
Alyssa Greiman, MD¹; Kit Simpson, PhD²; Amit Patel, MD³ and Sandip Prasad, MD⁴
¹Medical University of South Carolina; ²Department of Healthcare Leadership and Management College of Health Professions MUSC, Charleston, SC; ³Department of Urology, DuPage Medical Group, DuPage, IL; ⁴Department of Urology, Medical University of South Carolina, Charleston, SC and Department of Surgery, Ralph H. Johnson VA Medical Center, Charleston, SC (Presented By: Alyssa Greiman, MD)

Introduction: Fifty percent of patients with hematuria will have demonstrable causes. Full evaluation includes cystoscopy, urine cytology, and imaging. We determined patterns of care for hematuria evaluation in the insured population.

Methods: Utilizing a national administrative database of privately insured patients (Truven Health Analytics MarketScan® Research Database), we performed a cross-sectional analysis of men and women aged 40-65 years with newly diagnosed gross or microscopic hematuria in the calendar year 2013. Patients with pre-existing genitourinary diagnoses in the previous 12 months were excluded. The primary outcome was hematuria evaluation as assessed by the use of cystoscopy, urine cytology, and/or imaging for 6 months after a hematuria diagnosis identified by claims coding.

Results: We identified 22,514 and 69,310 patients with gross and microscopic hematuria, respectively; 44% of patients were male and 56% were female. Patients with gross and microscopic hematuria had complete evaluation in 6.3% and 5.2% and had no evaluation in 37.2% and 47.9% of cases, respectively (p<0.001 for all). For patients with gross and microscopic hematuria, 46.1% and 29.0% underwent cystoscopy, respectively (p<0.001). Performance of imaging and cytology are described in Table 1.

Conclusion: Among men and women with initial presentation of gross or microscopic hematuria, less than 6% of patients receive a complete evaluation with imaging, urine cytology and cystoscopic examination while over 48% have no evaluation. Practice patterns between gross and microscopic hematuria did not differ significantly, raising quality of care concerns that physicians treat these two conditions similarly despite significant differences in the natural history and the risk of urologic malignancies of these entities. Future studies should address causes for the discrepancies observed in the evaluation of hematuria.

<table>
<thead>
<tr>
<th>Table 1. Practice patterns of evaluation for patients with specific hematuria diagnosis.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Hematuria (n=22,514)</td>
</tr>
<tr>
<td>Complete evaluation</td>
</tr>
<tr>
<td>Cytology + Imaging only</td>
</tr>
<tr>
<td>Cytology + Cystoscopy only</td>
</tr>
<tr>
<td>Imaging + Cystoscopy only</td>
</tr>
<tr>
<td>Cytology only</td>
</tr>
<tr>
<td>Imaging only</td>
</tr>
<tr>
<td>Cystoscopy only</td>
</tr>
<tr>
<td>Any Cystoscopy</td>
</tr>
<tr>
<td>None</td>
</tr>
</tbody>
</table>

*Chi-Square
Poster #170

RATES AND PREDICTORS OF UPGRADING FROM BIOPSY TO SURGICAL PATHOLOGY FOR UPPER TRACT UROTHELIAL CARCINOMA

Ezra Margolin, BA; Justin Matulay, MD; Ojas Shah, MD and Christopher Anderson, MD
Columbia University Medical Center, New York, NY
(Presented By: Christopher Anderson)

Introduction: Upper tract urothelial carcinoma (UTUC) is an uncommon urologic malignancy with fewer than 10,000 cases diagnosed annually in the US. There are unique challenges associated with the diagnosis and management of UTUC due in large part to the failure of biopsy to provide reliable staging and grading information. The implications of inaccurate diagnosis are significant, as high-grade and high-stage malignancies carry a worse prognosis and warrant more aggressive treatment. Our objective was to describe rates of upgrading from biopsy to final pathology and attempt to identify predictors of upgrading.

Methods: We retrospectively reviewed the records of 276 patients who underwent definitive surgical management for UTUC at our institution from 2000 to 2016. We identified 202 patients who underwent nephroureterectomy or segmental ureterectomy and also had a preoperative ureteroscopic biopsy. We used multivariate logistic regression to identify predictors of upgrading and all p-values <0.05 were considered statistically significant.

Results: Median age at biopsy was 72 years, and 67% were men. Median tumor size was 2.8cm. Of the 180 patients who had a preoperative urine cytology, 35% were positive. On ureteroscopic biopsy, an average of 4 (±2.7) tissue samples were obtained, with the largest sample being approximately 5mm (±5). On biopsy, 41% (n=83) of tumors were classified as low-grade and 59% (n=119) were high-grade. Upgrading on final pathology occurred in 42% of patients with low-grade biopsies, and downgrading occurred in 5% of high-grade biopsies. On multivariate analysis (n=66), we did not identify any clinical characteristics that were independently associated with upgrading among patients with low-grade tumors.

Conclusion: Among patients who were found to have low-grade UTUC on ureteroscopic biopsy and then taken for surgical resection, 42% were upgraded on final pathology. Multivariate analysis was unable to identify any independent risk factors for upgrading, underscoring the difficulty in using clinical staging for risk stratification. Improved diagnostic tools are needed to identify patients with truly low risk disease who may be candidates for organ-sparing management.

<table>
<thead>
<tr>
<th>Multivariate logistic regression predicting upgrading of low-grade biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Size of largest biopsy fragment ≥0.5cm</td>
</tr>
<tr>
<td>≥4 biopsy fragments analyzed</td>
</tr>
<tr>
<td>Positive urine cytology</td>
</tr>
<tr>
<td>Tumor size ≥3cm</td>
</tr>
</tbody>
</table>
Poster #171
RESTRICTIVE TRANSFUSION IN RADICAL CYSTECTOMY IS SAFE
Sumeet Syan-Bhanvadia, MD; Siri Drangsholt, MD; Swar Shah, MD; Jie Cai; Gus Miranda and Siamak Daneshmand, MD
USC Institute of Urology, Los Angeles CA
(Presented By: Sumeet Kaur Syan-Bhanvadia, MD)

Introduction: Perioperative blood transfusion (PBT) has been associated with poorer oncologic outcomes in UC bladder. We adopted a restrictive transfusion protocol (RTP) in 2010; herein we examine perioperative outcomes of patients undergoing RC with this approach.

Methods: Outcomes for 173 consecutive patients undergoing RC from April 2010 to June 2014 by a single surgeon employing RTP were retrospectively analyzed from an IRB approved, prospectively collected database. Univariable and multivariable analyses were performed.

Results: The RTP was as follows: preoperatively, patients <75 years old with no cardiac disease should have hemoglobin (Hgb) > 8 g/dL, and >9 g/dL if > 75 or with cardiac history. Postoperative Hgb is kept above 7 g/dL or 8 g/dL, respectively. When required, 1 unit PRBC is given and then reassessment is performed. 46 (26.6%) received a PBT with median units transfused of 2 (range=1-12). For the cohort, median age was 70 (range=38-93) and BMI was 26.7(15.9-27.1). Median EBL was 400 (310-1800). Patients receiving PBT had higher EBL (500 vs. 350, p=0.001) and lower baseline hematocrit (28.9 vs. 33.3, p=0.005) but no difference in LOS (5.5 vs. 5, p=0.07). Hematocrit at baseline and immediately post-operatively was higher in the no PBT group (p=0.02); no difference was seen at time of discharge or at 3 week follow up (p>0.05). 90 -day complication rates were lower in the no PBT group (65.6 vs. 86.7%, p=0.007), as were rates of high-grade complications (15.6 vs. 34.8%, p=0.003). There were no differences in cardiac complication rates between groups. On multivariable logistic regression, predictors of PBT were age (OR=1.06, 95% CI [1.01, 1.11]), CCMI ≥2 (OR=2.68, 95% CI [1.09-7.04]), neoadjuvant chemotherapy (OR=3.74, 95% CI [1.46, 10.19]), ≥pT3 (OR=5.5, 95% CI [2.33, 13.73]), baseline hematocrit (OR=0.95, CI [0.87, 1.00]) and EBL (although marginally) (OR=1.001, CI [0, 1.003]). On multivariable cox regression, when controlled for age, baseline hematocrit, pathologic stage and nodal status, and adjuvant chemotherapy, PBT was associated with lower RFS (HR=2.16, CI [1.13, 41.12], p=0.02) and lower OS (HR=2.25, CI [1.25, 4.88], p=0.01).

Conclusion: RTP can safely minimize PBT in RC without increasing the rate of cardiovascular or total perioperative complications. This is especially important in light of the poorer RFS and OS outcomes in patients receiving PBT at RC independent of co-morbidity, age or pathological risk factors.
Introduction: Previous studies in bladder cancer have demonstrated gender disparities in the time to diagnosis from initial hematuria presentation. Our objective was to investigate the potential of gender disparities in the diagnosis of UTUC following initial hematuria presentation.

Methods: The Marketscan outpatient and inpatient claims database from 2010-2014 was queried for patients with a UTUC diagnosis claim. Only patients who presented with a hematuria claim (microscopic, gross, or unspecified) within 12 months of their initial UTUC diagnosis claim were included. Patients had to be present in the Marketscan database 1 year prior to the initial hematuria claim without claims for hematuria or bladder cancer in this precedent period. Delayed diagnosis was defined as >90 days from initial hematuria claim to UTUC diagnosis claim. Univariable and multivariable Poisson regression models with robust variance were used to determine factors associated with delayed UTUC diagnosis.

Results: Among the 1,326 patients, 35% (469/1326) experienced a delay in diagnosis. Men had a longer median number of days to UTUC diagnosis from hematuria claim than women (60 [26-139] vs. 49 [21-123.5], p=0.04). Women were more likely to have a UTI claim during the work-up period (37% vs. 21%, p<0.001), and 22% of men had a prostate-related diagnosis claim (BPH, prostatitis) present. The percentage of patients with a urinalysis, urine culture, cytology, or abdominopelvic imaging performed was comparable for men and women. In the multivariable model, having a UTI claim (RR=1.53 95%CI 1.32-1.77) and prostate-related diagnosis claim (RR=1.46 95%CI 1.22-1.74) were independent predictors of delayed diagnosis. When stratified by provider, the prostate-related diagnosis claim was associated with diagnosis delay for patients seen by non-urologists (RR=1.55, 95%CI 1.27-1.91) but not for patients seen by urologists (RR=1.21, 95%CI 0.87-1.70). When men with a prostate-related diagnosis claim were excluded, the median number of days to diagnosis was comparable among men and women (51 [21-113] vs. 49 [21-123.5], p=0.8).

Conclusion: Delays in UTUC diagnosis from hematuria presentation occurred in more than 1/3 of patients. Men had an increased number of days from hematuria to diagnosis of UTUC than women, which may be driven by the men with a prostate-related diagnosis. Additionally, men initially presenting to non-urologists may drive this delay associated with a prostate-related diagnosis claim.
**Poster Session II — Full Abstracts**

**Poster #173**

**IMPACT OF ACCOUNTABLE CARE ORGANIZATIONS ON PROSTATE SPECIFIC ANTIGEN (PSA) TESTING AND PROSTATE BIOPSY**

Amy N. Luckenbaugh, MD¹; Samuel R. Kaufman²; Tudor Borza³; Phyllis Yan³; Lindsey A. Herrel³; Ted A. Skolarus³; Edward Norton³; Florian R. Schroeck³; Bruce L. Jacobs⁴; David C. Miller³; Vahakn B. Shahinian⁶ and Brent K. Hollenbeck³

¹University of Michigan Ann Arbor, Michigan; ²University of Michigan, Department of Urology, Dow Division of Health Services Research Ann Arbor, MI; ³University of Michigan, Department of Internal Medicine, Department of Economics, University of Michigan, Ann Arbor, Michigan, National Bureau of Economic Research, Cambridge, Massachusetts; ⁴The Dartmouth Institute for Health Policy and Clinical Practice Lebanon, NH; ⁵University of Pittsburgh, Department of Urology, Graduate School of Public Health Pittsburgh, PA; ⁶University of Michigan, Department of Internal Medicine Ann Arbor, MI

(Presented By: Amy Luckenbaugh, MD)

**Introduction:** The USPSTF recommendations against PSA screening for prostate cancer have reduced screening and result in fewer diagnoses. Accountable Care Organizations (ACOs), which aim to improve population health and enhance financial stewardship, have the potential to accelerate the impact of such national recommendations. The extent to which ACOs translate such evidence to real world practice inevitably will determine their ability to achieve their overarching objective in the broader healthcare milieu. In this context, we examined the effect of ACO participation on PSA screening tests and prostate biopsy.

**Methods:** We performed a retrospective cohort study using national Medicare data evaluating rates of PSA testing and prostate biopsy among men without prostate cancer between 2010 and 2014. Patients were aligned to ACOs based on participation by their primary care provider. We assessed PSA testing and biopsy rates over time and before/after policy implementation for ACO and non-ACO aligned beneficiaries. Difference-in-differences analysis was used to determine the causal effects of ACO implementation on rates of PSA testing and prostate biopsy.

**Results:** Among 1.1 million eligible men without prostate cancer, 160,577 (15.2%) were aligned to an ACO. We noted divergent trends over time with a 13% decrease in the annual rate of PSA testing but a 29% increase in the annual rate of prostate biopsy (both p < 0.001). As shown in the figure, ACOs reduced PSA testing at a more rapid rate (difference-in-differences estimator p<0.001). However, they did not impact rates of biopsy, which increased at a similar rate among ACO and non-ACO patients (difference-in-differences estimator p>0.05).

**Conclusion:** Reductions in PSA testing, the decision for which typically is made by the primary care physician, were accelerated by the dissemination of ACOs. However, rates of prostate biopsy, the decision for which is made by the specialist, increased independent of ACO participation. Better engagement of ACOs with specialists is likely needed for these organizations to achieve their objective.

---

*Figure: Changes in A) Annual PSA tests B) Annual biopsy pre- and post-implementation of Accountable Care Organizations (ACOs)*
Introduction: The Urological Outcomes Data Base (UODB) has existed for 15 years and contains data on over 6000 patients treated for urologic malignancies at University of California, San Francisco (UCSF). Until recently, clinical data in UODB have been manually abstracted from patient records. We are now implementing automated data extraction from the Epic electronic health record system. The electronic health record software EPIC, is supported by a research database that automatically extracts patient data. We aim to study a sample set of chosen variables and compare the types and degrees of mismatch between automated and manual data extraction, to see if manual data extraction can be minimized or eliminated.

Methods: In early 2016 we developed a set of nearly 200 Smart Data Elements (SDEs) for urologic oncology, including over 100 SDEs for men with prostate cancer. These SDEs are populated automatically from the Epic clinician interface during routine clinical documentation, using either SmartForms or SmartLists embedded within a dozen new standardized templates. SDEs are available immediately in Epic’s Clarity database, and can be called in future documentation notes. We selected nine core sample SDEs for validation against manually abstracted data already in the UODB for 2016 patients. Manually abstracted values were compared directly to values in the Epic-extracted SDEs to see if they matched.

Results: SDEs selected for comparison were date of prostatectomy (N=37), number of biopsy cores taken (N=243), number of positive biopsy cores (N=238), biopsy primary Gleason score (GS, N=260), biopsy secondary GS (N=260), pathological GS (N=33), pathological T stage (N=35), pathological N stage (N=34), and PSA at diagnosis (N=29 patients). Match rates are shown in the Table.

Conclusion: Our next steps are to expand validation across a large number of variables, and to explore reasons for mismatch. In some cases, data sources may prove more accurate. Working with the AUA Quality (AQUA) registry, we plan to move a subset of SDEs into the Epic Foundation repository, allowing access to any Epic center. Automated data extraction can improve clinical workflows and streamline research data collection in urologic oncology.

<table>
<thead>
<tr>
<th>SDE</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of prostatectomy</td>
<td>93.6%</td>
</tr>
<tr>
<td>Number of biopsy cores</td>
<td>93.0%</td>
</tr>
<tr>
<td>Number of positive biopsy cores</td>
<td>92.6%</td>
</tr>
<tr>
<td>Biopsy primary GS</td>
<td>96.8%</td>
</tr>
<tr>
<td>Biopsy secondary GS</td>
<td>95.1%</td>
</tr>
<tr>
<td>Pathological GS</td>
<td>97.4%</td>
</tr>
<tr>
<td>Pathological T stage</td>
<td>97.6%</td>
</tr>
<tr>
<td>Pathological N stage</td>
<td>97.6%</td>
</tr>
<tr>
<td>PSA at diagnosis</td>
<td>92.6%</td>
</tr>
</tbody>
</table>
Poster #175
PROFILES OF UROLOGIC CANCER AMONG THE ELDERLY: SHIFTING INCIDENCE, STAGE PRESENTATION, AND MORTALITY

Deepak Pruthi, MD, FRCSC¹; Zoann Nugent, PhD²; David Dawe, MD³; Harminder Singh, MD, MPH⁴ and Piotr Czaykowski, MD³
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Epidemiology and Cancer Registry, CancerCare Manitoba, Winnipeg, Manitoba, Canada; ³Department of Medical Oncology and Hematology, CancerCare Manitoba, Winnipeg, Manitoba, Canada; ⁴Internal Medicine, University of Manitoba, Winnipeg, Manitoba, Canada
(Presented By: Deepak Kumar Pruthi, MD, FRCSC)

Introduction: Those aged >65 are often grouped in cancer statistics resulting in poor appreciation of the changes in cancer profiles with advancing age. We examined the changing incidence of urologic cancer and the ensuing transformation in disease presentation and mortality among the elderly defined in 3 groups: age 65-74, age 75-84, and age 85+.

Methods: Data were extracted from the population-based Manitoba Cancer Registry for 1985–2013 for Manitobans aged > 65 at diagnosis of cancer. Registry data were combined with Manitoba Health population data to produce age-specific incidence and mortality rates. Staging data were available from 2004 onward. Cancers examined were renal cancer [RC], urothelial cancer [UC] (including renal pelvis, ureter, in situ bladder), and prostate cancer [PC]. Data were analyzed by era (early 1985-99 vs contemporary 2000-13). Logistic regression utilized all cancers as the population and the target cancer as an event.

Results: This study included 97,972 total cancers diagnosed in 83,412 people aged >65. There were 14,997 PCs, 8,162 UCs, and 2,476 RCs. In the contemporary period, PC rates continue to rise with advancing age (APC 0.64). While male RC diagnoses continued to increase with advancing age (65-90, APC 1.18), female rates declined after age 83 (APC -7.66). Male UC rates increase with advancing age in both eras although they attenuate (age 76, APC 1.83 from 8.17). Among females, there is no era effect and UC rates decline in advanced age (age 86, APC -5.97). Relative survival is worst for RC and declines in each age group; era effect was significant in PC only. Stage of diagnosis demonstrates that patients aged 85+ have higher diagnoses of Stage 4 PC (p<0.001) with resultant changes on relative mortality particularly in the contemporary period (Figure 1).

Conclusion: In general urologic cancer rates tended to attenuate and, in some cases, decline with advancing age; this pattern is exhibited in both eras. Consequently, there are changes in presentation of cancers for each age group. Era effects have a role in rates of specific cancers and differences in stage at diagnosis are common. Relative survival is a function of both age and era in PC.
Poster #176
EFFECT OF SURGICAL APPROACH ON PERIOPERATIVE OUTCOMES IN NEPHROURETERECTOMY
Alexander A. Parker; Andrew G. Bachman; Marshall Shaw, MD; Brian W. Cross, MD; Kelly L. Stratton, MD; Michael S. Cookson, MD and Sanjay G. Patel, MD
University of Oklahoma College of Medicine – Department of Urology, Oklahoma City, OK
(Presented By: Alexander Parker, BS)

Introduction: To examine the effect of surgical approach on perioperative outcomes for nephroureterectomy.

Methods: The National Cancer Database was used to retrospectively identify 6,250 patients who underwent nephroureterectomy with urothelial carcinoma for localized disease (cN0/cM0) from 2010-2013. Cohorts were stratified by surgical approach (robotic, laparoscopic, or open). Perioperative outcomes measured included length of stay (LOS) >3 days, receipt of lymph node dissection (LND), lymph node yield, 30 day readmission rate, 30 and 90 day mortality. Pearson chi square and multivariate logistic regression evaluated correlations between approach and perioperative outcomes while controlling for patient demographic and hospital characteristics.

Results: Obtained: Of patients that met inclusion criteria 22.06% underwent robotic, 43.47% underwent laparoscopic, and 34.46% underwent open nephroureterectomy. Overall, 20.24% underwent a lymphadenectomy at the time of nephroureterectomy and 30 and 90-day mortality was 1.68% and 3.32% respectively. While controlling for demographic and hospital characteristics multivariate analysis revealed that the laparoscopic and open approaches had a longer LOS compared to robotic. LND (OR: 0.56 [95%CI: 0.5-0.7, p<0.0005) and yield >10 nodes (OR: 0.40 [95%CI: 0.3-0.6, p=0.0005) was less likely in patients undergoing laparoscopic compared to robotic. Open approach has a higher incidence of 30 and 90-day mortality when compared to robotic. (Table 1)

Conclusion: Lower incidence of LND and lymph node yield in laparoscopic surgery may indicate technical challenges associated with this approach and may suggest that robotic approach is the superior option when considering these factors. These data may suggest that robotic assisted approach offers an advantage when balancing shorter LOS, improved mortality and may better allow surgeons to perform lymphadenectomy with adequate yields.

Funding: Funding provided by the University of Oklahoma - Department of Urology.

Table 1: Multivariate analysis. Covariates: Age, race, gender, year of diagnosis, distance from hospital, facility type (academic vs. community), facility location, hospital volume, patient insurance status, and Charlson comorbidity score.
**Poster #177**

**IMPROVING NEEDLE BIOPSY ACCURACY IN SMALL RENAL MASS USING TUMOR-SPECIFIC DNA METHYLATION MARKERS**

Sameer Chopra, MD, MS¹; Jie Liu, PhD²; Mehrdad Alemozaaffar, MD, MS³; Manju Aron, MD³; Daniel Weisenberger, PhD³; Clayton Collings, PhD³; Sumeet Syan, MD³; Brian Hu, MD³; Mihir Desai, MD²; Monish Aron, MD³; Vinay Duddalwar, MD³; Inderbir Gill, MD²; Kimberly Siegmund, PhD² and Gangning Liang, PhD²

¹University of Southern California, Los Angeles, CA; ²USC; ³Emory (Atlanta, GA); ⁴Loma Linda (Redlands, CA)

(Presented by: Sameer Chopra)

**Introduction:** The clinical management of small renal masses (SRMs) is challenging since the current methods for distinguishing between benign masses and malignant renal cell carcinomas (RCCs) are frequently inaccurate or inconclusive. In addition, renal cancer subtypes also have different treatments and outcomes. High false negative rates increase the risk of cancer progression and indeterminate diagnoses result in unnecessary and potentially morbid surgical procedures. Our objective herein is to build a classification model to predict subtypes of kidney tumor that include benign and malignant.

**Methods:** Using available DNA methylation data from The Cancer Genome Atlas, we built a predictive classification model for kidney tumors using 697 DNA methylation profiles from 6 different subgroups: clear cell, papillary and chromophobe RCC, benign angiomyolipomas, oncocytomas, and normal kidney tissues. Furthermore, the DNA methylation-dependent classifier has been validated in 271 ex vivo needle biopsy samples from 100 SRMs.

**Results:** Obtained: In general, the results were highly reproducible (89%, n=70) in predicting identical malignant subtypes from biopsies. Overall, 98% of adjacent-normals (n=101) were correctly classified as normal, while 91% of tumors (n=70) were correctly classified malignant and 83% of benign (n=30) were correctly classified benign by this classification model.

**Conclusion:** Overall, this study provides molecular-based support for using routine needle biopsies to determine tumor classification of SRMs and support the clinical decision-making.
Introduction: Given that chromophobe renal cell carcinomas (chRCCs) are difficult to differentiate from oncocytomas on imaging and even on biopsy, various metrics have been utilized to help differentiate them. We investigated whether quantitative contour analysis can distinguish between chRCC and oncocytoma on cross-sectional imaging.

Methods: Computerized tomography (CT) images from 14 patients diagnosed with chromophobe RCC and 20 patients diagnosed with oncocytoma between 2011 and 2014 were manually segmented using Synapse 3D (Fujifilm, Stamford, CT). Tessellated 3D models of the tumor were created from the segmented voxels using custom MATLAB code. Eleven shape descriptors were then calculated per tumor: compactness, mean radial distance (RD), RD standard deviation (RDSD), RD area ratio (RDAR), zero crossings, entropy, Feret ratio (FR), convex hull area (CHA) and perimeter (CHP) ratios, elliptic compactness (EC), and sphericity (SPH). The morphometric parameters of chRCC and oncocytomas were compared using the Wilcoxon rank-sum test to test the hypothesis that chRCC tumors demonstrate more morphologic irregularity than oncocytomas.

Results: Obtained: Quantitative contour analysis was technically successful in all cases. Oncocytomas are more spherical than chRCCs (0.89 vs 0.92, p < 0.01). There were also significant differences between oncocytomas and chRCCs in 5 parameters when analyzed in all 3 orientations: compactness (0.74 vs 0.84, p < 0.01), convex hull area ratio (0.95 vs 0.97, p < 0.01), convex hull perimeter ratio (0.92 vs 0.96, p < 0.01), and mean radial distance (0.81 vs 0.86, p < 0.01). Some shape metrics (E, EC, RDAR, RDSD) were statistically significant in the transverse orientation but showed nonsignificant differences in the coronal and sagittal orientations.

Conclusion: Computerized renal tumor image analysis using shape descriptors is technically feasible and efficient. 6 shape metrics may help distinguish between oncocytic tumors which are often difficult to distinguish on imaging and biopsy.
Poster #179

IMAGE TEXTURE ANALYSIS OF PERIRENAL FAT AS A PREDICTOR OF INTRA-OPERATIVE ADHERENT PERINEPHRIC FAT

Chidubem Ugwueze, MD; Darryl Hwang, MD; Steve Cen, MD; Sameer Chopra, MD, MS; Mark Kwon, MD; Monish Aron, MD; Mihir Desai, MD; Inderbir Gill, MD and Vinay Duddalwar, MD

University of Southern California, Los Angeles, CA
(Presented By: Sameer Chopra, MD, MS)

Introduction: The presence of Adherent Perinephric Fat (APF) is a significant determinant of the difficulty of surgical dissection at the time of Robot Assisted Partial Nephrectomy (RAPN). We evaluated the perinephric fat using texture analysis using 2D and 3D and compared it with existing image based scoring systems.

Methods: This retrospective study looked at three study groups were identified based on operative notes as follows: 17 control cases (straightforward perirenal dissections), 16 APF cases (difficult perirenal dissections due to the adherent fat), and 10 cases of voluminous fat (difficult perirenal dissections due solely to fat quantity). The perinephric fat was segmented and extracted using Synapse 3D (Fujifilm, Stamford, CT). GLCM calculations were obtained using an algorithm on MatLab. MAP Score was calculated for all cases. Descriptive analyses based on ttest or Wilcoxon Rank Sum test, depending on data distribution and with box whisker plot were used to illustrate the difference in imaging parameter between patient categories. Stepwise logistic regression was used to select imaging parameters that can discriminate patient for either 2D or 3D. ROC curve was used to estimate and compare the discrimination power (area under the curve) between 2D vs. 3D (see figure).

Results: Obtained: 2D and 3D GLCM calculations were technically successful in all cases. Significant differences were noted between texture features among all three groups. Information measure of correlation 2 (IMC2) was nominated as the strongest predictor for 2D and Information measure of correlation 1 (IMC1) for 3D. There is no statistical difference in AUC between 2D and 3D analysis for all comparisons. MAP scores for APF and Voluminous fat cases were similar (3.7 ± 0.9 vs 3.1 ± 1.01) compared to control (1.7 ±1.1).

Conclusion: 2D and 3D GLCM image texture analysis is a promising technique for predicting intraoperatively encountered normal perinephric fat, Adherent perinephric fat, and voluminous fat. Hence with further prospective validation, the GLCM image texture features identified can be used to predict APF particularly in cases where other scoring systems might be limited.
NOT ALL SMALL RENAL MASSES ARE CREATED EQUAL: PREDICTORS OF PATHOLOGIC UPSTAGING IN CLINICAL T1 RENAL CANCER A MULTI-INSTITUTIONAL STUDY

Deepak Pruthi, MD, FRCSC¹; Dharam Kaushik, MD¹; Michael Liss, MD¹; Hanzhang Wang, MD, MPH¹; Ronald Rodriguez, MD, PhD¹ and Thomas McGregor, MD, FRCSC²

¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Urology, University of Manitoba, Winnipeg, Manitoba

(Presented By: Deepak Kumar Pruthi, MD, FRCSC)

Introduction: Active surveillance (AS) for small renal masses (SRM) is an important nephron sparing strategy. However, some patients are at risk of developing locally advanced renal cell carcinoma (RCC) with diminished cancer-specific survival. We sought to identify clinical and pre-operative anatomic imaging characteristics in patients with RCC to predict pathologic upstaging of clinical T1 tumors to T3a (pT3a) in partial and radical nephrectomy specimens.

Methods: A retrospective review was conducted for all patients with cT1NxMx renal masses undergoing radical and nephron-sparing surgery (NSS) between January 1, 2011 and June 30, 2015 at two institutions. Pre-operative imaging scans were independently reviewed and the RENAL Nephrometry score was applied to each scan. Relationship to the pT3a descriptor (segmental renal vein [SRV], renal sinus fat [RSF], perinephric fat [PNF], and pelvicalyceal invasion) was also examined. Univariate analysis was performed individually for each clinical and radiological predictor. Significant predictors were placed in multivariate regression and multinomial logistic regression models.

Results: RCC was identified in 410 patients with clear cell histology predominating (83%). The median age, tumor size, and renal nephrometry score were 60 (interquartile range, IQR, 51.3, 66), 3.5cm (IQR 2.6, 4.8), and 8 (IQR 7, 9). NSS was common (71%) and 44% of all patients had cT1b masses. In total 73 (18%) patients were pathologically upstaged to pT3a. PNF involvement was the most common cause (46%), followed by SRV (33%), and RSF (22%). In the univariate analysis, age, tumor size, radical nephrectomy, total nephrometry score, and specific nephrometry components (radius, endophytic tumor, polar line location, and ‘h’ designation) were all associated with upstaging. Similarly, while it appeared patients upstaged due to SRV or RSF patients were more likely to have larger tumors and undergo radical nephrectomy than PNF patients, in the multivariate model only age (p=0.024) and degree of endophytic tumor (p=0.015) predicted both pT3a upstaging and the pT3a descriptor.

Conclusion: While advanced age is often an indication for AS of SRM, we demonstrated that older patients and those with endophytic (>50) tumors were more likely to be upstaged to T3a. We advocate a careful review of imaging in clinic and thorough patient counseling when determining treatment options for small renal masses.
**Poster Session II — Full Abstracts**

**Poster #181**  
**IMPACT OF PERIOPERATIVE HMG-COA REDUCTASE INHIBITOR USE ON RATES OF ACUTE KIDNEY INJURY IN PATIENTS UNDERGOING PARTIAL NEPHRECTOMY**

Shreyas Joshi, Karen Ruth, Debra Kister, Michelle Collins, Stephanie Eble, David Chen, Richard Greenberg, Rosalia Viterbo, Marc Smaldone, Alexander Kutikov and Robert Uzzo  
Fox Chase Cancer Center, Philadelphia, PA  
(Presented By: Shreyas S. Joshi, MD)

**Introduction:** The use of statin medications is widespread among the general population. Accumulated observational data suggests a beneficial effect of statin therapy on renal function, although recent prospective studies assessing for a renoprotective effect of perioperative statin use during cardiac surgery have been equivocal. Prior studies of statin use in patients undergoing partial nephrectomy (PN) have focused on oncologic outcomes, and their impact on post-PN renal function is unknown. We hypothesized that perioperative statin use would reduce rates of acute kidney injury (AKI) in patients undergoing PN and aimed to examine this in a retrospective post-surgical cohort.

**Methods:** 1,158 PN patients were identified from a prospectively-maintained institutional database of patients undergoing partial/radical nephrectomy. Exclusion criteria included lack of preoperative serum creatinine (Cr), multiple concurrent surgeries, and those with baseline Cr <0.4. The binary outcome measure was AKI, defined using Kidney Disease Improving Global Outcomes (KDIGO) criteria: An increase >=1.5x baseline serum Cr value occurring within 7 postoperative days, or an absolute increase of >=0.3 mg/dl above baseline within the first 48 hours postoperatively. Preoperative categorization of statin use was binary and patient-reported. Overall Chi-Square and Cochran-Armitage trend tests were used to evaluate the strength of associations.

**Results:** Variables associated with statin use included age, gender (male >female), BMI, Charlson index, hypertension, type II diabetes, and hypercholesterolemia (all p <0.01). Univariate analysis demonstrated that statin use was associated with an increased risk of AKI following PN (24.9% with statin use, 18% without statin use, p < 0.01). Interestingly, the risk was higher in patients taking statins without a history of high cholesterol than for those taking statins with a history of high cholesterol (26.5% vs. 23.7%, respectively, p = 0.01).

**Conclusion:** Perioperative statin use during partial nephrectomy may be associated with a higher risk of development of post-operative AKI. Given the strength of the association, definitive analysis is warranted to insure safety for patients using statins who undergo partial nephrectomy. Future studies are needed to confirm this finding prospectively, and may warrant a recommendation against statin use in the perioperative period.
CHARACTERIZATION OF GENOMIC ALTERATIONS ASSOCIATED WITH METASTATIC TROPISM IN A COHORT OF PATIENTS WITH RENAL CELL CARCINOMA

Maria Becerra, MD; Francisco Sanchez-Vega, PhD; Ed Reznik, PhD; Brandon Manley, MD; Almedina Redzematovic; Mahyar Kashan; Mazyar Ghanaat, MD; Jonathan Coleman, MD; Paul Russo, MD; Ari Hakimi, MD and James Hsieh, MD, PhD
Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center. New York, NY
(Presented By: Maria F. Becerra, MD)

Introduction: Advances in genomics have enabled the discovery of genetic alterations driving renal cell carcinoma (RCC) pathology. While patterns of mutations and copy number alterations from primary tumors have been well characterized, it remains unclear if these patterns persist in tumors from metastatic sites. We aim to evaluate genomic features associated with organ tropism of metastasis.

Methods: After IRB approval, we identified patients with RCC whose metastases had been sequenced at our institution between 2001 and 2016. All of the tumors were sequenced using MSK-IMPACT, a custom 410-gene (previously 341) next-generation sequencing assay. Recurrent somatic mutations were analyzed Fisher’s exact test. Statistical analysis was separately conducted by site of metastasis and by organ system stratified by clear cell (cc) and non-clear cell histology (ncc).

Results: A total of 160 samples from 153 patients were available for the analysis, 94 of ccRCC and 66 of nccRCC histology. Sites of metastasis and organ system of the samples are detailed in Table 1. In the ccRCC group the most common alterations were VHL (84.9%), PBRM1 (45.3%), SETD2 (37.2%), BAP (19.8%). When analyzing samples by site, metastases to pleura presented with enrichment in BAP1 mutations (P=0.008), adrenal gland metastases had an enrichment in MED12 mutations (P=0.005), and NF2 alterations were found to be associated with bone metastases (P=0.08). In our cohort brain metastases were only seen in the ccRCC group (p= 4.19E-02). In the nccRCC group, the most common alterations were TP53 (21.2%), TERT (18.2%), NF2 (9.1%), BAP1 (7.6%). When analyzing the samples by organ system, TERT promoter mutations were found to be more common with metastasis to gastrointestinal system (P=0.05).

Conclusion: Our data suggests genomic alterations could mediate organ tropism of metastasis to a particular site. The extent to which the identified molecular factors contribute to the development of these characteristics of metastatic spread needs to be analyzed in further studies. Patterns of genomic alterations in RCC metastasis could result in creation of gene signatures predicting metastasis.

<table>
<thead>
<tr>
<th>Organ System</th>
<th>ccRCC</th>
<th>nccRCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td>29</td>
<td>13</td>
</tr>
<tr>
<td>Musculoskeletal</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>Lymphatic</td>
<td>14</td>
<td>29</td>
</tr>
<tr>
<td>Endocrine</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Nervous</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Integumentary</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Reproductive</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site</th>
<th>ccRCC</th>
<th>nccRCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung</td>
<td>26</td>
<td>11</td>
</tr>
<tr>
<td>Bone</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>Lymph node</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>Brain</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>Adrenal</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>Liver</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Other</td>
<td>19</td>
<td>10</td>
</tr>
</tbody>
</table>
Poster #183
MANAGEMENT AND CLINICAL OUTCOMES OF MIXED EPITHELIAL AND STROMAL TUMOR: THE MSKCC EXPERIENCE
Mahyar Kashan, BA; Mazyar Ghanaat, MD; Maria Becerra, MD; Brandon Manley, MD; Nicole Benfante; Paul Russo, MD; Jonathan Coleman, MD and Ari Hakimi, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Mahyar Kashan, BA)

Introduction: Mixed epithelial and stromal tumor (MEST) is a rare tumor of the kidney that presents during adulthood. It has been recognized under many names, including cystic nephroma, multilocular cyst and adult mesoblastic nephroma. Historically, MEST has been regarded as a benign entity, with only a few case reports of malignant transformation or recurrence in the literature. Diagnosis requires histopathological evaluation as radiologic imaging cannot accurately differentiate it from malignancy. We aim to characterize our experience with this rare neoplasm. To our knowledge, this is the largest single institution series ever reported.

Methods: We identified 41 patients with pathological diagnosis of MEST from our prospectively collected institutional database between 01/1995 and 12/2015. Demographic and clinical characteristics were recorded.

Results: The mean age at diagnosis was 52.8 +/- 10.5 (31.5-75.2). Thirty-eight (92.7%) patients were female and 3 (7.3%) were male. Thirty-three (80.5%) were detected incidentally without symptoms. The size of the tumor on CT was available for 40 (97.6%) patients. The mean diameter on CT was 5.8 +/- 2.8 cm (1.9-16.1) for all patients, 6.0 +/- 2.8 cm (1.9-16.1) for females and 3.2 +/- 0.6 cm (2.5-3.6) for males. Patients presenting with symptoms at diagnosis had a mean diameter of 7.4 +/- 4.4 (4-16.1). Incidental masses had a mean diameter of 5.5 +/- 2.5 (1.9-9.6). All patients underwent surgical resection, with partial nephrectomy performed in 70.7% of cases. Mean tumor size was 6.0 +/- 3.0 cm (1.5-15). Median follow up time was 69.7 months. Two (4.9%) patients died secondary to non-tumor related causes. At last follow up, all patients showed no evidence of disease.

Conclusion: MEST are benign tumors with a female predominance that are usually detected incidentally. Partial nephrectomy should be utilized whenever technically possible to resect the tumor and preserve renal function. Given the low likelihood of recurrence following excision, we believe that once pathologically identified, these patients have an excellent long-term prognosis, and require minimal surveillance imaging on follow up.

Funding: Ruth L. Kirschstein National Research Service Award T32CA082088
Poster #184
PERIOPERATIVE OUTCOMES FOR ROBOTIC AND OPEN MULTIPLEX PARTIAL NEPHRECTOMY IN THE MANAGEMENT OF MULTIFOCAL RENAL CELL CARCINOMA
Ted Crisostomo-Wynne¹; Shawna Boyle, MD²; David Kim³; Michele Fascelli, MD⁴; W. Marston Linehan, MD² and Adam Metwalli, MD²
¹Uniformed Services University; ²NIH, Bethesda, MD; ³George Washington University Hospital, Washington DC; ⁴Cleveland Clinic, Cleaveland, OH
(Presented By: Shawna L. Boyle, MD)

Introduction: Despite wide adoption of Robotic partial nephrectomy (RPNx) among urologists, open partial nephrectomy (OPNx) is often preferentially performed when multifocal tumors are present. We present a matched cohort comparison of RPNx and OPNx in patient with 3 or more tumors in a single kidney, known as Multiplex Partial Nephrectomy (MxPNx).

Methods: 278 patients underwent MxPNx at the NCI from 2003-14. Patients from the OPNx cohort were matched for number of lesions excised with patients from the RPNx cohort. We compared demographics, and perioperative outcomes including operative time, estimated blood loss (EBL), and postoperative renal function. eGFR was calculated using the CKD-Epi equation.

Results: Of the 278 patients who underwent MxPNx, 179 were performed open, 18 laparoscopically, 81 robotically. Prior to matching, mean number of lesions excised was significantly higher in the OPNx group (p < 0.001). There were 81 patients identified from each cohort No significant differences were noted in demographics. Operative time (p=0.001) was longer in the robotic cohort by only 12 minutes. Number of off-clamp PNx was similar. EBL and mean transfusion were similar, however a trend towards lower intra-op and post op transfusions was seen in robotic group. No difference in pre-, peri- or post-operative eGFR was seen.

Conclusion: MxPNx performed robotically and open appear to have similar perioperative outcomes. Multifocal tumors should not preclude the use of minimally invasive techniques. No advantage is blood loss was seen likely due to high rate of off-clamp partial nephrectomy in this series though a trend toward lower EBL and transfusions in the robotic cohort was seen. Renal function preservation despite multifocal tumors is uniformly excellent with both surgical approaches.
Poster Session II — Full Abstracts

Poster #185
RENAL FAILURE AND SURGERY: HOW LOW IS TOO LOW? PARTIAL NEPHRECTOMY IN HEREDITARY RENAL CANCER POPULATION WITH IMPAIRED RENAL FUNCTION
Shawna Boyle, MD¹; Michele Fascelli, MD²; David Kim³; Ted Crisostomo-Wynne⁴; W. Marston Linehan, MD¹ and Adam Metwalli, MD¹
¹NIH, Bethesda, MD; ²Cleveland Clinic, Cleaveland, OH; ³George Washington University Hospital, Washington DC; ⁴Uniformed Services University
(Presented By: Shawna L. Boyle, MD)

Introduction: Many hereditary and multifocal renal cancer patients have undergone multiple previous partial nephrectomies (PNx). In a minority of these patients, this results in Chronic Kidney Disease (CKD) Stage 3b or worse renal function (GFR<45). As a result, some urologists deem a repeat or salvage PNx (rPNx/sPNx) in this setting futile. This complex subset of patients has an increased lifetime risk of needing dialysis but the point when to opt for nephrectomy rather than a complex and morbid r/sPNx is unclear. We present renal functional outcomes for multifocal PNx based on CKD stage.

Methods: Patients undergoing partial nephrectomy between 2003 and 2014 were extracted from a prospective, IRB-approved database. We compared patients with eGFR preoperatively of Class 3b or lower (<45), Class 3a (45-59.9), Class 4 (60-89.9) and Class 5 (>90) and analyzed postoperative renal functional outcomes and progression to the next CDK stage was recorded. All eGFR values were calculated using the CKD-Epi Equation. Age, surgical approach and need for interim or permanent dialysis are reported.

Results: 471 Patients are included for analysis. Only 24 had GFR <45 at time of the OR, however all had complete follow-up to 12 weeks and all but 3 had one-year follow-up. 43 Patients had GFR 45-59.9 prior to the OR. Overall outcomes showed that the lower GFR categories had less loss of renal function at all follow-up time points. They were more likely to have open surgery with 70%, 60%, 40% and 40% in the respective categories. Those in lower GFR categories had more tumors and cysts removed at the OR. In our population 20% of patients showed a shift to a lower class of renal function, however 10% showed improvement in overall renal function after surgery. Those most likely to show improvement where in the CKD class 3a, and those most likely to drop where in the CKD class 1 and dropping only to the 60-89.9 category.

Conclusion: Partial nephrectomy in a hereditary population can safely be performed even at very low GFR with reasonable outcomes. The surgical approach most used is open and our small numbers preclude looking at comparison between open and robotic approaches.

Table 1: Outcomes by Chronic Kidney Disease Class

<table>
<thead>
<tr>
<th>Chronic Kidney Disease Class</th>
<th>Class 1 (GFR&lt;90)</th>
<th>Class 2 (GFR 60-89.9)</th>
<th>Class 3a (GFR 45-59.9)</th>
<th>Class 3b (GFR&gt;45)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>199</td>
<td>205</td>
<td>43</td>
<td>24</td>
</tr>
<tr>
<td>Males (%)</td>
<td>122</td>
<td>138</td>
<td>27</td>
<td>18</td>
</tr>
<tr>
<td>Age (range)</td>
<td>41</td>
<td>50</td>
<td>57</td>
<td>55</td>
</tr>
<tr>
<td>Pre-op GFR (range)</td>
<td>107 (90-125.1)</td>
<td>75.2 (60-89.8)</td>
<td>53.5 (45.6-59.4)</td>
<td>39.4 (25.8-44.4)</td>
</tr>
<tr>
<td>In Hospital GFR (range)</td>
<td>82.9 (49.2-225.1)</td>
<td>57.6 (12.1-275.1)</td>
<td>40.7 (20.0-70.1)</td>
<td>27.1 (6.1-95.4)</td>
</tr>
<tr>
<td>12 week GFR (range)</td>
<td>98.6 (53.8-189.3)</td>
<td>72.3 (23.2-177.2)</td>
<td>52.5 (32.5-85.9)</td>
<td>36.4 (11.1-61.9)</td>
</tr>
<tr>
<td>1 year GFR (range)</td>
<td>99.0 (35.8-177.0)</td>
<td>72.9 (27.2-120.2)</td>
<td>55.1 (39.4-96.1)</td>
<td>36.4 (23.8-56.0)</td>
</tr>
<tr>
<td>Re-classified to worse CKD at 12 months</td>
<td>53 (36.4%)</td>
<td>39 (19.9%)</td>
<td>8 (18.6%)</td>
<td></td>
</tr>
<tr>
<td>Re-classified to better CKD at 12 months</td>
<td>53 (36.4%)</td>
<td>39 (19.9%)</td>
<td>8 (18.6%)</td>
<td></td>
</tr>
<tr>
<td>Open (%)</td>
<td>82 (11.2%)</td>
<td>81 (39.5%)</td>
<td>26 (60.5%)</td>
<td>17 (70.8%)</td>
</tr>
</tbody>
</table>

Back to Table of Contents ↑
Immunochemistry of Epithelial Membrane Antigen in Renal Tumors: An Analysis of Prognostic Significance

Katherine Hawkins, BS; Mahmoud Mohamed, MD; Lulin Hu, MD; Haiyan Liu, MD; Fan Lin, MD and Heinric Williams, MD
Geisinger Health Stem/ New York Methodist Hospital- NY-Presbyterian Health Care System
(Presented By: Katherine Hawkins, BS)

Epithelial membrane antigen (EMA) is a transmembrane protein expressed on renal cells. Overexpression has been associated with a poor prognosis in a number of cancers. In this study, we sought to identify the prognostic implications of EMA expression in renal tumors. Paraffin embedded specimens from 88 patients (63 men, 25 women) with clear cell renal cell carcinoma (ccRCC), chromophobe RCC (chRCC) and oncocytoma were selected for this study. EMA expression was determined by tissue microarray and classified as negative (<5%) or positive (>5%) by a single pathologist (HL). The association of clinicopathological parameters with degree of EMA staining was determined. Positive EMA expression was present in 58/66 (87.8%) of ccRCC cases and in all chRCC and oncocytoma cases. Strong EMA staining (>75% positive) was seen in all chRCC and oncocytoma cases compared to 32% of ccRCC cases. Within the ccRCC group, strong EMA expression was associated with the presence of sarcomatoid differentiation (P=0.02, Fisher’s test) but not pathologic T stage (p = 0.805, Fisher’s test), Fuhrman grade (P=0.198, Fisher’s test) or presence of metastasis (p = 0.595, Fisher’s test). After a median follow up of 7.2 years, there were 26 deaths in the ccRCC and none in the chRCC or oncocytoma groups. Strong positive EMA staining was associated with poor overall survival in the ccRCC group (Kaplan-Meier, log rank p = 0.05). Prognostic value of EMA expression in renal tumors is histological subtype dependent, being favorable in chRCC and oncocytoma and unfavorable in ccRCC.
Poster Session II – Full Abstracts

Poster #187

ROBOTIC VERSUS OPEN INFERIOR VENA CAVA (IVC) TUMOR THROMBECTOMY: THE INITIAL COMPARISON

Sameer Chopra, MD, MS; Jeff Loh-Doyle, MD; Jie Cai, MS; Monish Aron, MD; Mihir Desai, MD and Inderbir Gill, MD
University of Southern California, Los Angeles, CA

(Presented By: Sameer Chopra, MD, MS)

Introduction: We developed completely intra-corporeal robotic technique for level II and III IVC thrombectomy, and retrospectively compare outcomes with open surgery.

Methods: We retrospectively reviewed the records of 61 patients who underwent IVC thrombectomy for level II and III thrombi at our institution from 2009-2014. Patient demographics, operative variables, and postoperative outcomes were examined.

Results: Obtained: Of the 61 patients, 25 were treated robotically and 36 were open. Both groups had 7 left-sided tumors (19% open vs. 28% robotic, p=0.4345). For Level III intra-hepatic thrombi: robotic=44% open=47%. Robotic cohort had smaller tumors (7.5 vs. 10.6cm, p=0.005) and shorter thrombi (4.8 vs. 6.2cm, p=0.04). Figure 1 depicts the intra-operative findings between the two groups. Robotic cohort had lesser median operative room time (4.5 vs. 6hrs, p<0.005), estimated blood loss (EBL) (300 vs. 1800cc, p<0.001), and transfusions per patient 0 (0-19) vs. 8 (0-37) (p<0.001). Robotic-to-open elective conversion occurred in one case. Length of hospital stay was 6 (3-81) vs. 5 (1-22) for open vs. robotic (p=0.04). High grade Clavien complications (Grade 3-5) were 9 in the open group and 2 in the robotic. Median follow-up between the two groups was 0.4 (0.07-3.5) years for robotic and 1.6 (0-7.3) years in the open cohort (p=0.005). Forty-eight percent of the open cases are currently dead.

Conclusion: Robotic thrombectomy is reproducible, with lesser EBL/transfusions and quicker recovery to open surgery. Additional experience is warranted.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Open IVC Median (Range) or N (%)</th>
<th>Robotic IVC Median (Range) or N (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>36</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Main Hepatic Vein</td>
<td>7 (19.4%)</td>
<td>0</td>
<td>0.0348</td>
</tr>
<tr>
<td>Control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short Hepatic Veins Taken</td>
<td>10 (27.8%)</td>
<td>11 (44%)</td>
<td>0.1897</td>
</tr>
<tr>
<td>Liver Mobilization</td>
<td>17 (47.2%)</td>
<td>11 (44%)</td>
<td>0.8038</td>
</tr>
<tr>
<td>Cava Control</td>
<td>18 (50%)</td>
<td>25 (100%)</td>
<td>0.001</td>
</tr>
<tr>
<td>Circumferential Side-Clamping</td>
<td>6 (16.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open Conversion</td>
<td></td>
<td>1 (4%)</td>
<td>0.2253</td>
</tr>
<tr>
<td>Positive Margins</td>
<td>2 (5.5%)</td>
<td>0</td>
<td>0.2308</td>
</tr>
<tr>
<td>OR Time (hrs)</td>
<td>6.0 (3-13)</td>
<td>4.5 (1-8)</td>
<td>0.0047</td>
</tr>
<tr>
<td>Blood Less (ml)</td>
<td>1800 (200-11000)</td>
<td>230 (100-11000)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Transfusion</td>
<td>8 (0-17)</td>
<td>0 (0-19)</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
Poster #188
A MULTI-INSTITUTIONAL REVIEW OF POST-OPERATIVE COMPLICATIONS IN 1,248 PATIENTS UNDERGOING ROBOTIC PARTIAL NEPHRECTOMY
Kyle Blum, MD¹; David Paulucci, BA¹; Balaji Reddy, MD¹; Eric Moskowitz, MD¹; Daniel Rosen, MD¹; Ronney Abaza, MD²; Daniel Eun, MD³; Ashok Hemal, MD⁴ and Ketan Badani, MD¹
¹Icahn School of Medicine at Mount Sinai, New York, NY; ²OhioHealth Dublin Methodist Hospital, Columbus, OH; ³Temple University School of Medicine, Philadelphia, PA; ⁴Wake Forest School of Medicine, Winston-Salem, NC
(Presented By: David Joseph Paulucci, BA)

Introduction: Few comprehensive reviews of post-operative complications during robotic partial nephrectomy (RPN) exist. We therefore sought to review overall post-operative complications in addition to medical and surgical post-operative complications for RPN in a large and contemporary multi-institutional database.

Methods: We retrospectively identified 1,248 patients undergoing RPN from 2008 to 2016. Rates of overall, major (Clavien Score ≥3), medical and surgical complications within 30 days of surgery are reported. Complications were classified as surgical if related to the incision or perioperative causes. Complications were classified as medical if the patient developed a medical condition following surgery or if the patient's pre-existing medical condition was made worse by perioperative stress or intubation and mechanical ventilation.

Results: Overall, 182 postoperative complications were identified in 149 (11.9%) patients with 45 (3.6%) of patients having a major post-operative complication. Ninety nine medical complications were identified in 91 (7.3%) patients with 26 (2.1%) patients having a major medical complication. Eighty three surgical complications were identified in 78 (6.3%) patients with 26 (2.1%) patients having a major surgical complication. The most common postoperative complications included acute urinary retention (n=15, 1.2%) requiring catheter placement, infection (i.e., incisional, urinary tract, cellulitis, kidney, etc.) requiring antibiotics (n=14, 1.1%), anemia requiring transfusion (n=14, 1.1%), hemorrhage requiring intervention (i.e., blood transfusion, angioembolization, etc.) or conservative management (n=10, 0.8%), fever requiring antibiotics (n=9, 0.7%), ileus (n=9, 0.7%), hematuria (n=9, 0.7%) hernia (n=8, 0, 0.6%) and hypoxia (n=8, 0.6%). Only one death occurred due to an acute post-operative myocardial infarction.

Conclusion: Complication rates in the present series were found to be lower than previous reports with less than 4% of complications requiring intervention (surgical, endoscopic, radiological) or ICU management.
**Poster Session II – Full Abstracts**

**Poster #189**

**CLINICAL RESPONSE RATES OF NEOADJUVANT CHEMOTHERAPY IN UPPER TRACT UROTHELIAL CARCINOMA: A SINGLE INSTITUTIONAL EXPERIENCE**

Hayley R. Silver, MD¹; Mark A. Bjurlin, MD¹; Nicolas M. Donin, MD² and William C. Huang, MD¹

¹Department of Urology, NYU Langone Medical Center, New York, New York; ²Department of Urology, David Geffen School of Medicine, University of California, Los Angeles, CA

(Presented By: Hayley Silver, MD)

**Introduction:** Upper tract urothelial carcinoma (UTUC) is histologically similar to urothelial carcinoma of the bladder, but frequently associated with high grade (HG) invasive disease at diagnosis, resulting in poor outcomes. Although Level I evidence supports the use of cisplatin based neoadjuvant chemotherapy (NAC) for patients with muscle invasive bladder cancer, there is currently no level 1 data supporting the use of peri-operative chemotherapy for patients with HG UTUC. Given the inability to accurately stage UTUC, some speculate that NAC for patients undergoing nephroureterectomy (NU) for HG UTUC may improve outcomes, considering their limited eligibility for adjuvant chemotherapy due to renal impairment. Our study objective was to evaluate the impact of NAC in patients who underwent NU for pathologically proven HG UTUC.

**Methods:** A retrospective review was conducted of patients with HG UTUC at our institution from 2012 to 2016 who underwent NU. As per department protocol, all patients scheduled for NU with pre-op estimated glomerular filtration rate (eGFR) > 45 mL/min per 1.73 m² were referred for evaluation of NAC. Clinical and pathologic response rates were noted, with pre- and post-operative kidney function defined by eGFR.

**Results:** A total of 58 patients met inclusion criteria, with a median age was 75 years (range: 35-92) and a pre-op and post-op eGFR of 54.45 and 47.6 mL/min per 1.73 m² respectively. 26 patients were considered eligible for NAC, of which 18 (69%) received NAC. The rate of utilization increased over time (Figure 1). 13/18 (72%) demonstrated a clinical response including 6 (33%) with a complete clinical response. Final pathology demonstrated pT0N0 in 2 patients (11%) and pTisN0 in 2 patients (11%). No patients suffered a delay or were deemed ineligible for surgery due to NAC.

**Conclusion:** Cisplatin based NAC demonstrated a clinical response rate in the majority of patients with HG UTUC without compromising definitive surgical treatment. Since NU significantly reduces kidney function and eligibility for cisplatin based chemotherapy, patients with HG UTUC may be considered candidates for NAC. Longer follow-up data is needed to further assess the impact of NAC on survival rates.

![Use of NAC 2012-2016](attachment:chart.png)

- **Number of Patients**
  - 2012: 6
  - 2013: 12
  - 2014: 15
  - 2015: 20
  - 2016: 21

**Use of NAC 2012-2016**

<table>
<thead>
<tr>
<th>Year</th>
<th>Neoadjuvant</th>
<th>No Neoadjuvant</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>2015</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>2016</td>
<td>21</td>
<td>4</td>
</tr>
</tbody>
</table>

**Back to Table of Contents ↑**
Poster #190  
NEPHROURETERECTOMY FOR UPPER TRACT UROTHELIAL CARCINOMA: A POPULATION-BASED ASSESSMENT OF UTILIZATION AND OUTCOMES BY SURGICAL APPROACH
Joseph Rodriguez III, MD; Vignesh Packiam, MD; Scott Johnson, MD; Zachary Smith, MD; Gary Steinberg, MD; Arieh Shalhav, MD and Norm Smith, MD  
University of Chicago, Chicago, IL  
(Presented By: Joseph Rodriguez, MD)

Introduction: The effect of surgical approach on outcomes after nephroureterectomy (NU) is poorly defined, particularly given the low incidence of upper tract urothelial carcinoma (UTUC). The purpose of this study is to compare outcomes and survival of open, robotic, and laparoscopic NU (ONU, RNU, LNU) using population-based data.

Methods: Using the National Cancer Database, we identified patients who underwent NU for UTUC between 2010 and 2013. Demographic and clinicopathologic characteristics were compared among the three operative approaches. Multivariate regression analyses were used to determine the impact of approach on the performance of lymphadenectomy (LND), positive surgical margins (PSM), and overall survival (OS).

Results: There were 3651 ONU (34%), 2313 RNU (22%), and 4746 LNU (44%) identified for analysis. From 2010-2013, utilization of RNU increased from 14% to 29%. There were no significant differences in age, sex, race, Charlson score, or insurance status among groups. There were more RNU completed in academic centers compared to ONU and LNU (46% vs 36% vs 36%; p<0.01). Tumor sizes were not different among groups (p=0.06). Patients undergoing ONU had more high-grade tumors than both RNU (p=0.02) and LNU (p=0.04). On multivariate analysis, age, facility type, pT stage, tumor size, grade, and surgical approach were independent predictors of LND. LND was more likely in RNU (OR 1.46; p<0.01) and less likely in LNU (OR 0.75; p<0.01) compared to ONU. RNU was associated with decreased PSM on multivariate analysis compared to ONU (OR=0.71; p=0.01). On multivariate analysis, OS was not significantly impacted by surgical approach: ONU (reference); RNU (HR 0.89; p=0.29); LNU (HR 0.84; p=0.06).

Conclusion: In the four years studied, RNU utilization has doubled. RNU is independently associated with higher odds of LND and lower odds of PSM. OS with median follow up of 26 months was not independently affected by surgical approach.

<table>
<thead>
<tr>
<th>Table 1: Cox regression analysis for risk of positive surgical margin*</th>
<th>OR</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pT Stage (ref T0/Ta/Tis)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pT1</td>
<td>1.148</td>
<td>0.767 - 1.717</td>
<td>0.502</td>
</tr>
<tr>
<td>pT2</td>
<td>1.723</td>
<td>1.150 - 2.581</td>
<td>0.008</td>
</tr>
<tr>
<td>pT3</td>
<td>5.020</td>
<td>3.580 - 7.041</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>pT4</td>
<td>23.751</td>
<td>15.486 - 36.4426</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Primary Location (ref renal pelvis)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ureter</td>
<td>4.968</td>
<td>4.032 - 6.121</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Who/ISUP Grade (ref low grade)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Grade</td>
<td>1.827</td>
<td>1.319 - 2.530</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Surgical Approach (ref open)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robotic</td>
<td>0.712</td>
<td>0.545 - 0.930</td>
<td>0.013</td>
</tr>
<tr>
<td>Laparoscopic</td>
<td>0.869</td>
<td>0.701 - 1.077</td>
<td>0.200</td>
</tr>
</tbody>
</table>

*Controlling for age, sex, race, facility type, insurance, tumor size, WHO/ISUP grade, Charlson index
Introduction: Complex cystic masses pose a clinical challenge for physicians given lack of certainty for malignant potential. The Bosniak classification system is often utilized to categorize these lesions and help predict risk of malignancy. Cystic changes are a common finding in renal cell carcinoma (RCC), however, there is limited data on cystic RCC (cRCC). In the current literature there are only few small series which suggest this entity has a more favorable prognosis and benign course. We aim to better categorize cRCC and the natural history of this disease.

Methods: We queried our institutional database to identify patients with pathologically confirmed cRCC, multilocular cRCC or RCC with cystic features between 01/2000-12/2015. Patients with follow-up of less than 1 year, previous history of RCC, familial syndromes, multifocal tumors and lesions with >50% solid component on preoperative imaging were excluded from our analysis. Available imaging (CT, MRI, ultrasound) were re-reviewed by a single radiologist. Radiological, clinical and pathological characteristics were recorded.

Results: A total of 75 cases were available for the analysis. The mean age at surgery was 48.5 years (range 32.8-84.6). Thirty-three (44.0%) patients were male and 42 (56.0%) were female. Twelve (16.0%) patients had a family history of RCC. Sixty-nine (92.0%) patients underwent a partial and 6 (8.0%) underwent a radical nephrectomy, with an open technique being used in 61 (81.3%) cases. Mean preoperative creatinine and GFR was 0.89 +/- 0.38 and 77.5 +/- 17.8, respectively. Pathologic and imaging characteristics can be observed in table 1. Mean postoperative creatinine and GFR was 0.98 +/- 0.21 and 77.2 +/- 18.0. On median follow up of 75.1 months (range 12.3-180.3), there were no tumor recurrences or metastatic disease. Two patients died of other causes.

Conclusion: Our data shows that cRCC includes a wide variety of tumors, most commonly with clear cell features. Given the low likelihood of recurrence or metastatic disease, these lesions need to be differentiated from other renal tumors.

Funding: Ruth L. Kirschstein National Research Service Award T32CA082088

<table>
<thead>
<tr>
<th>Pathologic Size (range), cm</th>
<th>Radiologic Size (range), cm</th>
<th>Bosniak Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9 (1.6-9.0)</td>
<td>3.0 (1.4-13.5)</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 1: Pathologic and radiologic characteristics of patients with cystic renal cell carcinoma, n=75 (%)
Poster #192
COMPARING PREDICTIVE ACCURACY FOR FOUR PROGNOSTIC MODELS OF RECURRENCE FOLLOWING SURGERY IN NON-METASTATIC RENAL CELL CARCINOMA WITH THROMBUS
Shivashankar Damodaran, MCH¹; Jose Karam, MD²; Timothy Masterson, MD³; Viraj Master, MD⁴; Vitaly Margulis, MD⁵; Adam Lorentz, MD³; Tyler Bauman, MD¹; Michael Blute, MD³; Christopher Wood, MD²; Jason Abel, MD¹; Saad Aldousaari, MD² and Evan Bloom, MD¹
¹Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison WI; ²Department of Urology, The University of Texas MD Anderson Cancer Center, Houston, Texas; ³Department of Urology, Indiana University School of Medicine; ⁴Department of Urology, Emory University School of Medicine; ⁵Department of Urology, University of Texas Southwestern Medical Center, Dallas, TX
(Presented by: Shivashankar Damodaran)

Introduction: Predictive models for Renal Cell Carcinoma (RCC) recurrence have been developed from general populations of RCC patients and may not be ideal to stratify risk in specific patient populations such as those with venous tumor thrombus. Our aims were to develop and externally validate a nomogram specific for patients with venous tumor thrombus, and to compare its performance with 3 prognostic models developed for the general RCC population.

Methods: Clinical and pathologic data were reviewed for 636 consecutive non-metastatic RCC patients with tumor thrombus from 2000-2013 at 5 institutions. A nomogram was developed from independent predictors using a development cohort (n=465) and a validation cohort (n=171). Receiver operator characteristic (ROC) curves were constructed to compare predictive accuracy of the nomogram with the University of California-Los Angeles Integrated Staging System (UISS), Stage Size Grade Necrosis (SSIGN) and Sorbellini models.

Results: Variables independently associated with RCC recurrence were increased tumor diameter (HR 1.05, 95% CI 1.004-1.09; p=0.03), Body Mass Index<20 (HR 2.55 CI 1.55-5.22, 95% CI 0.95 – 0.997; p=0.03), preoperative hemoglobin < lower limit of normal (HR 1.59, 95% CI 1.11-2.27; p=0.01), IVC thrombus level above hepatic vein (HR 2.4, 95% CI 1.3-4.3; p=0.005), perinephric fat invasion (HR 1.5, 95% CI 1.05-2.02; p=0.03), and non-clear cell histology (HR 1.8, 95% CI 1.06-3.00; p=0.03). Estimated overall 5-year Recurrence Free Survival was 49%. There was no difference in predictive accuracy for the development vs. validation cohorts (AUC .726 vs. 0.724). Predictive accuracy (figure) for the thrombus-specific nomogram was higher than the UISS model (AUC 0.726 vs. 0.595p=0.001), SSIGN model (AUC 0.713 vs. 0.612,p =0.04) or the Sorbellini model (AUC 0.709 vs. 0.638,p=0.02).

Conclusion: We developed and externally validated a nomogram developed specifically for non-metastatic RCC patients with venous tumor thrombus who underwent surgery. Its predictive accuracy was higher than general prognostic models.
**Poster Session II — Full Abstracts**

**Poster #193**

**PERCUTANEOUS CRYOABLATION FOR COMPLEX RENAL TUMORS**

Bimal Bhindi, MD, CM, MSc, FRCSC; Ross Mason, MD, FRCSC; Mustafa Haddad, MD; Jennifer Geske, MS; Stephen Boorjian, MD, FACS; Bradley Leibovich, MD, FACS; Thomas Atwell, MD; Grant Schmit, MD and Houston Thompson, MD

Mayo Clinic, Rochester, MN, USA

(Presented By: Bimal Bhindi, MD, CM)

**Introduction:** When nephron-sparing surgery is desired, anatomic tumor complexity is associated with technical difficulty and potential complications. Our objective was to characterize the outcomes of percutaneous cryoablation for complex renal tumors, and evaluate the associations between renal tumor complexity and outcomes.

**Methods:** A prospectively-maintained single-institution percutaneous renal ablation database was used (2003-2015) to identify renal tumors being treated with cryoablation. Exclusions were salvage procedures, known tumor syndromes, and prior surgery on the ablated kidney. The association between RENAL Nephrometry score and risk of complications, renal function impairment, local treatment failure, and cancer-specific survival (CSS) were evaluated using univariate and multivariable logistic, linear, and Cox regression models. The association between Nephrometry components and outcomes were also explored.

**Results:** The cohort included 618 tumors treated in 580 sessions in 565 patients. Median age was 71 years (IQR=63-77). There were 87 (15.0%) complications. Median decline in GFR from baseline was 10.4% (IQR=0.0-20.7) at last follow-up. Local failure occurred for 14 tumors (2.5%) and 10 (1.8%) patients died from RCC during a median follow-up of 26 months (IQR=10-50). Complications were more frequent with higher RENAL score (Score 4-6: 9.7%; 7-9: 14.2%; 10-12: 36.4%; p<0.001). Three (6%) high-complexity tumors (Score=10-12) recurred locally and one patient (2%) with a complex tumor died of RCC, neither of which was significantly different compared to less complex tumors (p=0.32 and p=0.88, respectively). Higher Nephrometry score was associated with risk of any complication (aOR per 1 point=1.3, 95%CI=1.2-1.5, p<0.001), risk of major complication (Clavien 3-5; aOR per 1 point=1.4, 95%CI=1.1-1.7, p<0.001), and with greater GFR decline from baseline (beta: additional 1.3% decline from baseline per 1 point, 95%CI=0.02-2.5, p=0.02). Nephrometry score was not associated with local recurrence risk or CSS in univariate and multivariable analyses. Tumor size was the only nephrometry component independently associated with complications.

**Conclusion:** Treatment of a high-complexity tumor is associated with a tumor size-driven increased risk of post-procedural complications, and only a minor additional decline in renal function. Intermediate-term risks for local recurrence and cancer-specific mortality are low, regardless of tumor complexity.
Poster #194
PATHOLOGIC OUTCOMES FOR COMPLEX LESIONS IN PATIENTS WITH HEREDITARY LEIOMYOMATOSIS WITH RENAL CELL CARCINOMA
Louis Spencer Krane, MD¹; Patrick Gomella, MD, MPH²; Abhinav Sidana, MD³; Kai Hammerich, MD, PhD¹; James Peterson, BS³; Daniel Su, MD²; Maria Merino, MD¹; Ashkan Malayeri, MD¹; Ramaprasad Srinivasan, MD, PhD¹; W. Marston Linehan, MD¹ and Adam Metwalli, MD¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, MD; ²George Washington University Department of Urology, Washington, DC
(Presented By: Patrick T. Gomella, MD, MPH)

Introduction: Hereditary Leiomyomatosis with Renal Cell Carcinoma (HLRCC) patients present with aggressive papillary renal cell carcinomas with a tendency for early lymphatic and metastatic spread. These patients have a propensity for development of cystic tumors, but also develop benign renal cysts as well. HLRCC-related renal tumors may metastasize and infiltrate surrounding parenchyma at a very small size. Consequently, early surgical intervention for suspicious renal lesions is a mainstay of the treatment algorithm for these subjects. The Urologic Oncology Branch at the National Cancer Institute (NCI) has the world’s largest cohort of these patients. Herein we present the characteristics of malignant and benign cysts.

Methods: We retrospectively identified all patients who underwent surgical resection for small) cystic renal lesions in HLRCC families at the NCI, Bethesda MD between 1989 and 2015. All patients had confirmed or obligate germline FH alterations. On initial visit, patients had axial imaging including multiphase CT or MRI with dedicated thin renal cuts. If placed on surveillance protocol these individuals were followed at least annually with repeat imaging.

Results: We identified 18 patients who underwent primary renal surgery for small renal cystic lesions. Median size was 1cm (range 0.5 – 3.5 cm). Of these 8 (44%) were papillary type II RCC. In the remaining 10 patients, 8 had entirely benign cysts, and two had either atypia or clear cells lining the cyst. Utilization of active screening protocol, multiple lesions, nor enhancement of the cyst was associated with renal malignancy. Figure 1 shows representative renal cysts with a) benign, b) clear cell lined c)atypia and d)papillary type 2 malignancy.

Conclusion: Current MRI and thin slice CT imaging does not accurately differentiate between benign and malignant renal cysts in patients with HLRCC. Due to aggressive nature of renal malignancy in this condition, early surgical intervention with wide surgical margin is recommended.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Benign</th>
<th>Atypia</th>
<th>Malignant</th>
</tr>
</thead>
<tbody>
<tr>
<td># Patients</td>
<td>8</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Median Age (years)</td>
<td>45</td>
<td>60</td>
<td>54</td>
</tr>
<tr>
<td>Male Sex</td>
<td>6</td>
<td>75%</td>
<td>1</td>
</tr>
<tr>
<td>Median Tumor Size (cm)</td>
<td>2.5 (0.7 - 3.5)</td>
<td>0.5 (0.5 - 0.5)</td>
<td>1 (0.6 - 2.7)</td>
</tr>
<tr>
<td>Lesion Followed on Surveillance</td>
<td>7</td>
<td>88%</td>
<td>2</td>
</tr>
<tr>
<td>Previous Renal Malignancy</td>
<td>0</td>
<td>0%</td>
<td>0</td>
</tr>
<tr>
<td>Multiple Lesions Removed</td>
<td>5</td>
<td>63%</td>
<td>1</td>
</tr>
<tr>
<td>Enhancement in Cyst</td>
<td>2</td>
<td>25%</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 1
NUCLEAR RENAL SCAN LIKELY OVERESTIMATES SPLIT RENAL FUNCTION OF AFFECTED KIDNEY IN PATIENTS WITH LARGE RENAL MASS

Mohammed Haseebuddin, MD; Samuel Weprin; Robert Uzzo; Andrew McIntosh; Daniel Parker; Benjamin Ristau; Nikhil Waingankar; Rosalia Viterbo; David Chen; Richard Greenberg; Marc Smaldone and Alexander Kutikov

(Presented By: Mohammed Haseebuddin, MD)

Introduction: Multiple prior studies indicate that a CT-scan based estimate of renal parenchymal area correlates strongly with nuclear renal scan (NRS) and may obviate the need for NRS in some instances. Nevertheless, in patients with large renal masses, when considering surgical options of radical (RN) and partial (PN) nephrectomy, a NRS is often obtained. Here, we examine the correlation between NRS-measured split renal function (SRF) and renal parenchyma volumetric-estimated SRF (=anatomic-measured) in patients who underwent RN at our institution.

Methods: From our IRB-approved prospectively maintained renal database, we identified patients with an enhancing renal mass who had both NRS and multiphase CT performed prior to RN. Slice-by-slice differential renal parenchymal area was calculated and added to estimate functional renal parenchymal volumes. Anatomic-measured SRF was then determined by calculating the ratio of the volume of the kidney with the tumor to anatomic-measured total volume of both kidneys. Anatomic-measured SRF was compared to NRS-measured SRF using Spearman correlations. Relationship of the ratio of anatomic-measured to NRS-measured SRF was examined at increasing tumor sizes to assess for over-estimation or under-estimation of SRF based on the calculated r-value.

Results: 37 patients were identified meeting inclusion criteria. The anatomic-measured SRF showed a weak but significant correlation with NRS-measured SRF ($r = 0.36$, $p = 0.04$) (Figure 1). There was a significant and negative correlation with increasing tumor size to the ratio of anatomic-measured to NRS-measured SRF ($r = -0.58$, $p = 0.0005$) (Figure 2).

Conclusion: Parenchymal volume calculated SRF correlates only weakly to nuclear renal scan measured SRF in patients undergoing RN. Importantly, renal scans appear to over-estimate SRF of affected kidneys as renal tumor size increases. These findings require validation, and may have important clinical implications for patients in whom the decision to perform PN vs. RN pivots on SRF.
Poster #196
MINIMALLY INVASIVE VERSUS OPEN RADICAL NEPHRECTOMY FOR CLINICAL STAGE T4 RENAL MASSES
Zachary Smith, MD; Scott Johnson, MD; Vignesh Packiam, MD; Joseph Rodriguez, MD and Scott Eggener, MD
University of Chicago, Chicago, IL
(Presented By: Zachary Lee Smith, MD, FACS)

Introduction: Radical nephrectomy (RN) is the mainstay of treatment for clinically localized renal cell carcinoma (RCC). Little data are available on how minimally invasive RN (MIRN) compares to open radical nephrectomy (ORN) in the setting of clinical stage T4 (cT4) RCC. We sought to evaluate the impact of surgical approach in locally advanced cT4 RCC.

Methods: We analyzed the National Cancer Data Base (NCDB) participant user files from 2010-2013 to identify patients who underwent RN for cT4 RCC. Using univariable and multivariable analyses, patient and treatment facility characteristics as well as surgical outcomes were compared between MIRN (robotic and laparoscopic) and ORN.

Results: There were 642 (76%) ORN and 206 (24%) MIRN performed for cT4 RCC. There was no difference in median age (62 vs 65 years, p=0.2) but more patients over 70 were treated with MIRN (38% vs 26%, p <0.01). Utilization of MIRN increased over the study period (16% to 35%, p <0.01). There were no differences in sex, race, Charlson comorbidity score, preoperative metastatic disease, or preoperative radiation exposure between groups (all p-values>0.05). ORN had higher rates of pathological stage T4 (81% vs 77%, p=0.04) and N1 (42% vs 31%, p=0.04). Forty-nine (24%) of MIRN were converted to ORN. Median length of stay (LOS) was shorter for MIRN (4 vs 6 days, p<0.01). Patients in the ORN group had larger tumors (median 11.2 vs 9.0 cm, p<0.01). Extent of local tissue/organ invasion was similar (p=0.1), with the most common reason for T4 staging in both groups being bowel, diaphragm, or pancreas invasion. Extent of venous involvement was more advanced in the ORN group (p<0.01). Lymphadenectomy was performed at similar rates (37% vs 31%, p=0.06), but nodal yield was greater with ORN (median 5 vs 2 nodes, p<0.01). Positive surgical margin (PSM) rate did not differ between groups (47% vs 46%, p=0.9). Both groups had similar 30-day (p=0.8), 90-day (p=0.09), and overall (p=0.06) survival, as well as 30-day postoperative readmissions (p=0.9). On multivariable analysis, there were no significant predictors of conversion from MIRN to ORN.

Conclusion: MIRN is utilized in ~25% of all patients with cT4 RCC. Conversion to ORN occurs in ~25%. While hospital stay is shorter, there does not appear to be any difference in PSM rate, readmission rates, or 90-day survival. In appropriately selected patients with cT4 RCC, MIRN appears to be a safe alternative to ORN.
Poster #197
RISK CALCULATOR: THE NON-NEOPLASTIC KIDNEY SCORE PREDICTS POST-OPERATIVE RENAL FUNCTION IN RADICAL NEPHRECTOMY SPECIMENS
Deepak Pruthi, MD, FRCSC¹; Vivian Liu, MD²; Evan Weins, BSc³; Ruchi Chhibba, MD⁴; Ian Gibson, ChB, MD, FRCPATH² and Thomas McGregor, MD, FRCSC³
¹Department of Urology, University of Texas Health Sciences Center, San Antonio, Texas; ²Department of Pathology, University of Manitoba, Winnipeg, Manitoba, Canada; ³Department of Urology, University of Manitoba, Winnipeg, Manitoba, Canada; ⁴Department of Emergency Medicine, University of Manitoba, Winnipeg, Manitoba, Canada
(Presented by: Deepak Pruthi)

Introduction: To utilize clinical and histopathologic changes in the non-neoplastic kidney (NNK) to predict post-operative renal function one and two years post radical nephrectomy (RN) for renal cell carcinoma (RCC).

Methods: We retrospectively reviewed all patients undergoing RN for RCC measuring <10 cm with a functioning contralateral kidney between January 1, 2011 - May 1, 2015. All slides were independently re-reviewed for histopathologic changes using the Banff 97 criteria by two blinded dedicated nephropathologists for any chronic glomerular (G), tubulointerstitial (IFTA), arterial (Art), and arteriolar changes (Arl). Univariate analyses were conducted with Spearman correlation coefficients and ANOVA. Factors significantly associated with post-operative eGFR were entered into multivariable regression (MVR) models. Separate regression models were created for the clinical and histological factors. Predictive performance was evaluated with the r-square statistic. Estimated glomerular rate (eGFR) was calculated using chronic kidney disease epidemiology collaboration formula for up to two year values.

Results: In total 167 patients met the inclusion criteria. Mean age, Charlson comorbidity score, and tumor size were 61, 2.6, and 6.2cm, respectively. The group consisted of diabetics (26%), hypertensives (60%), and smokers (35%). Mean pre-op eGFR and 24-month eGFR were 78 and 51mL/min/1.73m², respectively. Severe histopathologic changes were discovered in 11% of patients despite normal pre-operative eGFRs. New kidney disease was common (54%); five patients progressed to dialysis and nine died during follow-up. NNK changes were significantly associated post-op eGFR at 1 year (R²=0.52) and 2 years (R²=0.5). Severe G and IFTA were associated with an independent eGFR change of decline of -28 (p<0.001) and -16 mL/min/1.73m² (p=0.0005). Art (p=0.08) and Arl (p=0.387) changes were not associated with eGFR changes. Age (p<0.0001), body mass index (p=0.0039), and age-adjusted Charlson co-morbidity (p=0.0434) were significantly associated with post-op eGFR. Using MVR modeling a calculator was developed and accurately predicted post-op eGFR.

Conclusion: Using age, glomerular, and tubulointerstitial histopathologic variables alone, the post-operative eGFR can be accurately calculated. Grading the non-neoplastic kidney provides accurate prediction of post-operative renal function and may guide therapeutic intervention.
Poster #198
VALIDATION OF VENOUS THROMBOEMBOLISM RISK ASSESSMENT SCORE IN MAJOR UROLOGIC CANCER SURGERY: A POPULATION BASED STUDY
Ross Krasnow, MD, MS¹; Mark Preston, MD, MPH¹; Yu-Hung Lin, MD²; Benjamin Chung, MD³; Adam Kibel, MD¹ and Steven Chang, MD, MS¹
¹Brigham and Woman’s Hospital, Boston, MA; ²Koo Foundation Sun Yat-Sen Cancer Center, Tapei, Taiwan; ³Stanford University, Palo Alto, Ca
(Presented By: Ross E. Krasnow, MD, MS)

Introduction: The Caprini Risk assessment model is widely used to risk stratify patients at risk for venous thromboembolism, but it has never been validated in major urologic cancer surgery. We sought to validate the Caprini risk assessment model in patient’s undergoing major urologic cancer surgery.

Methods: A population-based cohort study of a weighted 1,099,093 patients from 490 United States hospitals undergoing radical prostatectomy, radical nephrectomy, partial nephrectomy, or radical cystectomy for malignancy from 2003 to 2013. The primary outcome was 90-day symptomatic venous thromboembolism (pulmonary embolism or deep vein thrombosis). Patients were scored according to the Caprini risk assessment model.

Results: There were no patients in the low risk Caprini risk category, 0.9% in the moderate risk category, and 99.1% were high risk (38.1% high risk, 48.5% higher risk, and 12.5% highest risk). The overall rate of venous thromboembolism was 1.2% (0.6% after prostatectomy, 1.9% after radical nephrectomy, 1.0% after partial nephrectomy, and 5.4% after radical cystectomy). The Caprini score was associated with increased risk of venous thromboembolism (odds ratio [OR] 1.21, 95% confidence interval 1.17-1.25, p<0.001). The Caprini score demonstrate poor discrimination in the prediction of VTE no matter if they received VTE chemoprophylaxis (Receiver Operator Characteristic [ROC] area 0.53, 95% CI 0.50-0.56) or did not receive VTE chemoprophylaxis (ROC area 0.58, 95% CI 0.56-0.59).

Conclusion: While the Caprini risk assessment model has been validated in other surgical specialties, it is not a good predictor of venous thromboembolism in patients undergoing major urologic cancer surgery. It should not be used to risk stratify patients undergoing major urologic cancer surgery.
Poster #199
USE OF AUTOMATED SMS-BASED MESSAGING TO IMPROVE OUTCOMES AND SATISFACTION IN PATIENTS UNDERGOING MAJOR UROLOGIC ONCOLOGY SURGERY
Neal Patel, MD; Nariman Ahmadi, MD; David Hatcher, MD; Fatima Husain, MD; Monish Aron, MD; Mihir Desai, MD and Inderbir Gill, MD
USC Institute of Urology, Keck School of Medicine, Los Angeles, California
(Presented By: Neal Patel, MD)

Introduction: It has been well documented that recovery protocols improve patient outcomes after major surgery. We believe that a consistent method of communication with the patient in the post-operative period is crucial to the success of their recovery. We aim to show that using an automated test messaging based system to provide a regimented messaging protocol with anticipatory guidance will provide patients appropriate recovery expectations. We also aim show that reminders and encouragement to performs certain activities, like hydration, monitoring for complications (urinary tract infection (UTI), deep vein thrombosis (DVT), etc.), ambulation and incentive spirometry (IS) will improve patient outcomes and satisfaction.

Methods: We utilized custom-built cloud software to provide patients who elected to participate and underwent major urologic oncology surgery daily post-operative text messages to their cell phone. Our system includes a combination of anticipatory guidance and encouragement to provide appropriate expectations in both the immediate inpatient post-operative setting as well as in the outpatient recovery setting. The messages received by the patients were comprised from a set protocol of messages based on the nature of surgery and its expected recovery in both inpatient and outpatient settings (Figure 1). In this cohort we examined, overall length of stay (LOS), inpatient ambulatory frequency, use of IS, 90-day readmission and complication rates, patient satisfaction, and quality of life (QOL).

Results: 50 enrolled patients will be compared to an immediate matched past historical cohort. Inpatient recovery parameters examined include: time to ambulation, frequency of ambulation, frequency of IS utilization, time to recovery of bowel function, and LOS. In the outpatient setting, preventable 90-day readmissions (ex. fever, dehydration, UTI, and complications, patient satisfaction), and QOL were examined

Conclusion: Communicating with patients to provide a clear message of recovery expectations and encouragement on daily basis is tantamount to improving outcomes and preventing complications. We demonstrate a novel system that standardizes this in both an inpatient and outpatient setting.
Poster #200
THE HSF1 CANCER SIGNATURE IN UROLOGIC TUMORS
Christopher Zhang; Heinric Williams, MD, FACS and Thomas Prince, PhD
Geisinger Health Systems, Danville, PA
(Presented By: Christopher Zhang)

Cancer is a disease marked by severely altered gene expression and unchecked cell proliferation. Heat shock factor 1 (HSF1) is the primary transcription factor responsible for initiating the cellular stress response and the expression of heat shock proteins. In cancer, HSF1 is often over-activated as tumor cells become addicted to the cellular stress response as they continue to proliferate in their self-created toxic environments. Chromosome binding studies have shown that HSF1 binds to the regulatory regions of a large number of genes in tumor cells. HSF1 binding to this group of over 800 genes, here referred to as the HSF1 Cancer Signature (CanSig), has been linked with increased tumor malignancy and poor clinical outcomes. However, the associated mRNA levels of the HSF1 CanSig from clinical samples have not been reported. Using The Cancer Genome Atlas (TCGA) along with other bioinformatics tools, we examined the mRNA expression patterns of the HSF1 CanSig across 31 different TCGA tumor types. We observed that across almost all tumor types on average 37 of the top 100 most over-expressed HSF1 CanSig genes are located on Chromosome 8q. Moreover, genes located on Chromosome 8q were the least under-expressed across each tumor type. Prostate, bladder and clear cell kidney tumors were all enriched for over-expressed HSF1 CanSig genes located on Chromosome 8q. Papillary kidney tumors represented an exception with the location of the number of over-expressed HSF1 CanSig genes located on Chromosome 17q. These findings possibly link HSF1-driven gene expression to previous studies indicating the involvement of Chromosome 8q in tumorigenesis. Examination of the clinical data also suggests that the number of altered HSF1 CanSig genes located on Chromosome 8q in urologic tumors may be associated with pathological stage and other clinical parameters. Furthermore, gene ontology analysis suggests the HSF1 CanSig may be involved in positive regulation of Cajal bodies and telomeres, providing clues on a possible molecular mechanism for HSF1-enabled tumorigenesis.

Funding: Funded by the Geisinger Clinic
INDICATIONS FOR NOVEL INTERPOSITION MYOCUTANEOUS FLAP FOR THE REPAIR OF RECTO-URINARY FISTULA
Alyssa Greiman, MD¹; Lawrence Dagrosa, MD¹; Nima Baradaran, MD¹; Eric Rovner, MD¹; Lance Tavana, MD² and Harry Clarke, MD, PhD¹
¹Department of Urology, Medical University of South Carolina, Charleston, SC, USA; ²Department of Plastic Surgery, Medical University of South Carolina, Charleston, SC, USA
(Presented By: Alyssa Greiman, MD)

Introduction: Recto-urinary fistula (RUF) is a rare complication following pelvic surgery, radiation or trauma. We report our experience using a perineal approach with a cremasteric myocutaneous interposition flap (CIF) for the treatment of symptomatic RUF and sought to compare their outcomes with patients undergoing repair with other interpositions for complex versus simple fistulas.

Methods: We identified 26 patients who underwent RUF repair from January 2001 to June 2014 by a single surgeon at our institution. Patient demographic information, fistula etiology, surgical approach and outcomes were reviewed.

Results: Fistulas are categorized as complex (69.2%) where radiation therapy, salvage cryoablation or APR were performed, or simple (30.8%) in the setting of radical prostatectomy, hemorrhoidectomy or trauma. The prostatic urethra was the most common site of fistula (61.5%), followed by bladder neck (30.8%), and bladder (7.7%). Pre-repair hyperbaric oxygen was performed in 57.7% of patients and was not associated with improved success in initial closure for complex or simple fistulas (p=0.16, 0.69). All patients underwent colonic diversion prior to repair. Initial repair was performed at the median age of 63 (21-83) years using a cremasteric interposition in 12 patients, gracilis interposition flap (GIF) in 13 and a rectus myocutaneous flap in one. Median follow-up was 8.8 (1-44) months. In the CIF group, 9 (75%) patients failed the initial repair with 2 subsequently undergoing successful second CIF, 4 with successful subsequent GIF and 2 lost to follow-up. One patient failed a repeat CIF. Initial repair of simple fistulas was more successful than complex fistulas (p=0.04). The use of GIF or rectus myocutaneous flap resulted in improved success in complex fistula repair compared to CIF (p=0.004). There was no difference seen in success of simple fistula repair when comparing GIF and CIF (p=0.17).

Conclusion: Perineal repair of RUF using CIF is a novel approach with potentially less morbidity than larger muscle interposition flaps. However, the CIF is less effective in complex fistulas and thus should only be considered in patients with simple fistulas. For complex, ischemic fistulas, a more vascularized flap such as GIF or rectus myocutaneous flap is effective.
Poster Session II – Full Abstracts

Poster #202
THE LANDSCAPE OF WHOLE-GENOME ALTERATIONS AND PATHOLOGIC FEATURES IN GENITOURINARY MALIGNANCIES: AN ANALYSIS OF THE CANCER GENOME ATLAS

Mark Ball, MD; Michael Gorin, MD¹; Charles Drake, MD, PhD¹; Hans Hammers, MD, PhD² and Mohamad Allaf, MD¹
¹Johns Hopkins University, Baltimore, MD; ²University of Texas Southwestern, Dallas, TX
(Presented By: Mark W. Ball, MD)

Introduction: The accumulation of somatic genetic alterations drives carcinogenesis. Our objective was to investigate the influence of somatic mutation count (MC) and copy number variance (CNV) in patients with genitourinary malignancies in The Cancer Genome Atlas (TCGA).

Methods: The TCGA datasets for adrenocortical carcinoma (ACC), bladder urothelial carcinoma (BLCA), chromophobe renal cell carcinoma (KICH), clear cell renal cell carcinoma (KIRC), papillary renal cell carcinoma (KIRP), pheochromocytoma and paraganglioma (PCPG), prostate adenocarcinoma (PRAD) testis germ cell tumor (TGCT) were accessed via cBioportal. The median MC/genome and the CNV (calculated as the fraction of the genome with log (2) copy number > 0.2 compared to the reference genome) was compared among each tumor type. For each tumor type, patients were stratified by tumor grade and stage, and differences in MC and CNV were compared. Tumor grade was not available for KICH or KIRP. Two sided P < 0.05 were considered significant.

Results: Among the tumor types analyzed, BLCA had the highest MC at 167, followed by ACC 89 (IQR 72-22), KIRP 71, TGCT 55, KIRC 45, PRAD 34, and PCPH 14, KICH 12 (Table 1). The tumor type with the highest fraction of the genome with CNV was KICH .94, followed by ACC .58, TGCT .41, BLCA .29, KIRP .15, PCPH .13, KIRC .12, and PRAD .06. MC was associated with increased T stage in ACC, N stage in KIRC, M Stage in ACC, grade in BLCA and primary Gleason score in PRAD, and was associated with OS and RFS in KICH. CNV was associated with increased N stage in PRAD, Fuhrman grade in KIRC and primary Gleason grade in PRAD. In addition, increased CNV was independently associated with inferior RFS for KIRC, as well as inferior OS and RFS for KIRP.

Conclusion: Among genitourinary malignancies, MC and CNV varies greatly among tumor types. Six of the eight tumors types analyzed had some correlation with increasing genomic alteration and either greater pathologic aggressiveness or worse survival outcomes. The degree of genomic alterations in a given sample may be useful as a marker of clinical behavior.
Poster #203
DEMOGRAPHIC AND SOCIOECONOMIC PREDICTORS OF PATHOLOGIC STAGE AND SURVIVAL AMONG 14,395 PATIENTS WITH PENILE CANCER: A REPORT FROM THE NATIONAL CANCER DATABASE
David Paulucci, BA; Kyle Blum, MD; Kyrollis Attalla, MD; Ketan Badani, MD and John Sfakianos, MD
Icahn School of Medicine at Mount Sinai, New York, NY
(Presented By: David Joseph Paulucci, BA)

Introduction: Advanced penile cancer stage is a poor prognostic factor. Five-year survival rates for loco-regional and distant spread are 59% and 11%, respectively. To facilitate identification of those at a higher risk for advanced stage and worse survival, the present study sought to identify demographic, clinical and socio-economic predictors of survival in addition to pathologic T, N and M stage among patients with penile cancer.

Methods: The National Cancer Database was used to identify 14,395 patients with penile cancer from 1998-2012. Pathologic and demographic variables were used in a multivariable logistic and cox proportion hazards models to identify predictors of pathologic T stage ≥ 2, pathologic lymph node positivity, pathologic metastases and overall survival.

Results: The 5 year cancer specific survival for our cohort was 59.4% with a median follow-up of 39.8 months. Pathologic T stage ≥ 2 was identified in 3669 (36.1%) patients and 1281 (19.3%) had node positive disease. In addition to T,N M stage, age (HR=1.04, p<.001), Black vs. White race (HR=1.28, p<.001) and no insurance vs. private insurance (HR=1.55, p<.001) were associated with lower overall survival. Income ≥ $63,000 vs. ≤ $38,000 (HR=0.81, p=.002 and income $48,000 to $62,999 vs. < $38,000 (HR=0.84, p=.001) were associated with an improved overall survival. Variables associated with a higher likelihood of pathologic T stage ≥ 2 included no insurance vs. private insurance (OR=1.74, p<.001), while higher education based on zip code (OR=0.77, p=.005) was associated with a lower likelihood of pathologic T stage ≥ 2. Residence in a metropolitan area (OR=0.79, p=.031) was associated with a higher likelihood of pathologic node positive disease while income ≥ $63,000 vs. $38,000 (OR=0.27, p=.004), income $48,000 to $62,999 vs. < $38,000 (OR=0.41, p=.011) and lower education based on zip code (OR=0.52, p=.037) were associated with a reduced likelihood of pathologic metastases.

Conclusion: In addition to clinical T, N and M stage, socioeconomic factors including no insurance, lower income, non-metropolitan residence and lower education were associated with a worse pathologic diagnosis. Increased educational awareness of this rare disease is required to help reduce treatment delays, improve prognosis and ultimately prevent deaths among socioeconomically disadvantaged men with penile cancer.
Poster #204
LONG-TERM ONCOLOGIC OUTCOMES OF ADDING RADICAL PROSTATECTOMY TO CASTRATION FOR PATHOLOGICAL NODE-POSITIVE PROSTATE CANCER
Bimal Bhindi, MD, CM, MSc, FRCSC; Laureano Rangel, MSc; Ross Mason, MD, FRCSC; Matthew Gettman, MD, FACS; Igor Frank, MD; Eugene Kwon, MD; Matthew Tollefson, MD; R. Houston Thompson, MD; Stephen Boorjian, MD, FACS and Jeffrey Karnes, MD, FACS
Mayo Clinic, Rochester, MN, USA
(Presented By: Bimal Bhindi, MD, CM)

Introduction: Long-term data on the outcomes of aggressive loco-regional surgical resection in prostate cancer (PCa) with nodal involvement are lacking. The present study reports on the impact of adding radical retropubic prostatectomy (RRP) to surgical castration on long-term cancer-specific (CSS) and overall survival (OS) outcomes in men with pathological node-positive (pN+) PCa.

Methods: Men with pN+ PCa who underwent pelvic lymphadenectomy and early bilateral orchiectomy (within 3 months of surgery), with (n=382) or without (n=79) RRP, were identified (1966-1995). Men who underwent RRP + orchiectomy and men who underwent orchiectomy alone were matched 1:1 on age, year of surgery, clinical grade, clinical stage, number of positive nodes, and pre-operative serum PSA level (after 1987). Kaplan-Meier and Cox regression analyses were used to compare CSS and OS between groups.

Results: The cohort included 158 men (79 in each group) with a mean age of 66 years (SD=6). Groups were balanced on all matched parameters. Among men undergoing orchiectomy alone, 76 died and 60 died from PCa. Among patients undergoing RRP + orchiectomy, 70 died and 28 died from PCa. In Kaplan-Meier analyses, RRP + orchiectomy versus orchiectomy alone was associated with prolonged CSS (log-rank p<0.001), with greater probability of CSS at 10 years (79% vs 35%) and 20 years (59% vs. 18%). RRP + orchiectomy versus orchiectomy alone was also associated with prolonged OS (log-rank p<0.001), with greater probability of OS at 10 years (66% vs 27%) and 20 years (22% vs. 9%). In Cox models, RRP + orchiectomy versus orchiectomy alone was associated with significantly improved CSS (HR=0.28, 95%CI=0.17-0.46, p<0.001) and OS (HR=0.48, 95%CI=0.34-0.66, p<0.001). Findings were similar in the subgroup with available pre-operative PSA (CSS: HR=0.31, 95%CI=0.16-0.61, p<0.001; OS: HR=0.45, 95%CI=0.26-0.77, p=0.004).

Conclusion: With nearly the entire cohort having lifelong follow up, the present analysis demonstrates that the addition of RRP to surgical castration for pN+ PCa is associated with improved CSS and OS. If technically feasible, aggressive loco-regional resection should be considered in this population as a part of a multi-modal approach.
Poster #205
LYMPH NODE FLUORESCENCE DURING ROBOT-ASSISTED RADICAL PROSTATECTOMY WITH INDOCYANINE GREEN - A PROSPECTIVE DOSING ANALYSIS
Avinash Chennamsetty, MD¹; Ali Zhumkhawala, MD¹; Scott Tobis, MD²; Nora Ruel, MA³; Clayton Lau, MD¹ and Bertram Yuh, MD¹
¹City of Hope National Medical Center, Department of Surgery, Division of Urology and Urologic Oncology, Duarte, CA; ²Tobis Urology, Santa Barbara, CA; ³City of Hope National Medical Center, Department of Biostatistics, Duarte, CA
(Presented By: Avinash Chennamsetty, MD)

Introduction: Prior studies have shown the utility of indocyanine green (ICG) based sentinel lymph node (SLN) dissection for prostate cancer. We prospectively assessed the value of fluorescent SLN detection with ICG for the detection of lymph node (LN) metastases and the ideal dosing of ICG for detection of fluorescent lymph nodes (FLNs) in intermediate- and high-risk patients undergoing robotic radical prostatectomy.

Methods: A total of 20 patients received transperineal prostatic injections of ICG into the base, the midportion, and the apex of each lobe of the peripheral zone. Each consecutive set of five patients cycled through five doses (1.25mg, 2.5mg, 3.75 mg, 5 mg, 7.5 mg) so that the optimal dosing of ICG could be discovered early. After ICG was allowed to travel through the pelvic LNs, extended pelvic lymph node dissection (ePLND) was performed incorporating LN packets from the external iliac, obturator, internal iliac, node of Cloquet and the common iliac up to the ureteric crossing bilaterally.

Results: ICG injection was able to identify FLN packets in all 20 patients. Compared to the higher ICG doses, the 1.25 mg and 2.5 mg doses had fewer FLN packets and were abandoned after one dose each. The median number of FLN packets was 4.0, 6.0 and 4.5, for the respective doses of 3.75, 5.0 and 7.5 mg, which was suggestive of a positive correlation between dosage and FLN packets but not statistically significant. The external iliac group was the most common site of fluorescence in 27.2% of patients, followed by the common iliac (20.3%), internal iliac (18.5%), and node of Cloquet (7.7%). 7/20 (35%) patients had node positive disease. Out of the 5 patients that had fluorescent tissue outside of our ePLND template, one had a positive node present in the anterior bladder neck fat. Across all 20 patients, ICG fluorescence had 62% sensitivity, 50% specificity, 8% positive predictive value (PPV), and 95% negative predictive value (NPV) in detecting LN metastases.

Conclusion: The low sensitivity of ICG for the detection of LN metastases reported in our study highlight why fluorescent SLN dissection with ICG does not represent an alternative to a meticulously performed ePLND.
**Poster #206**  
**INITIAL SERIES OF ROBOTIC SALVAGE RETROPERITONEAL AND PELVIC LYMPH NODE DISSECTION FOR “NODE-ONLY” RECURRENT PROSTATE CANCER**

Carlos Eduardo Schio Fay, MD¹; Andre Luis de Castro Abreu, MD¹; Daniel Park, MD¹; Daniel Melecchi de Freitas, MD¹; Sameer Chopra, MD¹; Neal Patel, MD¹; David Quinn, MD¹; Tanya Dorff, MD¹; John Carpten, MD¹; Peter Kuhn, MD¹; Parkash Gill, MD¹; Fabio Almeida, MD² and Inderbir Gill, MD¹

¹USC Institute of Urology, Catherine & Joseph Aresty Department of Urology, Keck School of Medicine, University of Southern California, Los Angeles, California; ²Phoenix Imaging Center, Phoenix, Arizona

(Presented By: Carlos Fay)

**Introduction:** Salvage lymph node dissection has been proposed in patients with biochemical recurrence from prostate cancer and nodal involvement only, although the optimal template remains a question of debate. Herein we present the initial experience of robotic high-extended salvage retroperitoneal and pelvic lymph node dissection (sRPLND+PLND) for node-only recurrent prostate cancer.

**Methods:** Eighteen patients underwent robotic sRPLND+PLND (09/2015–09/2016) for ‘node-only’ recurrent prostate cancer after definitive primary treatment as identified by carbon-11 acetate PET/CT. Our anatomic template extends from bilateral renal artery/vein cranially up to Cloquet’s node caudally, completely excising lymphatic-fatty tissue from aorto-caval and iliac vascular trees. RPLND is performed before PLND.

**Results:** Median age was 64 (45-76), median BMI was 26.4 kg/cm² (21.4 – 41.2), previous primary treatment was radical prostatectomy in 14 patients (77.8%) and external radiation therapy in 4 patients (22.2%), median time from primary treatment was 32 months (4-160), median number of suspect nodes identified by PET/CT imaging was 5 (3-8) and median PSA at sRPLND+PLND was 3.34 ng/dl (0.28 – 38.2). Median operative time was 290 minutes (211-432), blood loss was 100 ml (50-300), and hospital stay was 1 day (1-6). No patient had intra-operative complication, open conversion or blood transfusion. Three patients had Clavien II post-operative complications, each resolving spontaneously. Final histology confirmed positive nodes in 14 patients (77.8%). Mean number of nodes excised per patient was 83 (41-132) and mean number of positive nodes was 23 (0-109). At 2 months post-operatively median (range) PSA was 0.75 ng/mL (<0.01-2 ng/mL), an overall median PSA decrease of 78%.

**Conclusion:** Robotic sRPLND+PLND duplicates open surgery, with superior nodal counts and decreased morbidity compared to the published literature. The discrepancy in number of metastatic lymph nodes pointed on C-11 acetate imaging and the actual number of metastatic nodes on final pathology may represent a limitation of imaging detecting metastatic lesions therefore justifying a standard anatomic lymphadenectomy template extending cranially to the renal vessels. Longer follow-up is necessary to assess oncologic outcomes.
Introduction: Although randomized trials of adjuvant radiotherapy (aRT) following radical prostatectomy (RP) have demonstrated an improvement in biochemical recurrence (BCR)-free survival (bRFS), a benefit in terms of decreased clinical progression and mortality has not been well-established. Our study sought to focus on men with a single positive surgical margin (PSM), and determine if the receipt of aRT is associated with improved long-term survival outcomes.

Methods: Men with pT2N0 prostate cancer (PCa) with a single PSM following RP and pelvic lymphadenectomy were identified using an institutional registry (1987-1996). Men receiving aRT within 90 days of RP and men who did not were matched 1:1 on age, year of surgery, Gleason score, pre-operative PSA, site of margin involvement, and DNA ploidy. Kaplan-Meier (KM) analysis and log-rank tests, as well as cumulative incidence and Gray tests were used to compare bRFS, clinical progression-free survival (cPFS; with clinical progression defined as local or distant recurrence) and overall survival (OS) between groups.

Results: The cohort included 152 men (76 per group). Groups were balanced on all matched parameters. Median age was 64 years (range=44-75). Median follow-up among survivors was 20 years (IQR=19-22). In the aRT vs. control groups, there were 19 vs. 39 with BCR, 8 vs. 12 who had local recurrence or distant metastasis, 4 vs. 3 who died of PCa, and 39 vs. 25 who died overall. Receipt of aRT was associated with lower cumulative incidence of BCR (Gray p<0.001) at 10 years (20% vs. 41%) and 20 years (25% vs. 52%). Conversely, receipt of aRT was not associated with cumulative incidence of clinical progression (Gray p=0.29) at 10 years (3% vs. 9%) and 20 years (10% vs. 16%). Moreover, receipt of aRT was not significant associated with OS (log-rank p=0.08; mortality at 10 years: 8% vs. 9%; at 20 years: 44% vs. 32%).

Conclusion: As seen in randomized trials, receipt of aRT was associated with reduced risk of BCR in our cohort men with pT2N0 PCa and a single PSM. However, with a 20-year median follow-up, this intermediate outcome did not translate into an associated improvement in cPFS or OS. In light of heightened awareness of the potential complications of radiotherapy, the merits of aRT in this population need to be revisited.
Poster #208
PREDICT: A STUDY EVALUATING BASELINE DISEASE CHARACTERISTICS PREDICTIVE OF DISTANT METASTASES IN PATIENTS WITH CASTRATION-RESISTANT PROSTATE CANCER – UPDATED DATA
Stephen J. Freedland, MD¹; Matthew R. Smith, MD, PhD²; Raoul S. Concepcion, MD³; Christopher Pieczonka, MD⁴; Benjamin Gartrell, MD⁵; Zvi Schiffman, MD, FACS⁶; Tim Van Mouverik, PharmD⁷; Nancy Chang, PharmD⁷ and Neal D. Shore, MD, FACS⁸
¹Durham VA Medical Center, Durham, NC and Cedars Sinai Medical Center, Los Angeles, CA; ²Massachusetts General Hospital, Boston, MA; ³Urology Associates P.C., Nashville, TN; ⁴Associated Medical Professionals, Syracuse, NY; ⁵Montefiore Medical Center, Bronx, NY; ⁶Houston Metro Urology P.A., Houston, TX; ⁷Dendreon Pharmaceuticals Inc, Seattle, WA; ⁸Carolina Urologic Research Center, Myrtle Beach, SC (Presented By: Stephen J. Freedland, MD)

Introduction: Nearly 1 in 3 men with presumed non-metastatic (M0) castration-resistant prostate cancer (CRPC) harbored undetected metastases (mets) in a phase 3 study (Yu EY, et al, J Urol 2012;188:103–9). Metrics predicting a positive imaging test for men presumed M0 CRPC are not universally accepted/implemented. PREDICT (NCT01981109) evaluates characteristics predictive of a baseline (BL) imaging study positive for distant mets (M1) in men with presumed M0 CRPC and follows disease progression of men with confirmed M0 CRPC to M1 development.

Methods: Eligible men with presumed M0 CRPC, no prior M1, no imaging in the previous 3 months (mos) are enrolled in the registry. Imaging modality to detect mets is at investigator’s discretion. Based on BL bone/soft tissue imaging, patients are classified as M0 or M1. Men will be followed for 3 (M0) to 5 (M1) years (yrs) from registration.

Results: 155/179 registered men had BL scan/image data; 41/155 (26%) men presented with M1. Mean follow-up was 19 mos. Of men with M0 at BL, 26/111 (23%) became M1 with a mean time from study entry to mets development of 8.9 mos from start of study registration. In these men, the only notable change in laboratory values from BL was increased PSA (mean: 19 vs 78 ng/mL; p=0.075). Baseline imaging modalities to detect mets were: Tc99 bone scan ± CT n=113; MRI n=1; NaF PET ± CT scan n=41. Bone mets were found in 15/113 (13%) Tc99 scans vs 18/41 (44%) NaF PET (p=0.0001). 8 men had only nodal disease. BL mean laboratory values were significantly higher (p<0.05) in the M1 vs M0 group for PSA (53 vs 12 ng/mL), alkaline phosphatase (101 vs 79 U/L), and serum prostatic acid phosphatase (8.2 vs 2.4 ng/mL). At BL, the M1 vs M0 group were similar in mean age (both 77 yrs), lactate dehydrogenase (194 vs 193 U/L), ECOG performance status = 0 (39 vs 33%), Gleason score = 8 (39 vs 38%), opiate use (4.9 vs 5.4%) and time from diagnosis to study entry (8.7 vs 10.5 yrs).

Conclusion: These data from PREDICT for men with presumed M0 CRPC show that a high proportion (26%) of men present with asymptomatic, occult mets, and that NaF PET is detecting more mets than Tc99 bone scan. Moreover, in men with documented M0 CRPC, approximately a quarter will develop mets in the next 6 mos. There is a need for the early detection of occult mets in such men, as there are no approved treatments to alter the course of disease progression in men with M0 CRPC.

Funding: Dendreon Pharmaceuticals, Inc
Poster #209
PROGNOSTIC GRADE GROUP (PGG) PROSTATE CANCER GRADING SYSTEM: CAN MULTIPARAMETRIC MRI (MPMRI) ACCURATELY SEPARATE PATIENTS WITH PGG 1, PGG 2 AND HIGH GRADE CANCER?
Kae Jack Tay, MBBS¹; Jamie Holtz, BSc¹; Rachel Silverman, MSc²; Rajan Gupta, MD¹ and Thomas Polascik, MD¹
¹Duke University, Durham, NC; ²University of North Carolina, Chapel Hill, NC
(Presented By: Kae Jack Tay, MBBS)

Introduction: Our objective is to determine the accuracy of multiparametric MRI (mpMRI) in predicting pathologic grade of prostate cancer after radical prostatectomy (RP) using the new prognostic grade group (PGG) grading criteria and specifically, whether mpMRI can accurately separate disease into one of two risk categories (low versus higher grade) or one of three risk categories (low, intermediate, or high grade).

Methods: This retrospective, HIPAA-compliant, IRB-approved study included 140 patients with PCa who underwent 3T mpMRI with endorectal coil and transrectal ultrasound-guided (TRUS-G) biopsy before RP. MpMRI was used to classify lesions using a two-tier (low grade/PGG 1 vs. high grade/PGG 2-5) or a three-tier system (low grade/PGG 1 vs. intermediate/PGG 2 vs. high grade/PGG 3-5). Accuracy of mpMRI was compared against RP for each classification system. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), positive likelihood ratio (LR+), and negative likelihood ratio (LR-) of mpMRI for distinguishing low from higher grade disease were also calculated.

Results: The predictive accuracy of mpMRI using the two-tier system is higher than when using three-tier system (0.77 & 0.45, respectively). The sensitivity, specificity, PPV, NPV, LR+, and LR- are 0.94, 0.16, 0.80, 0.45, 1.13 and 0.34, respectively. There were similar rates of undergrading between mpMRI and TRUS-G biopsy compared to RP (16% & 21%; respectively); rate of overgrading of disease was higher for mpMRI versus TRUS-G biopsy compared to RP (42% & 17%, respectively). When mpMRI and TRUS-G biopsy are combined, rate of undergrading is 1.4% and overgrading is 11%.

Conclusion: The predictive accuracy of mpMRI is higher using a two-tier system versus a three-tier system, suggesting quantitative variables may be necessary to delineate intermediate from high grade disease. Rates of under- and overgrading decreased when mpMRI and TRUS-G biopsy are combined, suggesting these techniques may be complementary in accurately predicting tumor grade.
Introduction: Active surveillance has excellent short to medium term outcomes in well-selected prostate cancer patients. However, traditional biopsy-based selection criteria have been criticized for inaccurate determination of cancer grade and extent. We evaluated the incremental benefit of multiparametric MRI (mpMRI) in patient selection using various AS criteria.

Methods: We retrospectively evaluated a cohort of patients who had received an mpMRI prior to radical prostatectomy between 2011 and 2013. Patients were classified as suitable for active surveillance using Epstein (Gleason ≤3+3, ≤3 positive cores, PSA ≤10ng/ml, PSAD≤0.15), NCCN low-risk (Gleason ≤3+3) and extended criteria (Gleason ≤3+4, PSA ≤15ng/ml) using clinical parameters. The incremental value of adding mpMRI criteria (mpMRI grading 3+3, no extracapsular extension[ECE] and estimated mpMRI volume <0.5ml for Epstein; mpMRI grading 3+3, no ECE for NCCN low-risk; mpMRI grading ≤3+4, no ECE for extended criteria) were evaluated against the referent standard of surgical pathology (Gleason ≤3+3, no ECE, tumor volume<0.5ml for Epstein; Gleason 3+3, no ECE for NCCN low-risk; Gleason ≤3+4, no ECE for extended). Performance characteristics and area under receiver operating curves were compared.

Results: We evaluated 157 men in total. Only 3 men fulfilled Epstein criteria at pathology, none of whom were identified using clinical criteria nor mpMRI. Using NCCN low-risk criteria, 29 men qualified at final pathology while clinical criteria identified 45 (sensitivity 79%, specificity 83%, AUC 0.81) and combined clinical-mpMRI criteria identified 7 (sensitivity 21%, specificity 99%, AUC 0.60 [p<0.01]). Using the extended AS criteria, 74 qualified at pathology while clinical criteria identified 90 (sensitivity 76%, specificity 59%, AUC 0.68) and combined clinical-mpMRI criteria identified 40 (sensitivity 47%, specificity 94%, AUC 0.71 [p=0.38]).

Conclusion: A combined criterion was highly specific in selecting men for AS using NCCN low-risk or extended criteria because of a significant improvement in specificity after addition of mpMRI. However, due to a reduction in sensitivity, there was no overall improvement in accuracy.
Poster Session II — Full Abstracts

Poster #211
EFFECT OF MEDICARE SHARED SAVINGS PROGRAM ACCOUNTABLE CARE ORGANIZATIONS ON PROSTATE CANCER CARE
Tudor Borza, MD, MS¹,²; Samuel Kaufman, MS³; Phyllis Yan, MS³; Lindsey Herrel, MD, MS¹,²; Amy Luckenbaugh, MD¹; David Miller, MD, MPH¹,²; Ted Skolarus, MD, MPH¹,²; Lindsey Herrel, MD, MS¹; Edward Norton, PhD⁵,⁶,⁷; Vahakn Shahinian, MD, MS⁸ and Brent Hollenbeck, MD, MS¹,²
¹University of Michigan, Department of Urology, Division of Oncology; ²University of Michigan, Department of Urology, Division of Health Services Research; ³VA Ann Arbor Healthcare System, Center for Clinical Management and Research; ⁴Department of Urology, University of Pittsburgh, Pittsburgh, Pennsylvania; ⁵Department of Health Management and Policy, University of Michigan, Ann Arbor, Michigan; ⁶Department of Economics, University of Michigan, Ann Arbor, Michigan; ⁷National Bureau of Economic Research, Cambridge, Massachusetts; ⁸Department of Internal Medicine, University of Michigan, Ann Arbor, Michigan
(Presented By: Tudor Borza, MD, MS)

Introduction: Prostate cancer is the most common and among the most costly cancer in US men. Uncertainties regarding optimal management lead to treatment variations and increase cost. Accountable care organizations (ACO) can potentially improve care by decreasing variation (i.e. avoidance of treatment in low value settings) and constraining costs. Our objective was to determine the effect of Medicare Shared Savings Program (MSSP) ACOs on prostate cancer care.

Methods: Using a 20% Medicare sample we perform a retrospective cohort study of men with newly diagnosed prostate cancer from 2010-2013. We assigned patients to ACOs based on their primary care provider’s MSSP ACO participation and performed a difference-in-differences analysis comparing the impact of ACO participation on prostate cancer treatment, treatment of men with high 10-year non-cancer mortality risk (indicator of treatment in least likely to benefit) and per beneficiary payments. Outcomes in the post-implementation period were compared to outcomes in the pre-implementation.

Results: We identified 33,011 men with incident prostate cancer of which 5,065 (15%) were assigned to an ACO. Overall, 58% of men were diagnosed in the pre-ACO implementation period. We noted secular trends in the non-ACO group from pre- to post-implementation in overall curative treatment (4.3% decline, p<0.001), treatment of men with the highest mortality risk (3.5% increase, p=0.4) and annual per beneficiary payments 3.9% decrease (p<0.001). ACO participation had no significant effect beyond the secular trend (Figure) on overall treatment, treatment among men with the highest mortality risk or annual payments (difference-in-differences estimator p=0.8, p=0.6, p=0.3, respectively).

Conclusion: Over the course of our study, curative treatment of prostate cancer and annual per beneficiary payments decreased significantly while treatment of patients least likely to benefit remained unchanged. For men diagnosed with prostate cancer, ACO participation did not lead to added improvement in either treatment parameter or cost. In order for ACOs to substantially affect prostate cancer care, policies emphasizing greater specialist participation are necessary.
MICHIGAN PROSTATE SCORE (MiPS): A NOVEL URINARY BIOMARKER PANEL FOR THE PREDICTION OF PROSTATE CANCER DIAGNOSIS

Amir H. Lebastchi, MD; Christopher M. Russell, MD; Alexander M. Helfand, BA; Takahiro Osawa, MD, PhD; Javed Siddiqui, MS; Rabia Siddiqui; Arul M. Chinnaiyan, MD, PhD; Priya Kunju, MD; Rohit Mehra, MBBS; Debbie Snyder; Scott A. Tomlins, MD, PhD; John T. Wei, MD, MS and Todd M. Morgan, MD

University of Michigan, Ann Arbor, MI
(Presented By: Amir H. Lebastchi, MD)

Introduction: The Michigan Prostate Score (MiPS) is a validated and commercially available early detection test for prostate cancer combining serum PSA with the amounts of urinary PCA3 and T2:ERG expression. This novel biomarker panel reports individual patient risk estimates for biopsy detection of any "MiPS" and of high-grade (Gleason score >6) prostate cancer "HG MiPS". We investigated the impact of MiPS on clinical decision-making and prostate biopsy frequency rates and correlated MiPS and HG MiPS with final biopsy pathology results.

Methods: MiPS testing was offered to all men referred for initial or repeat prostate biopsy at a single, tertiary institution as an alternative to proceeding directly to a biopsy between October 2013 and January 2015. Patient characteristics, PSA, PCA3, T2:ERG, and biopsy pathology were analyzed to see how MiPS and HG MiPS risk prediction models affected the decision for prostate biopsy as well as biopsy pathology. One-way ANOVA was used to correlate MiPS scores with biopsy rates and clinical outcomes.

Results: 149 men underwent MiPS testing, of whom 67.8% had no prior prostate biopsy. The mean predicted risks for detection of any and high-grade cancer were 41.5% and 26.0%, respectively. The 73 men (49%) who then chose to have a biopsy had higher MiPS (52.7% vs. 30.7%, p<0.001) and HG MiPS scores (35.2% vs. 18.2%, p<0.001) than those who did not undergo biopsy. Among those biopsied, MiPS, HG MiPS, PCA3, and T2:ERG were significantly higher in those with cancer (all p≤0.05) found on biopsy. PSA alone was not associated with cancer diagnosis (p=0.82)

Conclusion: The combination of urinary PCA3 and T2:ERG in a test panel for prostate cancer reduced the use of prostate biopsy by 51% among men referred for prostate biopsy. MiPS and MiPS HG were significantly higher in men with any and high-grade cancer, respectively. These findings support the clinical utility of MiPS for stratifying prostate cancer risk and guiding high-yield biopsy utilization.
Poster #213
MRI-TRUS FUSION BIOPSY AT NCI: CHANGES IN PROSTATE CANCER DETECTION RATE OF FUSION VS SYSTEMATIC BIOPSY
Brian P. Calio, BA¹; Abhinav Sidana, MD¹; Dordaneh Sugano, BS¹; Zachary Stanik¹; Mahir Maruf, MD¹; Amit L. Jain, MD¹; Maria J. Merino, MD²; Baris Turkbey, MD³; Peter L. Choyke, MD³; Bradford J. Wood, MD⁴ and Peter A. Pinto, MD¹
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ³Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁴Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Brian Patrick Calio, Jr., BA)

Introduction: To determine the effect of surgeon and radiologist learning curves and changes in fusion platform during 9 years of NCI’s experience with multiparametric MRI (mpMRI)/TRUS fusion biopsy.

Methods: A review was performed of a prospectively maintained database of patients undergoing mpMRI followed by fusion biopsy (Fbx) and standard biopsy (Sbx) from 2007-2016. The patients were stratified based on the timing of first biopsy in 3 groups. Cohort 1 included patients biopsied between 7/2007-12/2010, accounting for surgeon and radiologists’ learning curve at our institution. Cohort 2 included patients biopsied from 1/2011 up to the debut of the commercialized UroNav platform in 5/2013. Cohort 3 included patients biopsied after 5/2013. Patient demographic, imaging, and histopathologic data were collected. Clinically significant (CS) disease was defined as Gleason 7 (3+4) or higher. Cancer detection rates (CDR) between Sbx and Fbx during different time periods were compared using McNemar’s test.

Results: 1529 patients were included in the study with 219, 549 and 761 patients included in 3 respective cohorts. Mean age was 61.2, 62.1, and 63.6 years in 3 cohorts respectively (p=.007). PSA and race distribution were similar across 3 cohorts. In patients who underwent first biopsy between 2007 and 2010 there was no significant difference between CDR of CS disease by Fbx (24.7%) vs Sbx (21.5%), p=0.377. Fbx was significantly better than Sbx in detection of CS disease in the following two periods (cohort 2: 31.5% vs 25.3%, p=0.001; cohort 3: 36.5% vs 30.2%, p<0.001). There was significant decline in the detection of low risk disease by Fbx when compared to Sbx in the same period (cohort 2: 14.2% vs 20.9%, p<0.001; cohort 3: 12.5% vs 19.5%, p<0.001). Age standardized CDR was comparable to crude CDR, indicating increased detection in later cohorts was not due to increased patient age.

Conclusion: In the last 9 years there has been significant improvement in the accuracy of Fbx compared to Sbx. Results show that after an early learning period using Fbx, CS prostate cancer was detected at significantly higher rates with Fbx than with Sbx, and low risk disease was detected at lower rates. Advances in software allows for even greater detection of CS disease in the last cohort. This study shows that accuracy of Fbx is dependent on multiple factors; surgeon/radiologist experience and software improvements together produce improved accuracy.
Impact of Positive Surgical Margins on Quality of Life in Prostate Cancer Patients Treated with Radical Prostatectomy

John Oliver DeLancey, MD, MPH; Richard Matulewicz, MD, MS; David Victorson, PhD; Sandra Gutierrez, MS; James Burns, MS and Shilajit Kundu, MD
Northwestern University, Chicago, IL
(Presented By: John Oliver DeLancey, MD, MPH)

Introduction: Treatment for prostate cancer with radical prostatectomy can profoundly affect psychosocial and sexual quality of life (QOL). We sought to evaluate quality of life outcomes in patients who were found to have positive surgical margins on final pathology compared to those patients who did not have positive margins.

Methods: We enrolled patients diagnosed with prostate cancer at our institution in an internet-based data collection platform (PROMIS: Patient-Reported Outcomes Measurement Information System) which used validated questionnaires to assess QOL measures related to sexual, urinary and bowel, psychosocial outcomes and treatment satisfaction. These included the International Index of Erectile Function (IIEF), Cancer PROMIS supplement (CAPS), and Surgical Outcomes Measurement System (SOMS). Analysis of variance (ANOVA) was used to test for differences in these self-reported measures at enrollment (baseline) and 1, 3, 6 and 12 months following treatment.

Results: A total of 63 patients underwent radical prostatectomy, 40 completed each of the follow-up surveys. 7 patients had positive margins on final pathology. Quality of life outcomes at each time point are shown in Table 1. We found that patients with positive surgical margins reported worsening anxiety throughout the follow-up period. There were no significant differences in physical function, such as bowel, bladder, or erectile domains in men with or without a positive margin at prostatectomy. There was a trend towards increased depression and sleep disturbances in men with a positive margin compared to men with a negative margin.

Conclusion: Patients with positive surgical margins after prostatectomy reported higher emotional and psychosocial dysfunction compared to men with negative surgical margins. There were no differences in physical function between these groups, which suggests that this pathologic finding may negatively affect emotional health related QOL after prostatectomy.

Table 1. Change in quality of life outcomes compared to baseline by surgical margin status*

<table>
<thead>
<tr>
<th>Positive Margin</th>
<th>Mean change from baseline</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 month</td>
</tr>
<tr>
<td>IIEF Erectile function</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>-15.65</td>
</tr>
<tr>
<td>Yes</td>
<td>-19.86</td>
</tr>
<tr>
<td>SOMS Bowel</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>-12.30</td>
</tr>
<tr>
<td>Yes</td>
<td>-11.00</td>
</tr>
<tr>
<td>SOMS Anxiety</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>2.05</td>
</tr>
<tr>
<td>Yes</td>
<td>0.57</td>
</tr>
<tr>
<td>SOMS Depression</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.78</td>
</tr>
<tr>
<td>Yes</td>
<td>-0.86</td>
</tr>
<tr>
<td>SOMS Sleep</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>0.98</td>
</tr>
<tr>
<td>Yes</td>
<td>0.43</td>
</tr>
</tbody>
</table>

*(+) denotes improvement, (-) denotes worsening
Updated Clinical and Safety Data From STRIDE, a Randomized, Phase 2, Open-Label Study of Sipuleucel-T with Concurrent vs Sequential Enzalutamide in Metastatic Castration-Resistant Prostate Cancer

Christopher M. Pieczonka, MD; Daniel P. Petrylak, MD; David I. Quinn, MD; Charles G. Drake, MD, PhD; Jorge A. Garcia, MD, FACP; Curtis J. Dunshee, MD, FACS; Nancy Chang, PharmD and John M. Corman, MD

1Associated Medical Professionals of New York, Syracuse, NY; 2Yale Cancer Center, New Haven, CT; 3Norris Comprehensive Cancer Center, University of Southern California, Los Angeles, CA; 4The Johns Hopkins Sidney Kimmel Comprehensive Cancer Center, Baltimore, MD; 5Cleveland Clinic, Cleveland, OH; 6Urological Associates of Southern Arizona P.C., Tucson, AZ; 7Dendreon Pharmaceuticals Inc., Seattle, WA; 8Virginia Mason Cancer Institute, Seattle, WA

(Presented By: Christopher M. Pieczonka, MD)

Introduction: Sipuleucel-T (sip-T) improves overall survival in men with asymptomatic or minimally symptomatic metastatic castration-resistant prostate cancer (mCRPC) and is a standard of care in the US. With new agents available for mCRPC, optimal therapy sequencing to mitigate resistance mechanisms or improve outcomes are unknown. STRIDE (NCT01981122) is a randomized, open-label, phase 2 study comparing concurrent (CON) vs sequential (SEQ) administration of enzalutamide (enz) with sip-T. Interim results, including immune data, have been reported (Pieczonka, SUO 2015 P96). The current analyses further assessed clinical efficacy and safety data.

Methods: Randomized patients (pts) with asymptomatic or minimally symptomatic mCRPC received 3 standard sip-T infusions and 52 weeks (wks) of enz starting 2 wks before (CON n=25) or 10 wks after (SEQ n=27) sip-T initiation. Pts had an Eastern Cooperative Oncology Group (ECOG) performance status <=1 at baseline (BL). Changes in ECOG from BL were assessed. Secondary endpoints included changes in prostate specific antigen (PSA) levels and adverse events (AEs).

Results: The proportion of pts with >=50% decrease in PSA was CON 80%, SEQ 83%. Maximal reduction in median PSA from BL was 88% (both arms). At BL, the proportion of pts with ECOG 0 was 79% (CON 88%; SEQ 70%), and ECOG 1 was 21% (CON 12%; SEQ 30%). Median follow-up was 13.8 months. Post-treatment, 72% pts had ECOG 0 and 17% ECOG 1. At wk 6 (2 wks after last sip-T infusion), the overall proportion of pts with ECOG 0, 1, 2 or 3 was 81%, 15%, 2% and 2%, respectively. Among pts with BL ECOG 0, 63% maintained ECOG 0, 22% had a worst post-BL ECOG of 1, 5% ECOG 2, 7% ECOG 3, and 2% ECOG 4. Among 11 pts with BL ECOG 1, 2 reported improved post-BL ECOG of 0, 7 maintained ECOG 1, and 3 were worse with 1 ECOG of 2 and 2 ECOG of 3. There were no new safety signals, with similar rates of AEs (CON 92%, SEQ 100%) and grade >=3 AEs (CON 28%, SEQ 33%) between arms. The most common AEs (>20% of pts) were fatigue, nausea and back pain.

Conclusion: In STRIDE, CON and SEQ administration of enz and sip-T had similar rates and magnitude of PSA responses. Most mCRPC pts receiving enz concurrently with or sequentially to sip-T maintained their ECOG for more than 1 year. Moreover, wk 6 ECOG data were not different from BL, suggesting that any side effects were short-lived. Use of enz with sip-T resulted in no new safety concerns.

Funding: Dendreon Pharmaceuticals, Inc
Poster #216

DOES PROLONGED SURGICAL WAIT TIME FOR ROBOT-ASSISTED RADICAL PROSTATECTOMY IMPACT PATHOLOGICAL OUTCOMES?

Mounsif Azizi, MD¹; Marc Zanaty, MD²; Mansour Alnazari²; Kelsey Lawson, MD¹; Emad Rajih, MD³; Abdullah Alenizi, MD³; Pierre-Alain Hueber¹; Thierry Lebeau, MD²; Serge Benayoun, MD²; Pierre I. Karakiewicz¹; Assad El-Hakim² and Kevin C. Zorn¹

¹Section of Urology, Department of Surgery, University of Montreal Hospital Center, Montreal, Canada; ²Division of Urology, Department of Surgery, Hôpital du Sacré-Coeur de Montreal, Montreal, Canada; ³Department of Urology, Taibah University, Madina, Saudi Arabia

(Presented By: Mounsif Azizi, MD)

Introduction: Given the limited resources in a public health care system, we sought to assess the impact of surgical wait time (SWT) to robot-assisted radical prostatectomy (RARP) on post-operative pathological outcomes.

Methods: A retrospective chart review of 835 patients treated by RARP in 2 Canadian academic centers between 2006 and 2015 was conducted. SWT was defined as the period from prostate biopsy to surgery. Primary outcome was the post-operative CAPRA-S Score which has been well documented to correlate with biochemical recurrence, cancer specific and overall survival. Patients were stratified according to D’Amico risk categories. Univariate and multivariate analysis with a generalized linear model was used to evaluate the effect of SWT and other predictive factors (age, BMI, prostate volume, PSA, clinical stage, biopsy Gleason score and percentage of positive cores) on pathological outcomes, in each risk group and on the overall sample.

Results: Median SWT was significantly different between the three D’Amico groups: 180 (IQR 169-191), 159 (IQR 152-166) and 139 (IQR 125-153) days for low, intermediate and high-risk groups, respectively (p<0.001). After stratification by D’Amico risk group, SWT did not significantly affect postoperative CAPRA-S score on univariate analysis for the 3 sub-groups. In multivariate analysis, SWT of more than 160 days was significantly correlated to higher CAPRA-S Score only in intermediate risk group (p=0.005). There was no correlation in multivariate analysis neither in the high and low risk group nor in the overall cohort. Predictors of higher CAPRA-S Score in the multivariate model in the overall cohort were: older age (p=0.014), clinical stage (p<0.001), biopsy Gleason score (p<0.001) and percentage of positive cores (p<0.001).

Conclusion: In the current study evaluating SWT for RARP in a Canadian public system, a prolonged time to prostate cancer surgery appears to negatively impact post-operative pathological outcomes. Further studies are required to evaluate the impact of SWT on biochemical free survival, cancer specific survival and overall survival.
Poster #217
RISK STRATIFICATION OF PROSTATE CANCER OF PATIENTS ON ACTIVE SURVEILLANCE: INTEGRATING GENOMIC BIOMARKERS AND MULTIPARAMETRIC MRI
Sudhir Isharwal, MD; Wenda Ye, MS; Joseph Zabell, MD; Andrei Purysko, MD; Eric Klein, MD; Andrew Stephenson, MD and Michael Gong, MD, PhD
Cleveland Clinic, Cleveland, OH
(Presented By: Sudhir Isharwal, MBBS)

Introduction: Accurate risk stratification of patients on active surveillance (AS) of prostate cancer (PCa) is essential. Multiparametric magnetic resonance imaging (mpMRI) and genomic biomarkers are relatively new tools available to improve risk stratification. However, the utility of integrating mpMRI and genomic biomarkers in the AS protocols is still unknown. In this study, we sought to determine whether genomic or mpMRI findings better stratified the patients who are at risk for disease progression.

Methods: We retrospectively reviewed the AS patients (2011-2016) at our institution who underwent mpMRI, and had Oncotype Dx genomic score (GPS) testing. Baseline demographics, PSA, biopsy pathology, NCCN risk category, mpMRI imaging findings, and GPS scores were collected. AS cohort was followed per protocol until disease progression.

Results: A total of 79 patients on AS with imaging and genomic information were identified. Median follow up time on AS was 19 months (IQR = 13-31). Median age of the patients was 64 years (IQR 60-69), and median baseline PSA was 4.94 (IQR=3.9-7.45). Baseline NCCN risk categories included were very low (n=23), low (n=38), and intermediate risk (n=18). A total of 24 patients (30%) were upgraded on subsequent biopsies. Based on GPS score, patients were categorized in very low (n=41), low (n=23), and intermediate (n=15) categories. Out of 64 patients with GPS category very low and low risk, 16 patients (25%) progressed, and 8 patients (53%) progressed out of 15 patients with GPS intermediate risk category. Forty patients (51%) had negative or equivocal MRI findings, and 39 patients (49%) had PIRADS score 4 or 5. Among the 40 patients with MRI negative/equivocal patients, 10 patients (25%) progressed, and out of 39 patients with PIRADS 4-5, 14 patients (36%) progressed. A significantly higher proportion of patients in GPS intermediate risk (53%) progressed compared to patients with PIRADS 4-5 (36%) (p=0.047).

Conclusion: In our AS cohort, GPS risk category was better in stratifying the patients who progressed compared to MRI findings. Integrating GPS score with mpMRI findings to optimally standardize AS protocols will need further larger studies.

<table>
<thead>
<tr>
<th>Disease progression</th>
<th>GPS risk category</th>
<th>PIRADS score</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Very low &amp; Low</td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>4-5</td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>48</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>40</td>
</tr>
</tbody>
</table>
COMPARISON OF END-FIRE VS. SIDE-FIRE ULTRASOUND PROBES FOR MRI/TRUS FUSION-GUIDED PROSTATE BIOPSY

Amit L. Jain, MD¹; Abhinav Sidana, MD¹; Zachary Stanik¹; Mahir Maruf, MD¹; Brian Calio, BA¹; Dordaneh Sugano, BS¹; Collier Wright, MD¹; Patrick Gommella, MD¹; Kai Hammerich, MD¹; Mark Ball, MD¹; Vladimir Valera, MD¹; Pingkun Yan²; Sherif Mehralivand, MD²; Baris Turkbey, MD²; Peter L. Choyke, MD²; Bradford J. Wood, MD² and Peter A. Pinto, MD¹

¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland

(introduced by: Amit Lodha Dharm Chand Jain, MD)

Introduction: Magnetic resonance imaging (MRI)/transrectal ultrasound (TRUS) fusion-guided prostate biopsy (FBx), made possible by advances in multiparametric MRI, has rapidly proliferated in prostate cancer evaluation and detection. FBx success may be dependent on multiple factors, including skills learned with user experience and the type of ultrasound (US) probe used. Our objective of this study was to compare the accuracy of the MRI/TRUS FBx technique utilizing an end-fire versus a side-fire US probe on an FBx platform.

Methods: The participants of the study consisted of three different experience levels (expert (>1000 FBx), Urology fellows with none to minimal FBx experience, Urology residents with no FBx experience). Each participant performed three trials of the FBx using rigid registration with the UroNav System in separate phantom models of the prostate. Each trial involved targeting the same set of fiducials through FBx platform and then using US only; first using an end-fire US probe, and then using a side-fire US probe. Fusion registration error (FRE) was defined as the distance between MR target and transformed core location from the US only biopsy. Time to completion of each task was also recorded.

Results: Six users with 3 different experience levels performed the FBx. Mean FRE with the end fire probe for the residents, fellows, expert was 7.42(±0.11), 5.10(±0.73) & 3.75(±0.75) respectively. Mean FRE with the side fire probe for the residents, fellows, expert was 6.08(±0.09), 4.76(±0.68) & 3.46(±0.08) respectively. There was no significant difference between the FRE averages for end-fire vs. side-fire. There was an inverse relationship of mean FRE with user experience level (corr. coefficient (r) =-0.79, p=0.011 for end-fire; r=-0.84, p=0.004 for side-fire). Time taken to complete trials was not statistically different between users of different experiences.

Conclusion: We report the results of a pilot study comparing the efficacy of side fire and end fire US probes in MRI/TRUS FBx. Our preliminary results suggest the type of US probe used does not significantly affect FRE and FBx performance. As expected, FRE decreases with increased user experience. A larger study with a greater number of participants will be needed to compare these probes with adequately powered analysis and will dictate the practice in clinical settings as minimization of FRE will improve diagnostic accuracy of this technique in detecting clinically significant cancer.
Poster #219
TUMOR DRAINING LYMPH NODES IN PROSTATE CANCER HARBOR IMMUNE SUPPRESSOR CELLS THAT MAY IMPAIR TUMOR-REACTIVE T CELLS
Vidit Sharma, MD; Haidong Dong, MD, PhD; Eugene K. Kwon, MD and R. Jeffrey Karnes, MD
Mayo Clinic, Rochester, MN
(Presented By: Vidit Sharma, MD)

Introduction: Prostate Cancer (PCa) persistence in Tumor Draining Lymph Nodes (TDLNs) in the pelvis after radical prostatectomy (RP) may eventually lead to distant metastases. This remains one of the hypothesized benefits of salvage Pelvic Lymph Node Dissections (sPLNDs), a procedure increasingly being investigated for nodal recurrent PCa. However, the role regional TDLNs play in local immunity to prostate cancer (PCa) remains unknown.

Methods: Here we prospectively enrolled 10 hormone therapy naive men undergoing salvage Pelvic Lymph Node Dissection (sPLND). Median PSA at sPLND was 3.1ng/mL (range 1.0-5.6ng/mL), median nodes removed 23 (range 7-32 nodes), and median nodes positive 3 (range 1-15 nodes). Lymph nodes analyzed consisted of the largest positive nodes involved for each patient. We analyzed their peripheral blood (PB) and TDLNs for tumor reactive CD8 T cells and myeloid derived suppressor cells (MDSC) using flow cytometry. MDSCs were stratified into CD14+monocytic and CD14-granulocytic. PD-L1/2 expression was also analyzed on MDSCs.

Results: Relative to PB, Tumor-reactive CD8 T-cells accumulated in TDLNs (p<0.01) yet had decreased proliferation with low Ki67 (p<0.05). Both CD14+monocytic and CD14-granulocytic MDSCs were found in TDLNs, but there was evidence for an increase in the proportion of CD8 T cells in TDLNs compared to PB (p<0.01). These granulocytic MDSCs exhibited an increase in immunosuppressive activity (supported by high pSTAT3 levels) and also expressed high levels of B7-H1 (PD-L1) and B7-DC (PD-L2). Thus, granulocytic MDSCs likely suppress tumor-reactive CD8 T-cells in TDLNs and exhibit a high expression of immune checkpoint molecules in PCa nodal metastases.

Conclusion: Taken together, our data demonstrates that tumor-reactive CD8 T-cells accumulate in TDLNs but had reduced proliferation relative to the blood. Simultaneously, TDLNs had a higher proportion of granulocytic MDSCs, which exhibited a higher degree of immunosuppressive activity and also express high levels of B7-H1 (PD-L1) and B7-DC (PD-L2). The expression of these immune checkpoint signals by granulocytic MDSC corresponds with our prior finding of increased expression of complementary receptors (ie. PD-1) on tumor-reactive CD8 T-cells. Thus, our data forms a hypothesis that PCa cells in TDLNs may harness immunosuppressive granulocytic-MDSCs to bypass anti-tumor immunity. We are currently working on large scale more mechanistic studies to see of this theory holds true.
IDENTIFICATION OF THRESHOLD PSA AND PSA DENSITY TO OPTIMIZE THE DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER BY PIRADSV2 DRIVEN MRI/TRUS FUSION GUIDED BIOPSY

Sherif Mehralivand, MD¹; Sandra Bednarova, MD²; Kai Hammerich, MD³; Francesca Mertan, BSME³; Sonia Gaur, BS³; Maria Merino, MD³; Bradford Wood, MD³; Peter Choyke, MD³; Peter Pinto, MD³ and Baris Turkbey, MD³

¹Mainz, Germany; ²Udine, Italy; ³Bethesda, MD

(Presented By: Sherif Mehralivand, MD)

Introduction: Magnetic Resonance Imaging/transrectal ultrasound fusion guided biopsy (FBx) of the prostate improves detection of clinically significant prostate cancer (CS PCa) compared to standard 12-core standard systematic biopsy (SBx). However, availability and expertise of FBx is still limited. In this study, we evaluated the performance of FBx vs. SBx with different PSA and PSA density (PSAD) thresholds to determine which patients would benefit from FBx.

Objectives: To determine optimum PSA and PSAD thresholds at which patients would benefit from FBx over SBx.

Methods: 963 patients underwent prostate multiparametric MRI (mpMRI) (including T2W, DWI, ADC, DCE) between May 2015-May 2016. 307/963 patients underwent FBx and SBx in the same session and this constituted the final study population. Mean and median age were both 64 years; mean and median PSA were 7.9ng/ml and 6.31ng/ml respectively. For each patient, the highest Gleason scores detected by FBx and SBx were determined. Patients who were upgraded to CS PCa (≥Gleason score of 3+4) by FBx over SBx were identified. After stratifying the patient population by different PSA and PSAD ranges, a threshold of both parameters was estimated to determine if the upgrading rate of FBx to CS PCa was higher than SBx. The exact thresholds were calculated by generating cumulative curve models for upgrading to CS PCa (figure 1).

Results: 143 of 307 patients were diagnosed with CS PCa. 47 patients were upgraded by FBx, 26 were upgraded by SBx, and for 70 patients both modalities performed equally. No CS PCa was detected for the remaining 164 patients. A threshold of 5.5ng/ml for PSA and 0.11 for PSAD was determined. Beyond these threshold values FBx outperforms SBx.

Conclusion: Patients with a PSA ≥ 5.5ng/ml or a PSAD ≥ 0.11 should be offered multiparametric MRI and subsequent FBx if suspicious lesions are detected at multiparametric MRI.

Funding: Dr. Sherif Mehralivand's postdoctoral fellowship is funded by a research grant from the “Dr. Mildred Scheel” foundation (Bonn, Germany).
RESULTS: OF SERIAL TESTING OF A 17-GENE GENOMIC PROSTATE SCORE IN PROSTATE CANCER PATIENTS ON ACTIVE SURVEILLANCE

Samuel Washington, MD¹; Michael Leapman, MD²; Cowan Janet, MS¹; Jeffrey Lawrence, MD³; Phillip Febbo, MD³; June Chan, ScD¹; Matthew Cooperberg, MD, MPH¹ and Peter Carroll, MD, MPH¹

¹University of California, San Francisco, San Francisco, CA; ²Yale University, New Haven, CT; ³Genomic Health, Inc, Redwood City, CA

(Presented By: Samuel L. Washington, III, MD)

Introduction: Molecular assays may improve risk stratification in men with prostate cancer. It is unclear how serial testing performs in men on active surveillance (AS), or whether changes in genomic profiling scores predict disease progression. Using pathologic specimens from 111 patients, we analyzed serial results for the Genomic Prostate Score (GPS), a biopsy based 17-gene expression RT-PCR assay, which is an independent predictor of the likelihood of favorable pathology (low grade, organ-confined disease) at surgery.

Methods: GPS testing (scale 0-100) was performed on diagnostic (dBX) and first surveillance biopsies (sBX) from 111 men with prostate cancer. All analyses were pre-specified in a statistical analysis plan. Summary statistics with 95% confidence interval (CI) were reported. Survival analysis was performed with the outcome of undergoing treatment defined as radical prostatectomy, radiation therapy or androgen deprivation therapy, with reporting of hazard ratios (HR) and 95% CI.

Results: Valid GPS results were obtained from biopsy specimens (77 GS 3+3, 30 3+4 and 4 4+3 on dBX). More than half (68%) of patients had at least 18 months between biopsies. The mean GPS was 24.4 at dBX and 27.4 at sBX resulting in a mean change of 3 (95% CI: 0.9-5.2). On multivariate analysis adjusted for age, GPS score at second biopsy was associated with increased risk of undergoing active treatment (HR 1.1, 95% CI 1-1.1, p<0.01), though GPS change from baseline was not significantly associated with treatment.

Conclusion: Among patients on AS, genomic profile scores, as assessed with a 17-gene RT-PCR assay, appeared to be largely stable on serial biopsies with minimal change between the first and second biopsy. The last GPS appeared to predict a transition from AS to active treatment. Larger changes were observed in a proportion of patients, seen in both men with clinical reclassification and otherwise clinically stable disease. Further investigation is warranted to determine whether changes in genomic profiles may better precede the occurrence of disease progression and serve as an improved endpoint during surveillance.

Funding: U.S. Department of Defense Prostate Cancer Research Program
Poster #222  
**DOES PI-RADS V2 SCORES PREDICT ADVERSE SURGICAL PATHOLOGY AT RADICAL PROSTATECTOMY?**  
Hao Nguyen, MD, PhD; Antonio Westphalen, MD; Niloufar Ameli, MS; Michael Leapman, MD; Janet Cowan, MS; Jeff Simko, MD; Katsuto Shinohara, MD and Peter Carroll, MD, MPH  
UCSF Medical Center, San Francisco, CA  
(Presented By: Hao Gia Nguyen, MD PhD)

**Introduction:** In recent years, multi-parametric MRI (mpMRI) has gained increased acceptance and utilization as a diagnostic and staging tool for early-stage prostate cancer. Reporting systems, in particular the Prostate Imaging - Reporting and Data System (PI-RADS), now in its second version, has been advanced as means to standardize the grading and reporting of MRI findings. However, it remains to be determined whether PI-RADS scores independently predict the risk of adverse pathology, i.e. high-grade and/or high-stage disease. The objective was to evaluate the association of surgical pathological findings assessed on whole-mount pathology analysis and pre-operative mpMRI suspicion assessed using PI-RADS v2 scores.

**Methods:** We retrospectively analyzed 121 patients who had radical prostatectomy within 12 months of their staging endorectal 3T mpMRI. We examined the association of the PI-RADS v2 scores with adverse surgical pathology, defined as advanced pathologic stage (≥pT3a) or high-grade disease (primary Gleason pattern ≥ 4) or both, using frequency tables (diagnostic accuracy and chi-square) and logistic regression models.

**Results:** Of 121 patients, 73 (60%) had adverse surgical pathology; 9 men (7%) had high-grade, 64 (29%) had ≥pT3 disease, and 29 (24%) had both high-grade and high-stage disease. 106 (88%) had PI-RADS mpMRI score 4 or 5 findings, of whom, 65% had adverse pathology compared to 15 (12%) patients with PI-RADS ≤3, of whom 27% had adverse pathology. Conversely, 95% (69/73) of patients with adverse pathology had positive MR studies (PI-RADS score 4 or 5). Accordingly, mpMRI PI-RADS 4 or 5 demonstrated 95% sensitivity (95% CI 87-98), 23% specificity (95% CI 12-37), 65% PPV (95% CI 55-74), 73% NPV (95% CI 45-92), and 66% accuracy (95% CI 57-75) for the detection of adverse surgical pathology. In the multivariable logistic regression analysis, adjusted for PSA density and age, PI-RADS score 4 or 5 (odds ratio (OR) 4.1, 95% CI 1.2-14.2, p=0.027) and clinical CAPRA score (OR 1.4, 95% CI 1.0-1.9, p=0.026) were significantly and independently associated with higher risk of adverse pathology. This study is limited by its retrospective nature.

**Conclusion:** PI-RADS v2 score 4 or 5 on mpMRI is highly sensitive for the detection and prediction of adverse pathology. PI-RADS v2 may help improve the detection and staging of prostate cancer and allow for tailored intervention.
Poster #223
ACCURACY OF MULTI-PARAMETRIC MAGNETIC RESONANCE IMAGING FOR DETECTION OF PROSTATE CANCER EXTRACAPSULAR EXTENSION AND RELATION TO ITS HISTOLOGIC EXTENT
Melanie Adamsky, MD; Scott Johnson, MD; Vignesh Packiam, MD; Alexander Gallan, MD; Tatjana Antic, MD; Arieh Shalhav, MD and Aytekin Oto, MD
The University of Chicago Medicine, Chicago, IL
(Presented By: Melanie Adamsky, MD)

Introduction: Clinical assessment of extracapsular extension (ECE) in prostate cancer may have a significant impact on treatment decision and/or surgical planning. Multi-parametric magnetic resonance imaging (MP-MRI) has emerged as a potential tool to predict the presence of ECE with variable results. Our objective was to define the accuracy of MP-MRI for detection of ECE in relation to its radial and circumferential extent.

Methods: We prospectively enrolled 70 patients to undergo prostate MP-MRI prior to radical prostatectomy. All MRIs were performed with a 3T scanner using an endorectal coil and T2, diffusion weighted imaging (DWI), and dynamic contrast enhanced (DCE) sequences were used. An expert genitourinary radiologist reviewed each MP-MRI and assigned a score of diagnostic certainty between 1-3 (1-absent, 2-suspicious, 3-definite) regarding the presence of ECE on each sequence (T2, DWI, and DCE, in that order). Prostatectomy whole-mount specimens were reviewed by a genitourinary pathologist and the radial and circumferential extent of ECE was measured. The accuracy of each MRI sequence was determined, as well as its association between circumferential and radial extent of ECE.

Results: 70 enrolled patients underwent MP-MRI of the prostate followed by radical prostatectomy. Mean preoperative PSA was 8.4 ng/dL and 50 patients (71%) had Gleason 7 or higher on final pathology. Sensitivity and specificity of MP-MRI for suspicious or definite ECE was 92.9% and 63.4%, respectively. Sensitivity and specificity of definite ECE was 78.6% and 68.3%. Area under the curve for T2, DWI, and ECE sequences was 0.79, 0.76, 0.78, respectively. Radial extent of ECE was not associated with its detection on any sequences. Circumferential extent of ECE was positively associated with suspicious or definite detection on DCE imaging (p=0.04)

Conclusion: Preoperative 3T MP-MRI of the prostate with endorectal coil interpreted by a 3-point scale is highly sensitive for predicting ECE. The radial extent of ECE is not associated with its detection on MP-MRI, however the circumferential extent is associated with its detection on DCE sequences.
Poster #224
URINARY AND SEXUAL FUNCTION IN PATIENTS AFTER OPEN VS. ROBOT-ASSISTED RADICAL PROSTATECTOMY FOR PROSTATE CANCER IN THE COMMUNITY: RESULTS: FROM THE CAPSURE REGISTRY
Annika Herlemann, MD¹; Janet Cowan, MA²; Peter Carroll, MD, MPH² and Matthew Cooperberg, MD, MPH²
¹LMU Munich; ²University of California, San Francisco, Helen Diller Family Comprehensive Cancer Center, San Francisco, CA, USA
(Presented By: Annika Herlemann, MD)

Introduction: To assess change in patient-reported urinary (UF) and sexual function (SF) over time in patients undergoing open radical prostatectomy (ORP) vs. robot-assisted radical prostatectomy (RARP) in a large, prospective, community-based registry.

Methods: Within the CaPSURE registry, we identified patients undergoing either ORP or RARP between 2004 and 2016 for localized PCa. UF and SF outcomes were measured using the UCLA Prostate Cancer Index. Baseline demographic and clinicopathological data were compared between the two surgical groups using the chi-square test for categorical variables, and Student’s t-test for continuous variables. Repeated measures mixed-model analysis was used to assess changes in UF and SF over time between RARP and ORP. Scores were adjusted for age and year at diagnosis, number of comorbidities, Cancer of the Prostate Risk Assessment (CAPRA) score, prostate volume, body mass index (BMI) at diagnosis, nerve-sparing technique, and clinical site.

Results: In total, we included 1,821 men (n=1,098 ORP; n=723 RARP) in our analysis. The RARP cases reflected the first such cases performed at each CaPSURE site. ORP patients were significantly younger (p<0.01), had lower preoperative prostate-specific antigen (PSA) (p<0.01), and fewer lymph nodes dissected (p<0.01). Likelihood of nerve-sparing, pathologic Gleason score, and pT stage were significantly higher in RARP patients (p<0.01). In a subset analysis with 738 men reporting UF and SF outcomes before and after surgery, ORP patients reported a significantly higher mean unadjusted SF score at baseline (p<0.01), and a lower mean UF score < 1 year (p=0.04). Repeated measures mixed-model analysis demonstrated a significant change over time, with a general decline in adjusted UF and SF <1 year following RP, with improvement by 2-3 years postoperatively (Figure 1). The pattern of change in UF and SF over time does not differ significantly between the two groups (Figure 1).

Conclusion: Most patients experience a change in UF and SF in the first 3 years following RP. These patterns over time do not differ significantly when comparing ORP and RARP in a community-based cohort, reflecting the initial learning curve with RARP in the cohort.

![Figure 1: Adjusted UF and SF overtime by surgical approach](image)
Poster #225
EFFECT OF PREOPERATIVE MRI ON OUTCOMES OF ROBOTIC-ASSISTED LAPAROSCOPIC RADICAL PROSTATECTOMY
Samuel Washington, MD; Hao Nguyen, MD, PhD; Niloufar Ameli, MS; Katsuto Shinohara, MD; Antonio Westphalen, MD, PhD and Peter Carroll, MD, MPH
University of California, San Francisco, San Francisco, CA
(Presented By: Samuel L. Washington, III, MD)

Introduction: Magnetic resonance imaging (MRI) of the prostate is a non-invasive method of preoperative staging of localized cancer. Preoperative imaging may provide a more precise dissection of the prostate and nerve sparing. We aim to evaluate the impact of preoperative multiparametric MRI (mpMRI) on immediate surgical outcomes in men with localized prostate cancer.

Methods: We identified patients within the Urologic Outcomes Database who underwent radical prostatectomy (RP) by a single surgeon at high volume center. Patients with and without preoperative mpMRI were matched using year of diagnosis, age and clinical CAPRA risk with a 1:3 ratio. Univariate analysis was performed using Chi-square test for categorical variables. Multivariable Cox regression was used for survival analysis. Multivariable model was used to identify independent predictors of positive margins, nerve sparing and biochemical recurrence.

Results: Of 792 patients who met the inclusion criteria, 206 had preoperative mpMRI and 586 without mpMRI. Mean age of the cohort was 62 and median PSA at diagnosis was 6.9. There were no significant differences in pathologic T stage, extracapsular extension and positive margin rates between groups. A higher proportion of those with mpMRI had complete bilateral nerve sparing (74.5% vs 69.1%), although this was not statistically significant (p=0.1). Preoperative mpMRI was not associated with improved surgical outcomes, including surgical margins, blood loss, nodal count or biochemical recurrence. In adjusted models, only higher clinical CAPRA risk was associated with increased risk of adverse pathology and decreased risk of nerve sparing.

Conclusion: Preoperative mpMRI was not associated with better surgical outcomes in our retrospective analysis of a matched cohort. Higher clinical CAPRA score was associated with higher risk of positive margins, blood loss, non-nerve sparing and biochemical recurrence.
Poster #226
EVALUATING MRI FUSION BIOPSY VS SYSTEMATIC ULTRASOUND GUIDED BIOPSY IN PREDICTING HIGH GRADE CANCER AT TIME OF RADICAL PROSTATECTOMY
Hao Nguyen, MD, PhD; Katsuto Shinohara, MD; Janet Cowan, MS; Antonio Westphalen, MD; Jeff Simko, MD; Matthew Cooperberg, MD, MPH and Peter Carroll, MD, MPH
UCSF Medical Center, San Francisco, CA
(Presented By: Hao Gia Nguyen, MD PhD)

Introduction: There is much enthusiasm for multi-parametric MRI (mpMRI)-ultrasound fusion biopsy in those with an elevated PSA, a prior negative biopsy or those on active surveillance. However, the predictive value of MRI – targeted biopsy in predicting final cancer grade has not been well addressed. The uncertainties of both over staging and under staging using MRI fusion targeted biopsy have not been well addressed. We aimed to evaluate the accuracy of cancer risk estimation with MRI fusion biopsy; traditional sextant and anterior (14 cores) ultrasound guided biopsy or the combination, using whole-mount histopathology at time of prostatectomy.

Methods: We retrospectively analyzed 98 patients who had radical prostatectomy in 2014-2016. All patients had undergone systematic ultrasound guided biopsy and mpMRI fusion biopsy. We compared Gleason Score (GS) upgrading or downgrading between MRI fusion and systematic ultrasound guided biopsy to that of the final Gleason score evaluated by whole-mount histopathological analysis. Logistic regression was used to evaluate association to adverse pathological outcome for each biopsy approach.

Results: Of 98 patients, cancer grade found on MRI fusion biopsy matched final pathology in 41% of the cases while it was overestimated in 20% of patients and underestimated in 39%. Cancer grade found on traditional systematic biopsy matched final pathology in 47% of patients while it overestimated grade in 36% and underestimated grade in 17% of patients with GS ≥ 7. The highest Gleason score from combined MRI fusion and systematic biopsy only underestimated 10% of patients but overestimated grade in 39% of patients who had GS ≥ 7 on their final pathology. In the logistic regression model, having a GS ≥ 3+4 detected on MRI fusion biopsy was associated with higher odds (OR: 3.5 95% CI 1.3-9.3, p <0.01) of higher stage cancer (≥pT3a) at RP. The association persisted when the model was adjusted for clinical CAPRA score. This study was limited by its retrospective nature.

Conclusion: Risk of over - staging using MRI fusion biopsy is low compared to systematic biopsy. However, MRI fusion biopsy alone could significantly underestimate those with clinically significant. Using MRI fusion biopsy alone to detect high grade cancer may not be adequate in this contemporary cohort. This data may have important implications for guiding treatment decisions.
Poster Session II – Full Abstracts

Poster #227
ASSOCIATION OF PRIMARY ANDROGEN DEPRIVATION THERAPY WITH DEPRESSION IN PATIENTS WITH LOCALIZED PROSTATE CANCER: RESULTS: FROM THE CAPSURE REGISTRY
Annika Herlemann, MD¹; Janet Cowan, MA²; Renu Eapen, MD²; June Chan, ScD²; Matthew Cooperberg, MD, MPH² and Peter Carroll, MD, MPH²
¹LMU Munich; ²University of California, San Francisco, Helen Diller Family Comprehensive Cancer Center, San Francisco, CA, USA
(Presented By: Annika Herlemann, MD)

Introduction: Multiple studies have evaluated the impact of androgen deprivation therapy (ADT) on mental health in patients with prostate cancer (PCa), with conflicting results. Our aim was to assess the impact of primary ADT (PADT) on depression in patients with localized PCa compared to other treatment options in a large, prospective, community-based registry.

Methods: Patients enrolled in the CaPSURE registry were treated with radical prostatectomy (RP), external beam radiation therapy (EBRT) and/or brachytherapy (BT) with no ADT (radiation (RT) monotherapy); EBRT and/or BT with ADT (RT+ADT), or PADT. Onset of depression was defined by patient-reported and provider-reported questionnaires at diagnosis and follow-up including the use of antidepressants. Kaplan-Meier curves and the log-rank test were used to compute and compare depression-free survival rates overall and within each CAPRA risk score stratified by primary treatment. Cox proportional hazards regression was used to determine factors associated with risk of depression.

Results: Overall, we included 8,861 patients (n=5,024 RP; n=1,411 RT monotherapy; n=797 RT+ADT; n=1,629 PADT) in our analysis. Patients treated with PADT were older compared to patients undergoing different primary treatments (73 years vs. 61, 68, and 70 years for RP, RT monotherapy, and RT+ADT, p<0.01). Post-treatment depression-free survival rate at 5 years for patients with any CAPRA risk score was highest for patients with PADT (95%) compared to patients undergoing RP (89%), RT monotherapy (90%), and RT+ADT (93%). Cox proportional hazards regression demonstrated that RT monotherapy (HR 1.63 (95%CI 1.16-2.28)) and RT+ADT (1.65 (1.12-2.42)) were associated with a higher risk of post-treatment depression compared to men treated with PADT. Older age at diagnosis (HR 0.96 (0.95-0.97)) and Veteran’s clinical site (1.70 (1.07-2.70)) were associated with a lower risk of depression. Primary treatment was not associated with risk of depression in risk-stratified models.

Conclusion: PADT was not associated with a higher risk or time to onset of depression after primary treatment regardless of clinical risk at diagnosis. Instead, RT was associated with a higher risk in our cohort.
Conclusion: associated with a lower risk of depression. Primary treatment was not associated with risk of depression in risk clinical risk at diagnosis. Instead, RT was associated with a higher risk in our cohort.

Methods: Cox proportional hazards regression demonstrated that RT monotherapy (HR 1.63 patients with any CAPRA risk score was highest for patients with PADT (95%) compared to patients undergoing RP (89%), RT 68, and 70 years for RP, RT monotherapy, and RT+ADT, p<0.01). Post - analysis. Patients treated with PADT were older compared to patients undergoing different primary treatments (73 years vs. 61 years). Multivariate analysis confirmed a higher risk of depression for patients treated with PADT compared to patients treated with any other primary treatment. Finally, the analysis showed that younger patients (< 68 years) treated with PADT had a higher risk of depression compared to patients treated with any other primary treatment, especially if they had a high risk of disease.

Introduction: Prostate-specific membrane antigen (PSMA) overexpression in prostate cancer (PCa) makes it an excellent ligand in molecular imaging for the detection of recurrent and/or metastatic disease. Gallium 68 (68Ga)–PSMA, may increase accuracy of staging prior to or after definitive treatment in patients with high-risk disease. The objective was to describe the detection of nodal and distant metastasis in patients with high-risk PCa prior to definitive treatment and in the setting of biochemical recurrence using 68Ga-PSMA positron emission tomography (PET) or CT.

Results: 68Ga-PSMA PET imaging detected nodal metastasis in 40% (n=12/30) and bone metastasis in 7% (n=2/30) of patients with high-risk PCa prior to primary treatment. 42% (n=5/12) of the cases with nodal metastasis had positive nodes located outside the primary landing zone (perirectal, pre-sacral and anterior prostate). Among the 15 patients who elected surgery for their primary treatment, pN staging (nodal staging) and pT staging (tumor staging) were concordant with 68Ga-PSMA PET imaging in 80% (n=12/15) and 44% (n=6/15) of the patients, respectively. Among 61 patients with biochemical recurrence, 68Ga-PSMA PET detected recurrence in 77% (n=47/61; n=13 local, 16 regional, 18 distant) of the cohort. In patients with loco-regional recurrence, 50% of patients had nodal disease outside the primary landing zone (n=14/29). The median PSA at the time of scan for patient without recurrence was 0.7, while the median PSA for visible recurrence on PSMA PET was 1.8. Conclusion: Our initial experience with 68Ga-PSMA PET imaging suggests it has a high specificity for the detection of nodal metastasis in high-risk patients and after biochemical recurrence. It may improve staging by detecting recurrence outside the primary landing zone, especially in the setting of low PSA. Integration of 68Ga-PSMA PET imaging into risk assessment may improve surgical and radiotherapy treatment planning.

Poster #228
MOLECULAR IMAGING USING 68GA-PSMA PET MAY INCREASE DETECTION OF REGIONAL AND DISTANT METASTASIS IN CLINICALLY HIGH RISK PROSTATE CANCER PATIENTS AND IN PATIENTS WITH BIOCHEMICAL RECURRENCE.

Hao Nguyen, MD, PhD; Thomas Hope, MD; Matthew Cooperberg, MD, MPH; Kirsten Greene, MD, MPH; Janet Cowan, MS; Huiqing Wang, MD; Katsuto Shinhara, MD; Antonio Westphalen, MD; Jeff Simko, MD and Peter Carroll, MD, MPH
UCSF Medical Center, San Francisco, CA
(Presented By: Hao Gia Nguyen, MD PhD)

Introduction: Prostate-specific membrane antigen (PSMA) overexpression in prostate cancer (PCa) makes it an excellent ligand in molecular imaging for the detection of recurrent and/or metastatic disease. Gallium 68 (68Ga)–PSMA, may increase accuracy of staging prior to or after definitive treatment in patients with high-risk disease. The objective was to describe the detection of nodal and distant metastasis in patients with high-risk PCa prior to definitive treatment and in the setting of biochemical recurrence using 68Ga-PSMA positron emission tomography (PET)/ MRI or CT.

Methods: 91 patients underwent 68Ga-PSMA PET imaging in 2015 and 2016. 30 men had high-risk PCa, defined as CAPRA-S ≥5, GS ≥8, PSA ≥20, or cT3a) and 61 patients had biochemical recurrence after prostatectomy or radiation therapy with PSA doubling time ≤12 months. Rates of detection of local, regional or distant disease were calculated. A comparison between results of 68Ga-PSMA PET imaging and surgical pathology was done in 15 patients who had surgery.

Results: 68Ga-PSMA PET imaging detected nodal metastasis in 40% (n=12/30) and bone metastasis in 7% (n=2/30) of patients with high-risk PCa prior to primary treatment. 42% (n=5/12) of the cases with nodal metastasis had positive nodes located outside the primary landing zone (perirectal, pre-sacral and anterior prostate). Among the 15 patients who elected surgery for their primary treatment, pN staging (nodal staging) and pT staging (tumor staging) were concordant with 68Ga-PSMA PET imaging in 80% (n=12/15) and 44% (n=6/15) of the patients, respectively. Among 61 patients with biochemical recurrence, 68Ga-PSMA PET detected recurrence in 77% (n=47/61; n=13 local, 16 regional, 18 distant) of the cohort. In patients with loco-regional recurrence, 50% of patients had nodal disease outside the primary landing zone (n=14/29). The median PSA at the time of scan for patient without recurrence was 0.7, while the median PSA for visible recurrence on PSMA PET was 1.8. Conclusion: Our initial experience with 68Ga-PSMA PET imaging suggests it has a high specificity for the detection of nodal metastasis in high-risk patients and after biochemical recurrence. It may improve staging by detecting recurrence outside the primary landing zone, especially in the setting of low PSA. Integration of 68Ga-PSMA PET imaging into risk assessment may improve surgical and radiotherapy treatment planning.
Poster #229
ACCURACY OF MAGNETIC RESONANCE IMAGING (MRI) IN DIAGNOSING PROSTATE CANCER: COMPARING THE 5-POINT LIKERT SCORING SYSTEM VIS-À-VIS MRI-ULTRASOUND FUSION TARGETED BIOPSY
Toshitaka Shin, MD, MS; Thomas Smyth, MD; Owings Mills, MD; Osamu Ukimura, MD; Jie Cai, MS; Nariman Ahmadi, MD; Sameer Chopra, MD, MS; Andre Luis de Castro Abreu, MD; Hiromitsu Mimata, MD and Inderbir Gill, MD
University of Southern California, Los Angeles, CA
(Presented By: Toshitaka Shin, MD, PhD)

Introduction: The aim of this study was to evaluate the accuracy of magnetic resonance imaging (MRI) scoring as rated by 8 different radiologists for detecting prostate cancer, using MRI-trans-rectal ultrasonography (US) fusion targeted biopsy as reference standard.

Methods: We retrospectively reviewed 762 patients who underwent 3-Tesla multi-parametric (mp)-MRI followed by MRI-US fusion biopsy, all performed by experienced urologists (10/2012-8/2015). We excluded patients in whom MRI did not identify any suspicious lesions and radiologists with experience of reporting < 50 mpMRI cases. Ultimately, 648 patients with 1255 MRI-suspicious lesions rated by 8 radiologists were included in this study. The mp-MRIs were reported on a 5-point Likert scale of suspicion. The UroStation (Koelis, France) was used for the image-fusion targeted biopsy. Clinically significant cancer was defined as biopsy Gleason score ≥7.

Results: Median patient age was 64 years, pre-biopsy prostate-specific antigen (PSA) level was 6.93 ng/ml and estimated prostate volume was 52.1 ml. Of 1255 suspicious lesions on MRI, 83% (n=1036) were rated as grade 1-3 (lower suspicion) and 17% (n=219) as grade 4-5 (higher suspicion). According to the 5-point Likert system of grading from 1 to 5, overall cancer detection rates were 12%, 13%, 22%, 52%, and significant cancer detection rates were 4%, 4%, 12%, 33%, 48%, respectively. Grading on the 5-point Likert scale of suspicion on MRI showed strong positive correlation with overall cancer detection rate (R=0.946, p=0.05) and significant cancer detection rate (R=0.945, p=0.05). On comparing MRI grade 4-5 lesions versus grade 1-3 lesions, the targeted biopsies from grade 4-5 lesions had a higher overall cancer detection rate (55% vs 17%, p<0.001) and significant cancer detection rate (40% vs 7%, p<0.001), respectively. On comparing the 4 “more experienced” radiologists versus the 4 “less experienced” radiologists as regards reading mp-MRI-prostate images, statistical differences were noted in overall cancer detection rate (62% vs 43%, p=0.007) and significant cancer detection rate (45% vs 31%, p=0.038) in the grade 4-5 lesions.

Conclusion: Overall and significant cancer detection rates strongly correlated with 5-point scale of suspicion on MRI. Among the radiologists with differing levels of experience for mp-MRI-prostate, there were significant differences in overall and significant cancer detection rate.
Poster Session II – Full Abstracts

Poster #230
THE IMPACT OF CLINICAL CCP TESTING IN MEN WITH LOCALIZED PROSTATE CANCER FOR EXPANDING THE POPULATION OF MEN ELIGIBLE FOR ACTIVE SURVEILLANCE
Behfar Ehdaie, MD, MPH¹; Steven Stone, PhD²; Ryan Bernhisel, MStat³; James Eastham, MD⁴; Thomas Keane, MD³; John Davis, MD⁵; E. David Crawford, MD³; Michael Brawer, MD⁶; Daniel Lin, MD⁷; and Peter Scardino, MD⁸
¹Memorial Sloan Kettering Cancer Center, New York City, NY; ²Myriad Genetics, Inc., Salt Lake City, UT; ³Memorial Sloan Kettering Cancer Center, New York, NY; ⁴The Medical University of South Carolina, Charleston, SC; ⁵The University of Texas MD Anderson Cancer Center, Austin, TX; ⁶University of Colorado at Denver, Denver, CO; ⁷University of Washington, Seattle, WA
(Presented By: Behfar Ehdaie, MD MPH)

Introduction: Active surveillance (AS) is an established treatment modality for select men with prostate cancer (PC). Eligibility criteria are based on clinicopathologic features including PSA and Gleason grade. Prior studies have validated a combined cell-cycle progression risk (CCR) score, which combines cell-cycle progression (CCP) gene expression data with the Cancer of the Prostate Risk Assessment (CAPRA) score to add significant prognostic discrimination to newly diagnosed PCs. Our objective was to assess the value of the CCR score for identifying men with higher risk clinicopathologic characteristics who qualify for AS.

Methods: Prostate biopsy samples from 17,017 men were submitted by their physicians for CCP testing (Myriad Genetic Laboratories). The CCP score was calculated from RNA expression of 46 genes (31 CCP and 15 housekeeping genes), and combined with CAPRA to generate the CCR score. Clinicopathological data was obtained from physician-completed test request forms. A threshold CCR score of 0.8 was previously developed and validated in a cohort of conservatively managed men (survival data censored at 10 yrs). We evaluated the proportion of men eligible for AS based on their CCR score whose clinicopathologic criteria would traditionally disqualify them from AS (PSA>10ng/mL, Gleason grade group ≥2, higher AUA risk).

Results: Overall, 66.6% of clinically tested men qualified for AS based on their CCR score. A proportion of tested men with higher risk clinicopathologic features qualified for AS based on their CCR score, including AUA intermediate (42.9%) and high (14.1%) risk as well as Gleason grade group 2 (48.8%) and Gleason grade group >2 (1-3%). In addition, 48% of men with Gleason score 6 and PSA >10 ng/mL qualified for AS.

Conclusion: Clinical characteristics and Gleason grade are often used as stand-alone indicators to offer men with localized PC immediate definitive treatment rather than AS. However, our study demonstrates that a significant proportion of men who qualify for AS based on their CCR score have a range of PSA and Gleason grade prostate cancer that may not traditionally be considered for AS. This supports using CCR score to improve risk stratification in PC and identify men for AS.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Categories</th>
<th>All Tested Men, N</th>
<th>Qualify for AS Based on CCR, N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>17,017</td>
<td>11,339 (66.6%)</td>
</tr>
<tr>
<td>AUA Risk Classification</td>
<td>Low</td>
<td>9135</td>
<td>8446 (92.5%)</td>
</tr>
<tr>
<td></td>
<td>Intermediate</td>
<td>6183</td>
<td>2653 (42.9%)</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>1699</td>
<td>240 (14.1%)</td>
</tr>
<tr>
<td>Gleason Grade Group</td>
<td>1 (Gleason ≤6)</td>
<td>10,211</td>
<td>9,103 (89.1%)</td>
</tr>
<tr>
<td></td>
<td>2 (Gleason 3+4)</td>
<td>4,460</td>
<td>2,177 (48.8%)</td>
</tr>
<tr>
<td></td>
<td>3 (Gleason 4+3)</td>
<td>1,449</td>
<td>42 (2.9%)</td>
</tr>
<tr>
<td></td>
<td>4 (Gleason 8)</td>
<td>585</td>
<td>14 (2.4%)</td>
</tr>
<tr>
<td></td>
<td>5 (Gleason ≥9)</td>
<td>312</td>
<td>3 (1.0%)</td>
</tr>
<tr>
<td>PSA (ng/mL) in</td>
<td>≤ 10</td>
<td>9,458</td>
<td>8,732 (92.3%)</td>
</tr>
<tr>
<td>Gleason Score 6</td>
<td>&gt; 10</td>
<td>729</td>
<td>350 (48.0%)</td>
</tr>
</tbody>
</table>
Poster #231
THE MAJORITY OF UPGRADING FROM STANDARD TRUS BIOPSY TO RADICAL PROSTATECTOMY PATHOLOGY IS DISCOVERED ON MRI/US FUSION GUIDED TARGETED BIOPSY
James L. Ellenburg, MD¹; Jennifer B. Gordetsky, MD²; John V. Thomas, MD³; Jeffrey W. Nix, MD¹ and Soroush Rais-Bahrami, MD¹
¹University of Alabama at Birmingham, Department of Urology, Birmingham, AL; ²University of Alabama at Birmingham, Department of Pathology, Birmingham, AL; ³University of Alabama at Birmingham, Department of Radiology, Birmingham, AL
(Presented By: James Luke Ellenburg, MD)

Introduction: Prostate grade groups (GG) on prostate biopsy play an important role in treatment planning for patients with prostate cancer (PCa). GG from standard 12-core biopsies are upgraded on the prostatectomy specimen historically in 21-54% of cases. Targeted magnetic resonance imaging/ultrasound (MRI/US) fusion guided biopsy of the prostate has been shown to result in upgrading of GG compared to traditional 12-core prostate biopsy. The objective of this study is to determine the rates of GG upgrading from standard biopsy to targeted biopsy to radical prostatectomy (RP) pathology in order to demonstrate the value of targeted MRI/US biopsy in the evaluation of patients with PCa.

Methods: 28 patients from January 2014 to May 2016 were identified who had undergone standard prostate biopsy, MRI/US fusion targeted biopsy, and RP at a single institution. The highest GG from each type of specimen was compared retrospectively. Upgrading was defined as an increase in GG from negative, 1, or 2 to GG 3, 4, or 5. Data analysis for upgrading to GG 4 or 5 alone was also performed to better determine rates of upgrading to high risk Gleason scores. Chi-square analysis was used to compare rates of upgrading from standard and targeted biopsies to RP GG.

Results: Overall cancer detection was 65.4% (17/26) for standard prostate biopsies and 96.4% (27/28) for targeted biopsies (p < 0.01). All RP specimens were found to have PCa. 38.5% (10/26) of standard biopsies were upgraded to GG 3, 4, or 5 on the targeted biopsy. 50% (13/26) of standard biopsies were upgraded to GG 3, 4, or 5 in the RP specimen, while 17.9% (5/28) of targeted biopsies were upgraded to GG 3, 4, or 5 in the RP specimen (p<0.05). 19.2%(5/26) of standard biopsies were upgraded to GG 4 or 5 on in the RP specimen, while 7.1% (2/28) of targeted biopsies were upgraded to GG 4 or 5 in the RP specimen (p=0.36).

Conclusion: MRI/US fusion targeted biopsy has a significantly higher overall rate of cancer detection than standard biopsy. The rate of upgrading from biopsy to RP is significantly lower with targeted biopsies than with standard biopsies. We conclude that targeted biopsies are significantly more representative of final RP pathology than are standard biopsies.
MULTIPARAMETRIC MRI/ULTRASOUND FUSION BIOPSY IMPROVES BUT DOES NOT REPLACE STANDARD TEMPLATE BIOPSY FOR THE DETECTION OF PROSTATE CANCER

Keyan Salari, MD, PhD¹; Nawar Hanna, MD¹; Matthew Wszolek, MD¹; Francisco Gelpi-Hammerschmidt, MD¹; Mukesh Harisinghani, MD²; Douglas Dahl, MD¹; Michael Blute, MD¹ and Adam Feldman, MD, MPH¹
¹Massachusetts General Hospital, Department of Urology, Boston, MA; ²Massachusetts General Hospital, Department of Radiology, Boston, MA

(Presented By: Keyan Salari)

Introduction: There exists a growing debate as to whether multiparametric MRI (mp-MRI) targeted biopsy alone without standard template is sufficient for evaluation of patients. We investigate and describe our experience with fusion biopsy.

Methods: We retrospectively reviewed medical charts of patients undergoing fusion transrectal US-guided biopsy from July 2014 through February 2016. Patients eligible for fusion biopsy had identifiable lesions on mp-MRI compatible to the fusion biopsy system. Each lesion was graded according to the Prostate Imaging Reporting and Data System version 2 (PIRADSv2) by a radiologist. The fusion biopsy procedure included a minimum of 2 core biopsies for each target lesion and a standard 12 core template biopsy. Clinically significant disease was defined as Gleason Score 7 or higher adenocarcinoma of the prostate.

Results: A total of 255 patients with a mp-MRI-identified lesion underwent fusion and standard template biopsy. Clinical indications included elevated PSA without a prior biopsy (11.4%), rising PSA with a prior negative biopsy (52.4%), active surveillance for prostate cancer (33.3%) and isolated abnormal digital rectal exam (2.7%). Pathologic results from the fusion-targeted biopsy were compared to those from the concomitantly performed standard template biopsies (Table 1). Of patients with PIRADSv2 4 or 5 lesions (n=145), 40.0% had no cancer, 25.5% had Gleason 6, 25.5% had Gleason 7, and 9.0%, had Gleason 8-10 on final histopathology. Fusion Biopsy of PIRADSv2 3 lesions (n=66) revealed no cancer in 65.2%, Gleason 6 in 15.2%, Gleason 7 in 19.7% and Gleason 8-10, in 0% of patients. Of 83 patients with clinically significant cancer, 26 (31.3%) would have been missed on standard biopsy and 12 (14.5%) would have been missed using fusion biopsy alone. Concordance between both biopsy modalities was 63.1%.

Conclusion: mp-MRI targeted fusion biopsy improves the detection of clinically significant prostate cancer in select patients. However, our results demonstrate that a significant proportion of these cancers will not be detected by a targeted biopsy alone. Therefore, standard template biopsies should remain an integral component of any fusion biopsy program.

<table>
<thead>
<tr>
<th>Fusion Biopsy</th>
<th>No Cancer</th>
<th>Gleason 6</th>
<th>Gleason 3+4</th>
<th>Gleason 4+3</th>
<th>Gleason 8+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Cancer</td>
<td>99</td>
<td>17</td>
<td>0</td>
<td>3</td>
<td>2</td>
<td>127</td>
</tr>
<tr>
<td>Gleason 6</td>
<td>23</td>
<td>31</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>71</td>
</tr>
<tr>
<td>Gleason 3+4</td>
<td>2</td>
<td>4</td>
<td>15</td>
<td>2</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Gleason 4+3</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>3</td>
<td>17</td>
</tr>
<tr>
<td>Gleason 8+</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>131</td>
<td>53</td>
<td>36</td>
<td>20</td>
<td>15</td>
<td>255</td>
</tr>
</tbody>
</table>

Table 1. Fusion biopsy results are listed in the first row across and random biopsy results are listed in the first column.
Poster #233
CONTEMPORARY PROSTATE CANCER RADIATION THERAPY IN THE UNITED STATES: COMPLIANCE WITH QUALITY MEASURES
Daniel Lee; JoAnn Alvarez, MA; Tatsuki Koyoma, PhD; Matthew J. Resnick, MD, MPH, MMHC; David F. Penson, MD, MPH, MMHC; Daniel A. Barocas, MD, MPH; Karen E. Hoffman, MD, MPH, MHSc and CEASAR Investigators
Vanderbilt University Medical Center, Nashville TN
(Presented By: Daniel J. Lee, MD)

Introduction: Quality measures represent standards of appropriate treatment agreed upon by experts in the field and often supported by data. The extent to which providers in the community adhere to quality measures in radiation therapy (RT) for localized prostate cancer is unknown. We addressed this question in a prospective, population-based cohort.

Methods: The Comparative Effectiveness Analysis of Radiation Therapy and Surgery (CEASAR) study is a population-based, prospective cohort study that enrolled 3708 men with clinically localized prostate cancer during 2011 and 2012. Compliance with 7 quality measures endorsed by national consortia as of 2011 was assessed. Patients were risk-stratified according to D’Amico classification criteria, and were evaluated according to categories of radiation treatment: external beam radiation therapy (EBRT) and low and high dose rate brachytherapy (BT).

Results: Overall, 877 men underwent radiation therapy and had adequate documentation of radiation dosing and technique. The median age was 68 (IQR 62-73), and the median PSA at time of diagnosis was 6ng/dL (IQR 4.6-8.6). Almost 70% of the patients had intermediate (43.9%) or high risk (23.8%) PCa. Overall, 569 (64.9%) underwent EBRT, 139 (15.9%) underwent BT, and 117 (13.3%) underwent EBRT and BT. Regarding compliance to quality metrics for low-risk PCa patients, 92% did not receive androgen deprivation therapy, 97.4% did not undergo radiation of the pelvic lymph nodes. Sixty-one percent of the low-risk patients underwent a dose of 75.6-79 Gy, and 84.4% had image-guided radiation therapy (IGRT). Post-implant dosimetry of the rectum and prostate was performed in 29% and 51% of low-risk patients undergoing BT, respectively. Among men with high-risk PCa, 68% of the patients did receive androgen-deprivation therapy; 88.4% had IGRT, 31.8% had radiation to the pelvic lymph nodes, and 61% received a dose of 78 Gy or more.

Conclusion: Compliance to quality measures was variable in this population-based cohort. These findings indicate a strong need to further outline compliance with quality standards and their association with patient outcomes.
GERMLINE MUTATIONS IN THE KALLIKREIN 6 REGION AND PREDISPOSITION FOR AGGRESSIVE PROSTATE CANCER

Laurent Briollais¹; Hilmi Ozcelik²; Jingxiong Xu¹; Maciej Kwiatkowski³; Emilie Lalonde⁴,⁵; Dorota H. Sendorek⁶; Neil E. Fleshner⁶; Franz Recker³; Cynthia Kuk⁴,⁷; Ekaterina Olkhov-Mitsel⁸;⁹; Sevtap Savas⁸; Sally Hanna⁷; Tristan Juvet⁸; Geoffrey A. Hunter⁸; Hong Li²; Karen Chadwick⁶; Ioannis Prassas¹⁰; Antoninus Soosaipillai¹¹; John Trachtenberg⁵; Ants Toi³; Yu-Jia Shiah¹²; Michael Fraser¹¹; Theodorus van der Kwast¹²; Robert G. Bristow⁶,¹¹; Bharati Bapat¹,⁸; Eleftherios P. Diamandis¹°; Paul C. Boutros⁴,⁵,¹¹ and Alexandre Zlotta, MD, PhD, FRCSC¹⁴

¹Lunenfeld-Tanenbaum Research Institute, Mount Sinai Hospital & Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada; ²Fred A. Litwin Centre for Cancer Genetics, Lunenfeld-Tanenbaum Research Institute, Toronto, Ontario, Canada & Department of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, ON, Canada; ³Department of Urology, Cantonal Hospital Aarau, Aarau, Switzerland; ⁴Informatics & Biocomputing Program, Ontario Institute for Cancer Research, Toronto, Canada; ⁵Department of Medical Biophysics, University of Toronto, Toronto, Canada; ⁶Department of Surgical Oncology, Urology, Princess Margaret Hospital, University Health Network, Toronto, ON, Canada; ⁷Department of Surgery, Urology, Mount Sinai Hospital, Toronto, ON, Canada; ⁸Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, ON, Canada; ⁹Faculty of Medicine, Memorial University, St. John’s, NL, Canada; ¹⁰Department of Pathology and Laboratory Medicine, Mount Sinai Hospital, Toronto, ON, Canada; ¹¹Ontario Cancer Institute, Princess Margaret Cancer Centre/University Health Network, Toronto, Canada; ¹²Department of Pathology, Toronto General Hospital, University Health Network, Toronto, ON, Canada; ¹³Department of Pathology and Laboratory Medicine, University Health Network, Toronto, ON, Canada; ¹⁴Mount Sinai Hospital, University Health Network, Toronto, Ontario

(Presented By: Alexandre Zlotta, MD)

Introduction: Prostate Cancer (PCa) is a highly heterogeneous disease, ranging from indolent tumors to rapidly progressing life-threatening metastatic disease. There is a need for markers that can specifically identify individuals at increased risk of harboring aggressive forms of PCa.

Methods: We surveyed the Kallikrein (KLK) region (KLK1-15) for single nucleotide polymorphisms (SNPs) associated with aggressive PCa (defined as Gleason Score ≥8) in 1858 PCa patients. Discovery cohorts (Swiss arm of the European Randomized Study of Screening for PCa, n=379, Toronto, Canada, Princess Margaret Cancer Centre, n=540) and a validation cohort (Prostate, Lung, Colorectal, and Ovarian (PLCO) screening trial, n=939) were analyzed. Fine-mapping within the KLK region was carried out by genotyping and imputation in the Swiss and Toronto cohorts whereas PLCO data was provided through DbGaP. The influence of SNPs of interest on biochemical free survival was further evaluated in an intermediate-risk disease patient cohort from the International Cancer Genome Consortium (ICGC; n=130) treated for localized PCa and analyzed with next generation sequencing. Single-, multi-SNP association studies and haplotype analyses were performed. All statistical tests were two sided.

Results: Several SNPs in very strong linkage disequilibrium in the KLK6 region and located within the same haplotype (rs113640578, rs79324425, rs11666929, rs28384475, rs3810287), identified individuals at increased risk of aggressive PCa in both Swiss and Toronto cohorts (OR=3.5-3.6, p=1.1x10⁻⁵-8.4x10⁻⁶). Validation in the PLCO cohort confirmed the association with these five SNPs (p=4.1x10⁻²-5.2x10⁻²) and revealed another important haplotype with 2 SNPs at the same locus (rs28665094, p=6.2x10⁻³; rs268890, p=4.7x10⁻³) associated with aggressive PCa. The overall test of haplotype association was highly significant in the Swiss and Toronto samples (p=3.5x10⁻⁴), in the PLCO cohort (p=6.2x10⁻³) and in the three data sets combined (p=2.3x10⁻⁵). These germline SNPs predicted relapse independently of standard clinical and molecular factors in the ICGC cohort (HR=3.15, p=0.0013).

Conclusion: Our fine-mapping study has identified novel loci in the KLK6 region strongly associated with aggressive PCa. Additional sequencing studies might help identify rare variants with major effect in this KLK6 region.
Introduction: A proportion of lower risk prostate cancer men on active surveillance (AS) have more aggressive disease and will be reclassified according to clinical and pathologic features on subsequent serial transrectal ultrasound guided (TRUS) biopsies. We assessed whether finding tumor within both lobes of the prostate predicts future reclassification on follow-up biopsies.

Methods: We evaluated the records of 144 consecutive patients enrolled in AS between 2008 to 2016 at a single academic health center. Strict criteria for AS were prostate specific antigen <10 ng/ml, clinical stage T1c or T2a, biopsy Gleason Score 6, <3 positive cores, and <50% tumor in a single core. Reclassification or AS failure was defined as Gleason Score upgrade (GSU) or increase in tumor volume or core number or involvement. Univariable and multivariable logistic regression analysis was used to evaluate predictors of reclassification during AS. Matched analysis was then performed in a concurrent group choosing surgical intervention.

Results: A total of 130 men met inclusion criteria, with median follow up 52.4 months, 97% of the patients were staged T1c (3% cT2a) and 50% of patients had at least two biopsies in followup. The reclassification rate (AS failure) was 38.5% overall with a large proportion failing AS on first follow up biopsy (40%). Most patients had unilateral tumor on diagnostic biopsy (94.6%) but on follow-up 40.7% of these patients had bilateral cancer detected. Patients with bilateral tumor fail AS more frequently than patients with unilateral tumors (HR 4.089 P<0.0001) and fail earlier with a reclassification-free survival of 32 vs 119 mo respectively (Figure). In a matched population of 210 patients that chose radical prostatectomy rather than AS, 82% of patients with unilateral biopsy detected cancer were found to have bilateral cancer on final pathology.

Conclusion: Finding bilateral prostate cancer on TRUS biopsy is an important predictor of ultimate reclassification or AS failure. The finding of bilateral cancer does not represent progression but rather detection for the majority of patients. Lateralization information on biopsies should be taken into account to better counsel patients considering AS.
Improving Risk Stratification in a Community-Based African American Population Using Cell Cycle Progression Score

Walter Rayford, MD, PhD, MBA¹; Mark Greenberger, MD² and Randy Bradley, PhD³
¹Cordova; ²Memphis, TN; ³Knoxville, TN
(Presented By: Walter Rayford, MD, PhD, MBA)

Introduction: Current clinical nomograms such as AUA/NCCN risk categories or CAPRA may not always reflect prostate cancer risk among African American (AA) men. We evaluated the usefulness of adding a commercially available cell cycle progression (CCP) score to improve risk stratification in a community-based AA population.

Methods: Biopsy tissues from 150 AA and 60 Caucasian men were obtained from a single community urologic oncology practice in Memphis, TN. The biopsy samples were evaluated with a commercially available CCP panel (Prolaris). Clinical variables such as Gleason score, PSA, age, clinical stage, and extent of disease were combined to determine a single risk category of low, intermediate, or high. Risk stratification for cancer aggressiveness was then compared between the CCP score and the clinical parameters to determine potential risk improvement by the CCP score.

Results: Based on the clinical parameters, of the 150 AA men evaluated, 20% were classified as low-risk, 40% were classified as intermediate risk, and 40% were classified as high-risk. Of the 60 Caucasian men evaluated, 42% were low-risk, 42% were intermediate-risk, and 17% were high-risk. However, when re-evaluating the AA patients using the CCP score, 30% of the patients were determined to be more aggressive than the clinical low-risk category. Similarly, 21.67% of the patients were found to be more aggressive than the clinical intermediate-risk category, and 23.33% of the patients were more aggressive than the high-risk category. When compared to our Caucasian cohort, 12% of the low-risk patients, 8% of the intermediate-risk patients, and 10% of the high-risk patients were found to be more aggressive by the CCP score. Overall, 24% of AA men v. 10% of Caucasian men were reclassified to a higher risk by CCP score.

Conclusion: AA men were more likely than Caucasians to be reclassified by CCP score to a more aggressive disease (OR = 2.3, p-value = 0.011). This suggests that adding CCP to the clinical parameters may improve risk stratifications in a community-based AA population, better prepare patients for follow-up visits and discussions with their health care provider(s), and enhance their ability to select the most appropriate definitive treatment.
Poster #237
COMPARATIVE ANALYSIS OF THE DECIPHER GENOMIC CLASSIFIER AND CAPRA-S NOMOGRAM BETWEEN AFRICAN AMERICAN AND CAUCASIAN POPULATIONS
Walter Rayford, MD, PhD, MBA¹; Mark Greenberger, MD² and Randy Bradley, PhD³
¹Cordova; ²Memphis, TN; ³Knoxville, TN
(Presented By: Walter Rayford, MD, PhD, MBA)

Introduction: African American men (AAM) have an increased incidence of prostate cancer (PCa) associated with worse outcomes in comparison to European American men (EAM). Despite the known disparities between these populations, postoperative clinical risk models such as CAPRA-S are used in the same manner for both. The objective of this study was to compare postoperative risk stratification of AAM and EAM patients based on the CAPRA-S clinical model and the Decipher genomic classifier (GC) for metastasis risk.

Methods: The 5 year risk of metastasis was determined with GC for 124 AAM and 55 EAM with adverse pathology post-prostatectomy. The Decipher Genomic Resource Information Database (GRID) was utilized to evaluate differences in intrinsic molecular subtypes (ERG+, ETS+, SPINK1+ or triple negative) and outlier gene expression patterns in AAM patients compared to EAM. CAPRA-S nomogram scores were determined utilizing 7 clinical and pathological features.

Results: GC stratified 30%, 23%, and 47% of AAM into low, intermediate, and high risk groups for the probability of metastasis, respectively. In EAM, GC stratified 27%, 20%, and 53% into low, intermediate, and high risk groups, respectively. Interestingly, when CAPRA-S and GC risk assessment models were compared on a case-by-case basis, in regards to classifying patients within the same risk groups (low–high) for disease progression, there was a 33% concordance rate among AAM in contrast to a 49% concordance rate in EAM (Figure 1). Preliminary assessment of the intrinsic molecular subtypes revealed ERG+ in 19%, ETS+ in 5%, SPINK1+ in 34% and triple negative (TN) in 42% in AAM. In contrast, ERG+ in 29%, ETS+ in 6%, SPINK1+ in 18% and triple negative (TN) in 47% were observed in EAM.

Conclusion: Decipher and GRID provides a valuable platform to investigate underlying genomic differences that may explain health disparities. Overall, agreement between clinical and genomic based risk stratification was lower in AAM. Future studies to improve utility of clinical and genomic risk models for distinct populations of PCa patients are needed.

Figure 1. CAPRA-S vs. Decipher Risk Assessment
Poster #238
PREDICTION OF PATHOLOGICAL OUTCOME AT RADICAL PROSTATECTOMY FOR MRI-ULTRASOUND FUSION PROSTATE BIOPSY VERSUS STANDARD TRANSRECTAL ULTRASOUND GUIDED PROSTATE BIOPSY
Hans Arora, MD, PhD¹; Yaw Nyame, MD, MBA¹; El-Shafei Ahmed, MD¹; Onder Kara, MD¹; Marwan Ali, MD²; Andrei Pursyko, MD¹; Andrew Stephenson, MD, MBA³; J. Stephen Jones, MD¹ and Eric Klein, MD¹
¹Glickman Urological & Kidney Institute, Cleveland Clinic, Cleveland, OH; ²Cleveland Clinic Akron General, Cleveland, OH; ³Imaging Institute, Cleveland Clinic, Cleveland, OH
(Presented By: Hans C. Arora, MD, PhD)

Introduction: Magnetic resonance imaging (MRI)-ultrasound (US) fusion prostate biopsy has been shown to able to detect prostate cancer, with the goal of targeting specific lesions. Our objective was to evaluate the ability of this technique to accurately determine the final pathological outcome at the time of radical prostatectomy as compared to standard template 12-core transrectal ultrasound (TRUS) guided prostate biopsy.

Methods: We performed a retrospective analysis of patients who underwent both prostate biopsy and prostatectomy at the Cleveland Clinic. Patients who underwent standard template 12-core TRUS biopsies between January 2005 through December 2013, and MRI-US fusion biopsies from January 2014 through June 2015 were included. Patients who had more than 12 cores taken during TRUS biopsy were excluded. Relevant covariates included patient demographics as well as pre-biopsy PSA and prostate size, which were collected from the electronic medical record. Continuous variables were compared using Wilcoxon rank-sum tests and categorical variables were assessed with χ² test.

Results: In total 543 patients were included. Of these, 491 underwent 12-core standard template TRUS biopsy whereas 54 underwent MRI-US fusion biopsy. Between the two groups there were no significant differences in age (median 62 years versus 63 years, p=0.21), race (17.5% versus 12.3% African American, p=0.32), family history (31.5% versus 29.3% positive, p=0.74), prostate size (47.75g, IQR 39.5-59 versus 42.7g, IQR 37-56, p=0.08), pre-biopsy PSA (5.2 ng/mL, IQR 4.1-7.6 versus 4.97, IQR 3.24-6.95, p=0.14). Of the fusion biopsy patients, 14 of 54 (25.9%) were upgraded from biopsy to prostatectomy, whereas 214 of 491 (43.6%) of TRUS biopsy patients were upgraded (p=0.02).

Conclusion: Of men undergoing transrectal biopsy for the diagnosis of prostate cancer, MRI-US fusion techniques have a lower rate of upgrading at the final pathology at prostatectomy as compared to standard 12-core TRUS-guided biopsy.
TARGETING THE HSP40/HSP70 AXIS AS A NOVEL STRATEGY TO DISRUPT ARV7 SIGNALING IN CASTRATION-RESISTANT PROSTATE CANCER.
Matthew J. Watson, DO¹; Michael A. Moses, PhD¹; Jason E. Gestwicki, PhD²; Jane B. Trepel, PhD³ and Len Neckers, PhD¹
¹NIH, NCI, Urological Oncology Branch; ²UCSF, Department of Pharmaceutical Chemistry (San Francisco, CA); ³NIH, NCI, Developmental Therapeutics Branch
(Presented by: Matthew J. Watson)

Introduction: Heat shock proteins (HSPs) are molecular chaperones involved in protein quality control. HSPs exist in an interactive and dynamic cycle. Nuclear receptors, including the androgen receptor (AR), require both HSP90 and HSP40/HSP70 for folding. Notably, HSP90 inhibitors promote AR degradation and display anti-prostate cancer (PCa) activity. Androgen deprivation improves PCa patient survival, but invariably these therapies lead to the emergence of castration-resistant PCa (CRPC). CRPC is a condition associated with elevated expression of HSP90-independent AR splice variants, including ARv7, and poor prognosis. ARv7 lacks a ligand binding domain, resulting in constitutive AR signaling and resistance to AR antagonists and HSP90 inhibitors. We examined ARv7’s dependence on the HSP40/70 chaperone axis by testing whether specific inhibitors of these chaperones (C86 and JG98, respectively) can destabilize ARv7 and alter its transcriptional activity.

Methods: To determine if AR proteins associate with HSP40/70, lysate from 22Rv1 human derived PCa cells (expressing both AR and ARv7) were probed with biotinylated-C86 and subjected to IP with streptavidin beads. Since 22Rv1 cells constitutively express both AR isoforms, we confirmed these observations in PC3 (AR null) cells engineered to express only ARv7. Results: C86 bound a significant fraction of HSP40 in complex with HSP70, AR, and ARv7. Excess C86 or JG98 effectively competed for binding of HSP40/70 to biotinylated-C86 with concomitant loss of AR and ARv7. Excess HSP90 inhibitor had minimal effect on binding of ARv7 to HSP40/70. Treatment of 22Rv1 cells with C86 or JG98 led to a time and dose-dependent decrease in AR and ARv7 protein, concomitant with a significant reduction in AR and ARv7 transcriptional activity. Both C86 and JG98 dose-dependently decreased ARv7 expression and activity, with both inhibitors displaying approximately equal potency

Conclusion: Together, these data confirm the continued dependence of ARv7 on HSP40/70 and demonstrate the feasibility of targeting the HSP40/70 axis to abrogate sustained AR-dependent signaling in CRPC. Further studies, using mouse xenograft and ex vivo human thin slice cultures, are needed to further characterize efficacy and toxicity of treatment.
Poster #240
WHAT FALSE NEGATIVE RATE OF NON-INVASIVE TESTING ARE ACTIVE SURVEILLANCE PATIENTS AND URO-Oncologists WILLING TO ACCEPT IN ORDER TO AVOID PROSTATE BIOPSY?

Rashid Sayyid, MD¹; Dharmendra Dingar, PhD¹; Katherine Fleschner, BSc¹; Taylor Thorburn, BSc¹; Joshua Diamond, BSc¹; Erik Yao, MD¹; Karen Hersey, BSc¹; Karen Chadwick, MSc¹; Nathan Perlis, MSc¹; Laurence Klotz, MD²; Antonio Finelli, MD, MSc¹; Robert Hamilton, MD, MPH¹; Girish Kulkarni, MD, PhD¹; Alexandre Zlotta, MD, PhD¹ and Neil Fleshner, MD, MPH¹

¹University Health Network, Toronto, ON; ²Sunnybrook Health Sciences Center, Toronto, ON
(Presented By: Rashid Sayyid, MD)

Introduction: Repeat prostate biopsies in active surveillance patients are associated with significant complications. Novel imaging and blood/urine based non-invasive tests are being developed to better predict disease grade and volume progression. We conducted a theoretical study to determine what test performance characteristics and costs would a non-invasive test(s) require in order for patients and their physicians to comfortably avoid biopsy.

Methods: Surveys were administered to two populations to determine an acceptable false-negative rate and cost for such test(s). Active surveillance patients were recruited at time of follow up in clinic at Princess Margaret Cancer Centre. Physician members of the Society of Urological Oncology were targeted via an online survey. Participants were questioned about their demographics and other characteristics that might influence chosen error rates and cost.

Results: 136 patients and 670 physicians were surveyed, with 130 (96%) and 104 (16%) responses obtained, respectively. 90.6% of patients were comfortable with a non-invasive test(s) in place of biopsy, with 64.8% accepting a false-negative rate of 5% or worse. 93.3% of physicians were comfortable with a non-invasive test, with 77.9% accepting a rate of 5% or worse. 75% of patients and 77% of physicians felt that a cost of less than $1,000, per administration, would be reasonable.

Conclusion: Most patients/physicians are comfortable with a non-invasive test(s). Although a 5% error rate seems acceptable to many, a substantial subset feels that 99% or higher negative predictive value is required. Thus, a personalized approach with shared-decision making between patients and physicians is essential to optimize patient care in such situations.

<table>
<thead>
<tr>
<th>Rate</th>
<th>Patients Frequency</th>
<th>Patients Percent</th>
<th>Cumulative Percent</th>
<th>Physicians Frequency</th>
<th>Physicians Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>17</td>
<td>13.3%</td>
<td>13.3%</td>
<td>5</td>
<td>2.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>10%</td>
<td>27</td>
<td>21.1%</td>
<td>34.4%</td>
<td>36</td>
<td>30.4%</td>
<td>30.4%</td>
</tr>
<tr>
<td>5%</td>
<td>39</td>
<td>30.5%</td>
<td>64.4%</td>
<td>38</td>
<td>31.6%</td>
<td>65.6%</td>
</tr>
<tr>
<td>1%</td>
<td>23</td>
<td>18.0%</td>
<td>82.4%</td>
<td>13</td>
<td>11.5%</td>
<td>93.9%</td>
</tr>
<tr>
<td>0.5%</td>
<td>10</td>
<td>7.3%</td>
<td>90.6%</td>
<td>3</td>
<td>2.9%</td>
<td>93.3%</td>
</tr>
<tr>
<td>Not comfortable with a non-invasive test in place of biopsy</td>
<td>124</td>
<td>98.7%</td>
<td>100.0%</td>
<td>7</td>
<td>6.7%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>128</td>
<td>100.0%</td>
<td>100.0%</td>
<td>104</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Back to Table of Contents ↑
Poster #241
VALIDATION OF THE 2015 PROSTATE CANCER PROGNOSTIC GRADE GROUPS FOR PREDICTING LONG-TERM ONCOLOGIC OUTCOMES IN A SHARED EQUAL ACCESS HEALTH SYSTEM.
Ariel Schulman, MD¹; Lauren Howard, MS¹; Kae Jack Tay, MD¹; Rajan Gupta, MD¹; Efrat Tsivian, MD¹; Christopher Amling, MD²; William Aronson, MD³; Matthew Cooperberg, MD⁴; Christopher Kane, MD⁵; Martha Terris, MD⁶; Stephen Freedland, MD⁷ and Thomas Polascik, MD¹
¹Duke Medical Center, Durham, NC; ²Oregon Health & Science University, Portland, OR; ³UCLA Medical Center, Los Angeles, CA; ⁴UCSF Medical Center, San Francisco, CA; ⁵UCSD Health System, San Diego, CA; ⁶Georgia Regents Health System, Augusta, GA; ⁷Cedars-Sinai Medical Center, Los Angeles, CA
(Presented By: Ariel Schulman, MD)

Introduction: The 2015 prostate cancer grading system was introduced to simplify pathologic stratification. We examine the performance of the Prognostic Grade Groups (PGG) in the Shared Equal Access Regional Cancer Hospital (SEARCH) database with respect to long-term prostate cancer outcomes and whether associations vary by race within an equal access healthcare system.

Methods: We performed a retrospective review of men undergoing radical prostatectomy at one of six Veterans Affairs hospitals between 1988 and 2015. We identified 4,325 men with available data. The prognostic ability of PGG for multiple long-term clinical endpoints was examined using Cox models. Interactions between PGG and race were tested.

Results: The cohort consisted of PGG 1-5 patients, respectively: 2,077(48%), 1,171(27%), 521(12%), 409(10%), 147(3%). 1,596(38%) were African American. Median follow-up was 86(IQR: 45-135) months. Higher PGG was associated with higher stage, older age, more recent year of surgery and surgical center (p<0.02). African American men had a lower PGG distribution (p=0.028). Higher PGG was associated with increased risk of all clinical endpoints on univariable and multivariable regression including biochemical recurrence (BCR), adjuvant therapy, castrate-resistant prostate cancer (CRPC), metastases, prostate cancer specific mortality (PCSM) and overall survival (OS) (all p<0.001). We found no significant interactions with race in predicting any of the measured outcomes. (BCR: p=0.78, adjuvant therapy: p=0.60, CRPC: p=0.91, metastases: p=0.61, PCSM: p=0.83, OS: p=0.21).

Conclusion: The 2015 Prognostic Grade Groups predicted multiple long-term clinical endpoints after prostatectomy in a large, multiracial cohort of men. The predictive value for survival endpoints was similar in Caucasian and African American men.
DEFINING THE INDEX LESION FOR SALVAGE PARTIAL GLAND ABLATION AFTER RADIATION THERAPY FOR LOCALIZED PROSTATE CANCER

Arjun Sivaraman, MD; Toshikazu Toshi, MD; Hebert Alberto Vargas, MD; Samson Fine, MD; James Eastham, MD and Behfar Ehdaie, MD
Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Arjun Sivaraman, MD)

**Introduction:** Partial gland ablation (PGA) is a promising treatment for selected patients with recurrent localized prostate cancer after radiation therapy. Our objective was to evaluate the impact of MRI and systematic biopsy characteristics to identify the index lesion for salvage partial gland ablation using tumor maps from whole mount slides of salvage radical prostatectomy (sRP) specimen.

**Methods:** We identified 225 patients who underwent sRP between 2000 and 2014 and a tumor map was created from whole-mount slides in 77 patients. Among these patients, we selected men with a priori pre-treatment criteria considered eligible for PGA, including, biopsy proven unilateral disease concordant with a region of interest (ROI) on MRI, and excluding men with imaging suspicious for extra-capsular extension (ECE), seminal vesicle Invasion (SVI) or lymph node involvement (LNI). We describe the correlation between pre-treatment clinical characteristics and final radical prostatectomy whole mount specimen to select men eligible for PGA defined as hemi-gland ablation.

**Results:** Among 77 patients with a tumor map of entirely-submitted and whole-mounted specimens, 15 patients were determined to be eligible for partial gland ablation based on pre-treatment clinical characteristics. The mean age was 60 years and median time from primary RT was 48 months. The median (IQR) tumor volume of the index lesion was 0.3 (0.4) cc. The location of the index lesion was determined to be the apex, mid-gland and base in 77%, 100% and 15% of patients, respectively. The median distance of the index tumor to the urethra was 0.5 (0.2) cm. The index tumor was confined to one lobe and concordant to the biopsy pathology and MRI data in all 15 patients (100%). There was no ECE, LNI or SVI identified in the sRP specimens. To account for those patients who did not have a tumor map of the whole-mount specimen, a sensitivity analysis was performed and determined that the clinical characteristics of the 77 patients with tumor maps were comparable to the entire 225 sRP cohort.

**Conclusion:** Clinical characteristics guided by biopsy findings and MRI data can be used to select men for PGA with recurrent localized prostate cancer after radiation therapy. Based on tumor maps from whole-mount slides of sRP specimen, we propose that salvage hemi-gland ablation including periurethral tissue is feasible in select patients with biopsy proven unilateral disease concordant with MRI data.
Poster Session II – Full Abstracts

Poster #243
PHASE IIA, RANDOMIZED PLACEBO-CONTROLLED TRIAL OF SINGLE HIGH DOSE CHOLECALCIFEROL (VITAMIN D3) AND DAILY GENISTEIN (G-2535) VERSUS PLACEBO IN MEN UNDERGOING PROSTATECTOMY

David Jarrard, MD; Badrinath Konety, MD, MBA¹; Wei Huang, MD²; Tracy Downs, MD²,⁴; Jill Kolesar, PharmD, BCPS, FCCP, RPh²,⁵,⁴; KyungMann Kim, PhD⁶,⁴; Tom Havighurst, MS⁶,⁴; Joel Slaton, MD¹; Margaret House, RN, OCN³; Howard Parnes, MD⁷ and Howard Bailey, MD⁸,⁹

¹Department of Urology, University of Minnesota, Minneapolis, MN, USA; ²Department of Pathology and Laboratory Medicine University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ³Department of Urology, University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ⁴University of Wisconsin Carbone Cancer Center, Madison, WI, USA; ⁵School of Pharmacy, University of Wisconsin, Madison, USA; ⁶Department of Biostatistics and Medical Informatics; ⁷National Cancer Institute, Bethesda, MD, USA; ⁸Department of Medicine, University of Wisconsin School of Medicine and Public Health, Madison, WI, USA; ⁹Environmental and Molecular Toxicology, University of Wisconsin, Madison, WI, USA

(Presented By: David F. Jarrard, MD)

Introduction: Prostate cancer (PCa) represents an important target for chemoprevention given its prolonged natural history and high prevalence. Epidemiologic and laboratory data suggest that vitamin D and genistein (soy isoflavone) may decrease PCa progression. The effect of vitamin D on prostate epithelial cell proliferation and differentiation is well documented and genistein may augment this effect through inhibition of the CYP24 enzyme, which is responsible for intracellular vitamin D metabolism. In addition, both genistein and vitamin D inhibit the intraprostatic synthesis of prostaglandin E2, an important mediator of inflammation. The objectives of this prospective multicenter trial were to compare prostate tissue calcitriol levels and downstream related biomarkers in men with localized prostate cancer randomized to receive cholecalciferol and genistein versus placebo cholecalciferol and placebo genistein during the pre-prostatectomy period.

Methods: Men undergoing radical prostatectomy were randomly assigned to one of two treatment groups: (1) cholecalciferol (vitamin D3) 200,000 IU as one dose at study entry plus genistein (G -2535), 600 mg daily or (2) placebo cholecalciferol day 1 and placebo genistein PO daily for 21-28 days prior to radical prostatectomy. Serum and tissue analyses were performed and side-effects recorded.

Results: A total of 15 patients were enrolled, 8 in the placebo arm and 7 in the vitamin D3 + genistein (VD+G) arm. All patients were compliant and completed the study. No significant differences in side effect profiles were noted. Utilization of the VD+G trended toward increased calcitriol serum concentrations when compared to placebo (0.104 +/- 0.2 vs. 0.0013 +/-0.08; p=0.08); however, prostate tissue levels did not increase. Calcidiol levels did not change (p=0.5). Immunohistochemistry for marker analyses using VECTRA automated quantitation revealed an increase in AR expression (p=0.04) and a trend toward increased TUNEL staining (p=0.1) in prostate cancer tissues in men randomized to receive VD+G compared to placebo.

Conclusion: In this first study testing the combination of a single, large dose of cholecalciferol and daily genistein, the agents were well tolerated. While an increase in AR expression suggesting differentiation was observed, it is difficult to draw firm conclusions regarding the bioactivity of the combination given the sample size.
Poster #244

68GA-PSMA PET/CT IMPROVES BIOCHEMICAL RESPONSE AFTER SALVAGE LYMPH NODE DISSECTION FOR NODAL RECURRENTCE

Annika Herlemann, MD; Alexander Kretschmer, MD; Alexander Buchner, MD; Lina El-Malazi; Christian G. Stief, MD and Christian Gratzke, MD

LMU Munich

(Presented By: Annika Herlemann, MD)

Introduction: The management of patients with biochemical recurrence (BCR) after curative treatment for prostate cancer (PCa) remains controversial. The aim of our study was to evaluate complications and oncologic outcome of salvage lymph node dissection (sLND) in patients with BCR and isolated nodal recurrence after radical prostatectomy (RP) for PCa.

Methods: Between 2005 and 2016 we performed sLND in 104 PCa patients diagnosed with nodal recurrence on either 18F-fluoroethylcholine (18F-FEC) or 68Ga-PSMA-HBED-CC (68Ga-PSMA) positron emission tomography / computed tomography (PET/CT) after RP. Surgical complications according to Clavien-Dindo grading system, and biochemical response (BR), clinical recurrence (CR), and cancer-specific survival (CSS) were evaluated. Kaplan-Meier analyses were performed to assess survival rates and logistic regression was used to determine predictors of BR and CR after sLND.

Results: Mean follow-up after sLND was 45.7 ± 30.4 months, maximum follow-up 123 months. Mean patient age and prostate-specific antigen (PSA) at sLND were 64.7 ± 7.0 years and 8.2 ± 14.8 ng/mL. 66% of patients underwent radiotherapy (RT) following RP and 71.6% of patients were treated with androgen deprivation therapy (ADT) prior to sLND. Mean number of lymph nodes (LNs) removed was 17.1 ± 15.0 per patient at sLND; mean number of positive LNs was 5.2 ± 7.4. 29.8% of patients developed complete BR (cBR) (PSA < 0.2 ng/mL), and 56.7% of patients partial BR (PSA postoperative < PSA preoperative) after sLND. Patients undergoing preoperative 68Ga-PSMA PET/CT showed a significantly higher rate of cBR after sLND compared to 18F-FEC PET/CT (45.7 vs. 21.7%, p=0.040). BCR after cBR was detected in 71% of patients, and CR on PET/CT occurred in 85% of patients during follow-up. The 5-year BCR-free, CR-free and CSS rates were 8%, 41%, and 83%, respectively. At multivariate logistic regression, continuous PSA (p=0.031) and choice of PET/CT tracer (p=0.048) were independent predictors of cBR. Overall rate of Clavien-Dindo Grade III complications was low (4.8%).

Conclusion: sLND may be safely performed with low complications rates. Only a limited number of patients will develop cBR after surgery, and preoperative staging with 68Ga-PSMA PET/CT seems superior in achieving cBR. However, the majority of patients progress to BCR after cBR. Therefore, patients experiencing nodal recurrence after RP should be carefully selected for this individual treatment approach.
Introduction: Prostate multiparametric magnetic resonance imaging (MRI) has been increasingly incorporated into the diagnosis and management of prostate cancer (PCa). Software fusion MRI-targeted biopsy (MRITB) has emerged as a valuable adjunct to the standard 12-core systematic biopsy. We herein evaluate our technical miss rate for MRITB, and attempt to identify MRI factors contributing to technical misses.

Methods: We reviewed our prospectively maintained database of consecutive men who underwent MRI prior to MRITB between September 2014 and December 2015. Biopsy naïve patients and those with previous negative biopsy were included. Exclusion criteria included cases where highest PI-RADS lesion was less than 3, fusion MRITB was not performed, or volumetric calculation of MRI lesions was not available. We identified 155 lesions in 119 patients. All patients also underwent 12-core systematic biopsy. We defined “regional cores” as biopsy cores from the sextant region corresponding to the MRI lesion on systematic biopsy. “Technical miss” was defined as higher Gleason score on the regional core than MRITB core. Univariate analysis was performed for MRI lesion volume, zone (transitional or central vs peripheral), aspect (anterior vs posterior) and PI-RADS score (3-5).

Results: Mean age was 64.3+/-.1 years with mean prostate-specific antigen 8.9+/-.10.1 ng/mL. Biopsy results are summarized in Figure 1. PCa was found in 31% (13/42) of PI-RADS 3, 60% (36/60) of PI-RADS 4 and 57% (30/53) of PI-RADS 5 lesions. Technical misses occurred for three (7.1%) PI-RADS 3 (one Gleason 6 and two Gleason 7), six (10%) PI-RADS 4 (three Gleason 6, one Gleason 7, and two Gleason >7), and three (5.7%) PI-RADS 5 lesions (two Gleason 7, and one Gleason >7). We found no significant difference in technical miss rate with respect to lesion volume (p=0.43), zone (p=0.64), aspect (p=0.72), or PI-RADS score (p=0.31).

Conclusion: We found that MRITB technical miss occurs independent of MRI lesion characteristics (size, location, or PI-RADS score). As MRITB continues to be more widely integrated into PCa management, it should be used with and not in lieu of systematic biopsy.

Figure 1. Summary of MRITB results
DIFFERENCES IN METASTATIC PROSTATE CANCER SURVIVAL BY RACE AND ETHNICITY

Jordan A. Baeker Bispo, BA, MPH; Lunan Ji, MD; Ronit Shah, MD; Nachiketh Soodana Prakash, MBBS, MS; Chad Ritch, MD; Mark Gonzalgo, MD; Murugesan Manoharan, MD; Dipen Parekh, MD; Raymond Balise, PhD and Sanoj Punnen, MD
University of Miami, Miller School of Medicine and Sylvester Comprehensive Cancer Center, Miami, Florida
(Presented By: Jordan A. Baeker Bispo, BA, MPH)

Introduction: Research on prostate cancer disparities has focused primarily on elevated incidence and later stage at diagnosis among Black men; less is known about racial and ethnic disparities in survival, particularly among men diagnosed with metastatic disease. The purpose of this study was to examine differences in survival between non-Hispanic White (NHW), non-Hispanic Black (NHB) and Hispanic men with metastatic prostate cancer using two separate databases.

Methods: Data for NHW, NHB and Hispanic men diagnosed with metastatic prostate cancer from 2004-2013 were obtained from Florida’s (FL) statewide cancer registry data system (FCDS; N=3,848) and the Surveillance, Epidemiology and End Results (SEER; N=22,060). Median survival times were calculated using all-cause mortality (FCDS, SEER) and cancer-specific mortality (SEER) as primary end points. Kaplan-Meier analyses were conducted with log-rank tests and age-adjusted hazard ratios were obtained using Cox proportional hazards modeling.

Results: Among men diagnosed with metastatic disease in FL, overall survival patterns were similar across groups (p<0.25), with median survival times of 20 months for NHW, 21 months for NHB and 24 months for Hispanics. Relative to NHWs in FL, the hazard of all-cause mortality was significantly higher in NHB (HR=1.68, p<0.0001) and Hispanics (HR=1.14, p<0.0001). Similar patterns were observed for all-cause mortality in SEER with median survival of 23 months for NHW, 23 months for NHB and 25 months for Hispanics. Cancer specific mortality showed a similar advantage for the Hispanic group: 29 months for NHW, 29 months for NHB and 32 months for Hispanics. Relative to NHW, NHB had slightly increased hazard of all-cause (HR=1.08, p<0.0006) and cancer-specific mortality (HR=1.06, p<0.03); Hispanics had slightly decreased hazard (HR=0.94, p<0.04) of cancer-specific mortality.

Conclusion: After adjusting for age, NHB men had greater hazard of all-cause mortality relative to NHW. Hispanics had a higher all-cause mortality HR relative to NHW in FCDS and a lower HR in SEER; these opposing trends may reflect underlying differences in the predominant Hispanic sub-groups represented in FCDS (largely Cuban) and SEER (largely Mexican and Central American).
Poster #247
LONG-TERM ONCOLOGICAL OUTCOMES IN PATIENTS WITH BIOCHEMICAL RECURRENCE AFTER RADICAL PROSTATECTOMY
Derya Tilki, Raisa Pompe, Pierre Tennstedt, Markus Graefen and Hartwig Huland
Department of Urology and Martini-Klinik Prostate Cancer Center
(Presented By: Derya Tilki, MD)

Introduction: The rate of metastatic progression (MP) and prostate cancer mortality (PCSM) is highly variable after biochemical recurrence (BCR). The aim of our study was to test whether time from radical prostatectomy (RP) to BCR (RP-BCR time) is a predictor of MP, PCSM and overall mortality (OM).

Methods: We retrospectively analyzed the data of 5509 RP patients treated between 1992 and 2006. Of those, we included 1377 patients who experienced BCR (PSA level ≥0.2 ng/ml) and did not receive any neoadjuvant or adjuvant therapy. Median follow-up was of 121 months. Kaplan-Meier estimates and time dependent Cox regression models were used to evaluate the impact of time on MP, PCSM and OM.

Results: Overall, 27.2% developed BCR. Median time from RP to BCR was 38.2 months and from BCR to MP 57.9 months. MP was recorded in 14.5%, CSM in 10.4% and OM in 20.9%. MP-free (MP-FS), PCSM-free (PCSM-FS) and overall survival (OS) rates differed according to BCR-free intervals: <12 months, 12 – 35.9 or ≥36 months (all p≤0.001). In time dependent Cox regression models, RP-BCR time represented an independent predictor of MP, PCSM and OM. Relative to the longest interval (≥36), in MP, PCSM and OM analyses, the shortest interval (<12) carried the highest risk, followed by the intermediate (12 – 35.9) that carried an intermediate risk.

Conclusion: Among BCR patients, few have MP and fewer experience PCSM. RP-BCR time predicts MP, PCSM and OM. Patients with RP-BCR interval <12 mo should be considered for early salvage treatments, while others might be observed.
MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING FOR DETECTION AND LOCALIZATION OF PROSTATE CANCER: DIAGNOSTIC PROPERTIES

Matvey Tsivian, MD¹; Rajan Gupta, MD¹; Efrat Tsivian, MD¹; Michael Abern, MD²; Ariel Schulman, MD¹; Kae Jack Tay, MD³ and Thomas Polascik, MD⁴

¹Duke University Medical Center, Durham NC; ²University of Illinois at Chicago, Chicago IL
(Presented By: Matvey Tsivian, MD)

Introduction: To evaluate the diagnostic properties of multiparametric MRI (mpMRI) in detection, localization and characterization of prostate cancer (PCa) using transperineal template mapping biopsy (TTMB) as the reference.

Methods: A retrospective review of patients undergoing mpMRI of the prostate followed by TTMB was performed. The indications for TTMB were prior negative office-based biopsies or restaging of potential active surveillance or focal therapy candidates. For imaging and pathology data, the prostate was divided in octants with the urethra serving as midline. The index test properties were calculated using TTMB results as the reference test with the following endpoints: any cancer, any Gleason ≥7, any Gleason ≥7 or ≥4mm of cancer in any given core, and any Gleason ≥7 or ≥6mm of cancer in any given core. The latter 2 definitions correspond to 0.2 and 0.5cc of cancer volume respectively. Sensitivity, specificity, negative and positive predictive values (NPV, PPV) were calculated.

Results: A total of 50 patients were included. Of 400 prostate octants evaluated, 114 (28.5%) had PCa on TTMB whereas 92 (23%) of octants were considered suspicious for cancer on mpMRI. NPV values for Gleason ≥7 cancers were 91–92%, and approached 90% for the detection of clinically significant cancers using both volume definitions. Similarly, specificity ranged between 82–97%. Sensitivity and PPV remained moderate for all the reference test definitions.

Conclusion: In this study, the diagnostic properties of mpMRI demonstrated high NPVs and specificity suggesting this imaging modality could reliably rule out clinically significant cancer. As such mpMRI could be an important stratification tool. In the setting of active surveillance, the ability of mpMRI to accurately rule out the presence of clinically significant disease may aid in appropriate candidate selection. In the setting of focal therapy, mpMRI could suggest the anatomical regions of the prostate that could be spared. Finally, not only could mpMRI guide targeted biopsies and thus potentially avoid random sampling and associated morbidity as well as over diagnosis of potentially indolent lesions, but one could hypothesize that mpMRI could obviate the need for prostate biopsy in the presence of negative imaging results. These and other potential uses for mpMRI should be thoroughly investigated in future studies.
Poster #250

THE 4KSCORE AND MULTI-PARAMETRIC MRI PROVIDE INDEPENDENT BUT COMPLEMENTARY ACCURACY FOR THE DETECTION OF SIGNIFICANT PROSTATE CANCER TO HELP GUIDE THE NEED FOR A PROSTATE BIOPSY.

Bruno Nahar, MD¹; Tulay Koru-Sengul, PhD²; Nachiketh Prakash, MD³; Vivek Venkatramani, MD³; Murugesan Manoharan, MD³; Mark Gonzalgo, MD³; Chad Ritch, MD³; Dipen Parekh, MD³ and Sanoj Punnen, MD³
¹Department of Urology - University of Miami; ²Department of Public Health Sciences - University of Miami
(Presented By: Bruno Nahar, MD)

Introduction: MRI of the prostate and the 4Kscore have emerged as popular tools to assess for the presence of an aggressive prostate cancer (PCa). While both of these tests assess risk independent of each other, we believe they can provide complementary information about the risk of a significant cancer (Gleason>7).

Methods: We selected patients who had a 4Kscore and a MRI for evaluation of PCa. Among these men, we selected those who also underwent a biopsy for further analyses. Differences in 4Kscore between men with a suspicious and non-suspicious MRI were compared. Logistic regression models were used to assess the association between the 4Kscore and MRI for detecting a Gleason>7 PCa. The AUC of the ROC curve was used to assess the accuracy of each test separately for detecting a Gleason>7 PCa, and to report the incremental benefit of using both tests. Finally, we modeled the probability of harboring a Gleason>7 PCa based on various categories of 4Kscore and MRI suspicion.

Results: There were 209 men who underwent both a 4Kscore and MRI, of which 107 (51.2%) underwent biopsy for evaluation of PCa. Significant differences in median 4Kscores between men with and without a suspicious MRI were detected (22 vs. 9, p=0.0012). Among those who underwent a biopsy, the AUC of using both 4Kscore and MRI (0.82, 95%CI: 0.73-0.91) was significantly higher than using a 4Kscore (0.70, 0.60-0.80, p=0.02) or MRI (0.75, 0.65-0.84, 0.004) alone. It appears that an MRI added significantly to cancer prediction in the higher two categories of 4Kscores, but in men with a 4Kscore below 7.5%, there was little incremental gain by adding an MRI. Figure 1 shows the predicted probability of having a Gleason>7 based on the 4Kscore and MRI.

Conclusion: While the 4Kscore and MRI were both independently associated with the detection of significant PCa detection, it appears that using both improved the accuracy of cancer detection compared to using either alone. For men with a 4Kscore below 7.5%, an MRI may not add any further predictive value. These findings require further validation in future prospective studies.
Poster #251
MRI GUIDED IN_BORE BIOPSY FOR PATIENTS WITHOUT RECTUM
Dordaneh Sugano, BS¹; Abhinav Sidana, MD¹; Collier Wright, MD²; Brian Calio, BA¹; Amit L. Jain, MD¹; Mahir Maruf, MD¹; Maria J. Merino, MD²; Peter L. Choike, MD²; Baris Turkbey, MD³; Bradford J. Wood, MD⁴ and Peter A. Pinto, MD⁴
¹Urologic Oncology Branch, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ²Center for Cancer Research, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ³Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁴Center for Interventional Oncology, National Cancer Institute & Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Dordaneh Sugano, BS)

Introduction: MRI targeted biopsy has changed the evaluation paradigm of patients with elevated PSA. However, in patients without a rectum, the fusion platforms to target suspicious lesions on MRI cannot be utilized due to inability to use transrectal ultrasound. In-bore MRI guided biopsy is a potential alternative for targeting specific lesions in these patients. This report outlines the techniques used in a series of five patients undergoing in-bore MRI guided prostate biopsy using registration with the Visualase® (Medtronic) MRI guided laser ablation platform.

Methods: Patients without rectum with presence of suspicious lesions on prostate mpMRI were scheduled for biopsy in the MRI suite. Patients were placed under general anesthesia and prepped and draped on the MRI table in the frog-leg position. The biopsy grid was positioned to be flush with the perineum. T2W MR images of the prostate were obtained, transferred to the Visualase platform, and registered to the fiducials using the Visualase system. Serial T1W MR images were used to identify the location and depth of the lesion and then to confirm the location of the biopsy needles. A total of 2-8 cores were obtained from each patient. After completion of the procedure, patients were transferred to the recovery area in stable condition.

Results: Four patients with suspicion of prostate cancer on prostate mpMRI and surgical absence of rectum underwent prostate biopsy by above technique. The median age was 72 (58-77) years and median PSA was 4.28ng/ml (3.6-6.73). Patient 1 had ileoanal anastomosis and Patients 2-4 had APR, due to UC in Patients 1-3 and rectal cancer in Patient 4. Patient 1 was found to have Gleason 8 and patient 4 had Gleason 7(3+4). Patient 2 and 3 had negative targeted biopsy. No complications from in-bore biopsy were noted.

Conclusion: The use of “in bore” MRI guidance as a technique during prostate biopsy has been in use since 2002. We report the technique of MRI targeted biopsy using the Visualase MRI guided laser ablation platform, which has traditionally been used for focal laser ablation. Use of this platform allows for accurate registration and targeting of the lesions in patients not eligible for MRI-TRUS fusion.

Table 1: Demographics of patients who underwent in-gantry MRI biopsy.

<table>
<thead>
<tr>
<th>Patient</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>75</td>
<td>58</td>
<td>77</td>
<td>57</td>
</tr>
<tr>
<td>BMIR (kg/m²)</td>
<td>19.5</td>
<td>22.9</td>
<td>33.4</td>
<td>36.9</td>
</tr>
<tr>
<td>PSA prior biopsy (ng/ml)</td>
<td>3.6</td>
<td>6.73</td>
<td>4.4</td>
<td>4.15</td>
</tr>
<tr>
<td>ASA</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Contraindication to TRUS</td>
<td>Total colectomy with ileoanal anastomosis</td>
<td>APR* and colectomy</td>
<td>APR* and total colectomy</td>
<td>APR*</td>
</tr>
<tr>
<td>Highest Gleason Score</td>
<td>3+4+8</td>
<td>benign</td>
<td>benign</td>
<td>3+4+7</td>
</tr>
</tbody>
</table>

*APR= abdominopereineal resection
Poster #252
COMPARISON OF MULTIPARAMETRIC MRI TO PSA KINETICS AS AN INDICATION OF PROSTATE CANCER PROGRESSION IN MEN ON ACTIVE SURVEILLANCE

Mahir Maruf, MD¹; Michael Kongnyuy, MS¹; Arvin K. George, MD²; M. Minhaj Siddiqui, MD³; Abhinav Sidana, MD¹; Akhil Muthigi, BS¹; Subin Valayil¹; Amit L. Jain, MD¹; Brian Calio, BA¹; Dordaneh Sugano, BS¹; Thomas P. Frye, MD²; Peter L. Choyke, MD⁵; Baris Turkbey, MD⁶; Bradford J. Wood, MD⁶ and Peter A. Pinto, MD¹
¹National Cancer Institute, National Institutes of Health, Urologic Oncology Branch, Bethesda, Maryland; ²Department of Urology, University of Michigan Health System, Ann Arbor, Michigan; ³Division of Urology, Department of Surgery, University of Maryland School of Medicine, Baltimore, Maryland; ⁴Department of Urology, University of Rochester School of Medicine, Rochester, New York; ⁵Molecular Imaging Program, National Cancer Institute, National Institutes of Health, Bethesda, Maryland; ⁶Center for Interventional Oncology, National Cancer Institute & NIH Clinical Center, National Institutes of Health, Bethesda, Maryland
(Presented By: Mahir Maruf, MD)

Introduction: Pathologic progression is identified in >25% of prostate cancer (CaP) patients on active surveillance (AS). However, the ability to identify which patients are at risk for progression is limited to PSA-based biomarkers with variable utility. Recently, multiparametric MRI (mpMRI) with fusion-guided prostate biopsy (FBx) has demonstrated utility in risk stratification for patients considering AS. We compared mpMRI characteristics with PSA kinetics for the prediction of pathologic progression in patients on AS.

Methods: A review of men on AS with serial mpMRI and 2 or more FBx sessions was performed. FBx sessions consisted of targeted biopsies and a 12-core systematic biopsy. Men who met NIH Expanded AS criteria included those with low and intermediate risk CaP, Gleason score \( \leq 3+4=7 \) with no restriction on percent core involvement or number of cores positive. Progression was defined by patients with initial Gleason 3+3=6 to any Gleason 4, and Gleason 3+4=7 disease progressing to a primary Gleason 4 or higher. MRI progression was defined as increase in lesion suspicion score, size, or new lesion on follow-up. PSA velocity (PSAV) > 0.75ng/ml/year, PSA doubling time (PSAdt) < 3 years, and imaging characteristics were examined for association with pathologic progression at protocol surveillance biopsy.

Results: A total of 164 men were included for analysis. Median length of follow-up was 19.4 months [IQR 14.3-30.0]. Median age, PSA, and prostate volume of our cohort were 63 years [58-670, 4.9ng/ml [3.3-7.3] and 47.0ml [36.5-59.8] at enrollment. The sensitivity and specificity of predicting pathologic progression by mpMRI, PSAV and PSAdt were 45% and 65%, 30% and 76%, and 17% and 86% respectively. A combination of MRI, and PSAV or PSAdt conferred a sensitivity and specificity of 55% and 58% or 54% and 56% respectively. Using a decision curve analysis, mpMRI offers minimal benefit for predicting pathologic progression of CaP.

Conclusion: MpMRI by itself marginally outperforms PSA kinetics for predicting pathologic progression in men on AS for CaP. The combination of MpMRI along with PSA parameters increase the sensitivity of prostate imaging in identifying progression in AS patients. Further research in combinations of prostate imaging with other clinical parameter and biomarkers will be needed to more accurately risk stratify AS patients.

Funding: This research was supported by the Intramural Research Program of the National Cancer Institute, NIH
Poster #253
MULTI-PARAMETRIC MAGNETIC RESONANCE IMAGING (MPMRI) IDENTIFIES SIGNIFICANT APICAL PROSTATE CANCERS

Alexander Kenigsberg, MST¹; Tsutomu Tamada, MD²; Andrew B. Rosenkrantz, MD³; Ming Zhou, MD⁴ and Herbert Lepor, MD¹
¹Department of Urology, NYU School of Medicine, New York, NY; ²Department of Radiology, Kawasaki Medical School, Okayama Japan; ³Department of Radiology, NYU School of Medicine, New York, NY; ⁴Department of Pathology
(Presented By: Alexander Kenigsberg, MST)

Introduction: The goal of radical prostatectomy (RP) is to achieve oncological control while preserving quality of life. Since post-prostatectomy membranous urethra length has been associated with improved continence, a reasonable strategy to maximize urinary continence is maximal preservation of the membranous urethra. However, since the apex is the most common site of positive surgical margins in RP specimens, this strategy may compromise oncological control. The objective was to determine if mpMRI identifies significant apical disease.

Methods: At our institution, most men undergoing RP have undergone a 12-core systematic biopsy (SB), preoperative staging mpMRI, and postoperative sectioning and mapping of the surgical specimen. The presence of cancer in the apical SB, the presence of an MRI lesion with a suspicion score>2 extending into the bottom 1/3 of the prostate, and the presence of Gleason >6 tumor in the distal 5mm of the apical surgical specimen were noted.

Results: We identified 121 men who underwent a 12-core SB, pre-op staging MRI and post-op prostate sectioning and mapping. The ability of SB and MRI to detect significant cancer in the distal apex is shown in the table. MRI was found to be more reliable than SB at detecting significant disease. On multivariate regression that included MRI suspicion score (MRIss) in the apex, age, PSA, prostate size, presence of any cancer on apical SB, and SB Gleason, only MRIss (p<.001), SB Gleason (p=.034), and PSA (p=.045) were found to be significant independent predictors of apical tumor with Gleason pattern 4-5 (adjusted R2=0.140 for MRIss and 0.172 combined with SB Gleason).

Conclusion: MRI is superior to SB at identifying significant cancers within the distal apex and may be useful for defining the extent of apical preservation during RP.

<table>
<thead>
<tr>
<th>Apical Significant Cancer Detection (MRI)</th>
<th>Apical Significant Cancer Detection (SB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sen 81.4%</td>
<td>Sen 74.4%</td>
</tr>
<tr>
<td>Spe 45.6%</td>
<td>Spe 35.1%</td>
</tr>
<tr>
<td>PPV 53.0%</td>
<td>PPV 45.4%</td>
</tr>
<tr>
<td>NPV 76.5%</td>
<td>NPV 64.5%</td>
</tr>
<tr>
<td>AUC 0.721</td>
<td>AUC 0.638</td>
</tr>
<tr>
<td><strong>Missed significant cancers (MRI)</strong></td>
<td><strong>Missed significant cancers (SB)</strong></td>
</tr>
<tr>
<td>n=100 patients</td>
<td>n=100 patients</td>
</tr>
<tr>
<td># lesions 6</td>
<td># lesions 9</td>
</tr>
<tr>
<td>avg tumor length (mm) 11.2 (1-25)</td>
<td>avg tumor length (mm) 10.6 (1-25)</td>
</tr>
<tr>
<td>3+4=7</td>
<td>3+4=7</td>
</tr>
<tr>
<td>4+3=7</td>
<td>4+3=7</td>
</tr>
<tr>
<td>4+4=8</td>
<td>4+4=8</td>
</tr>
<tr>
<td>5+4=9</td>
<td>5+4=9</td>
</tr>
</tbody>
</table>
Poster #254
IS PROSTATE CANCER STAGE MIGRATION CONTINUING FOR BLACK MEN IN THE PSA ERA?
Ryan Dobbs, MD; David Greenwald, MD; Harpreet Wadhwa, MD; Vincent Freeman, MD and Michael Abern, MD
University of Illinois Chicago
(Presented By: Ryan W. Dobbs, MD)

Introduction: In the U.S., disease specific mortality from prostate cancer (PC) is highest among black men. While the introduction of widespread prostate specific antigen (PSA) testing has been associated with a downward stage migration, whether this trend continues in the late PSA era and for black men is unknown. The objective of our study was to evaluate current PC stage migration patterns in the U.S. by race.

Methods: The Surveillance, Epidemiology and End Results (SEER) registry was queried to obtain all cases of PC reported between 2000 and 2011. Year of diagnosis was stratified into 2000-2003, 2004-2007, and 2008-2011. Temporal trends in PC incidence rates by stage at diagnosis were analyzed with Poisson regression stratified by race. Predictors of distant stage PC at diagnosis were determined using logistic regression adjusted for year of diagnosis, age at diagnosis, SEER region, and race.

Results: A total of 656,662 PC cases were identified. The stage at diagnosis was 83.7% localized, 11.9% regional and 4.4% distant. Age adjusted rates of metastatic prostate cancer for white and black men are shown in Figure 1. In univariate analysis black men in the 2004-2007 (OR 0.86, p<0.01) and the 2008-2011 (OR 0.85, p<0.01) cohorts were significantly less likely to be diagnosed with distant PC as compared to the 2000-2003 cohort. In multivariate analysis, the 2004-2007 cohort was significantly less likely to present with distant PC (OR 0.90, p<0.01) while this trend stabilized in the 2008-2011 cohort (OR 0.95, p=0.12). This trend was not observed in white men who in multivariate analysis had an increased risk of distant PC in both the 2004-2007 (OR 1.04, p=0.02) and 2008-2011 (OR 1.16, p<0.01) groups.

Conclusion: PC downward stage migration continues in black men but not in white men. Discontinuation of PSA-based screening for prostate cancer could disproportionately affect black men.
Introduction: Multi-parametric MRI (mpMRI) and targeted MRI/Ultrasound fusion prostate biopsy (tMRI/US FP) are important tools in the diagnosis of prostate cancer (PCA). We report our experience with our first 206 patients (pts).

Methods: Data was prospectively collected and analyzed on 206 men undergoing tMRI/US FPB between September 2014 & May 2016. In all pts, mpMRI was interpreted by a single radiologist using the PIRADS scoring system. 3D rendering of regions of interest was performed prior to tMRI/US FPB performed by a single urologist using the Invivo UroNav System. Concurrent standard 14 core biopsy (14Bx) was performed in all cases.

Results: tMRI/US FP with 14Bx (tMRI/US FP-14Bx) was performed on 206 men between September 2014 & May 2016 of whom 166 presented with rise in PSA or abnormal digital rectal exam & 40 with history of low risk (LR) PCA on active surveillance (AS). Ninety-one of 166 (55%) men were diagnosed with PCA using tMRI/US FP-14Bx versus (vs) 14Bx alone, 68/166 (41%), & tMRI/US FPB alone, 77/166 (46%). Twenty, 18 & 14 men were found to have high-risk (HR) PCA on tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively. Sixty-two, 50 & 49 men were found to have intermediate risk (IR) or HR PCA on tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively. In the first 30 pts, 12/30 (40%), 9/30 (30%) & 7/30 (23.3%) were found to have PCA using tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively. Among the most recent 30 pts, 19/30 (63.3%), 17/30 (56.7%) & 13/30 (43.3%) were diagnosed using tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively (p=0.08, 0.067 & 0.17). When comparing the detection rate of both IR & HR PCA between the first 30 & last 30 pts, 20% vs 43% (p=0.095), 10% vs 33% (p=0.058) & 13% vs 33% (p=0.13) were detected using tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively. Of the 40 pts with history of LR PCA on AS, 30/40 (75%), 27/40 (68%) & 26/40 (65%) were found to have PCA on tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively. Sixteen of 40 (40%), 11/40 (28%) & 13/40 (33%) were found to have a Gleason 7 or higher PCA on rebiopsy using tMRI/US FP-14Bx, tMRI/US FPB & 14Bx alone, respectively.

Conclusion: tMRI/US FP is an important technology which increases the diagnostic yield of prostate biopsies when combined with 14Bx. In our series, we detected a learning curve for diagnosis of IR & HR cancers. In addition, tMRI/US FP-14Bx found more IR & HR cancers at rebiopsy among pts with LR PCA undergoing AS.
Poster #256
PATHOLOGIC ANALYSIS OF THE PROSTATIC ANTERIOR FAT PAD AT THE TIME OF RADICAL PROSTATECTOMY: INSIGHTS FROM A PROSPECTIVE SERIES
Mark Ball, MD; Kelly Harris, MD; Zeyad Schwen, MD; Jeffrey Mullins, MD; Misop Han, MD; Patrick Walsh, MD; Alan Partin, MD and Jonathan Epstein, MD
Johns Hopkins University, Baltimore, MD
(Presented By: Mark W. Ball, MD)

Introduction: Pelvic lymphadenectomy is performed at the time of radical prostatectomy (RP) to stage the extent of disease and to potentially provide a therapeutic benefit. Previous studies have suggested that the prostatic anterior fat pad (PAFP) may contain lymphatic drainage from the prostate and sometimes harbors metastatic lymph nodes (LNs). We sought to assess patterns of PAFP involvement and the utility of routine PAFP analysis.

Methods: Our institution began to prospectively collect PAFP tissue in 2010. The PAFP was removed at the time of RP and sent as a pathologic specimen separate from the pelvic LNs and prostate. Consecutive RPs performed at our institution in which the PAFP was removed were reviewed to determine the rate of LNs in the PAFP, the rate of metastatic LNs in the PAFP, and the association of metastatic PAFP LN with clinical and pathologic features. The impact on biochemical recurrence was assessed with a Cox’s proportional hazard model.

Results: In total, 2,413 AFP specimens were available for analysis. LNs were found in the AFP in 255(10.6%) cases and metastatic LNs to the PAFP were found in 14 (0.6%) cases. Metastatic PAFP LNs were associated with anterior tumors in 11 (78.6%) cases (p = 0.01), and were present only in pre-operative D’Amico intermediate- (n=6, 42.8%) and high- (n=8, 57.1%) risk patients (p < 0.001). Metastatic PAFP LNs were associated with extraprostatic disease in 13 (92.8%) of cases, though concomitant pelvic LN involvement was present in only 4 (28.6%) cases. With a mean follow up of 1.5 years, 3 (21.4%) patients with metastatic PAFP LN experienced BCR. Positive LN involvement in either the pelvic LN or PAFP had worse BCR than LN negative patients (p < 0.0001); however, there was no difference in BCR between patients with positive pelvic LN and positive PAFP LN (p=0.5).

Conclusion: While lymphatic drainage is found in the PAFP in 10.6% cases, metastatic PAFP LNs were rare and always occurred in the presence of other adverse pathologic features. The routine pathologic analysis of PAFP as a separate specimen, especially in low risk disease, may not be warranted.
CRITICAL ASSESSMENT OF RADIOTHERAPY FOLLOWING RADICAL PROSTATECTOMY: TIMING OF RADIOTHERAPY, RECURRENCE AND OUTCOMES

Linda Huynh, BS¹; Stephen Williams, MD² and Thomas Ahlering, MD³

¹Department of Urology, University of California Irvine Health, Orange, CA, USA; ²Department of Urology, University of Texas MD Anderson Cancer Center, Houston, TX, USA; ³UC Irvine Health, Department of Urology in Orange, CA

(Presented By: Thomas Edward Ahlering, MD)

Introduction: Level one evidence and current NCCN guidelines recommend adjuvant radiotherapy (ART) for patients with adverse pathologic features following radical prostatectomy. Salvage radiotherapy (SRT) administered upon detection of biochemical recurrence may be an appropriate alternative limiting overutilization of radiotherapy in the majority and cost-effective. We sought to describe our outcomes using salvage radiotherapy.

Methods: A total of 1,269 consecutive patients diagnosed with localized prostate cancer who underwent robot-assisted radical prostatectomy (RARP) from 2002 to 2013 were included. Biochemical recurrence was defined as 0.2 ng/mL or greater on 2 consecutive visits following surgery. Primary outcomes included BCR, prostate cancer specific mortality (PCSM), and overall mortality (OM). Cost estimates for radiotherapy administered were calculated based on 2016 Medicare reimbursement rates.

Results: Of the 1,269 men who underwent RARP at median follow-up of 5.0 years, 227 (17.9%) men had BCR. According to NCCN guidelines, ART was recommended to 436 (34.4%). Of these eligible patients, 273 (62.6%) had no ART with no subsequent BCR; 84% had follow-up exceeding 2 years. The remaining 163 (37.4%) men did have BCR of which 32 (2.5%) received ART concurrent with androgen deprivation therapy. The remaining had salvage therapy including 27 (2.1%) with SRT alone (Table 1). Overall and PCSM was 59 (4.7%) and 18 (1.4%), respectively. Medicare expense for ART is $37,130.85. Following NCCN guidelines would equate to an additional $10 million in radiotherapy costs in men with no subsequent BCR. Given >80% in this NCCN ART group with no evidence of disease 2+ years, the risk of further progression in the ART group is minimal (<10%).

Conclusion: For men with adverse pathologic features the risk of overtreatment with ART ranged from 67-85%. These outcomes are consistent with prior reports suggesting utilization of SRT may be more cost effective and have comparable outcomes to ART. These results support current clinical trials underway discerning the utility of SRT in men with adverse pathologic features.
Poster #258
PROSTATE BIOPSY DISEASE BURDEN SCORE AS A RISK ASSESSMENT TOOL FOR ADVERSE PATHOLOGIC FEATURES AT TIME OF RADICAL PROSTATECTOMY
Paras Shah, MD¹; Matt Elmasri, BS²; Ren Ke, MD¹; Deepak Kapoor, MD³ and Carl Olsson, MD³,⁴
¹The Smith Institute of Urology - New Hyde Park, NY; ²The Arthur Smith Institute of Urology, New Hyde Park, NY; ³Mount Sinai Icahn School of Medicine; ⁴Columbia University School of Medicine
(Presented By: Matthew Elmasri, BS)

Introduction: Highest Gleason Score on prostate biopsy is currently the primary metric utilized to gauge clinical aggressiveness of tumor and dictate treatment. Recently, Gleason Score of each biopsy core is converted into Gleason Grade Groups (GGG), the highest of which is used to categorize patients and guide management. However, extrapolation based purely on the highest biopsy GGG lacks sensitivity and specificity in predicting the presence of adverse pathologic features, which serve as robust predictors of oncologic outcome. Herein, we propose the Weighted Gleason Grade Group, a novel scoring system that synthesizes histopathologic data and cancer volume into one marker in an effort to more reliably predict risk of adverse pathologic features on radical prostatectomy specimen.

Methods: 212 patients who underwent standard prostate biopsy and subsequent radical prostatectomy were reviewed. Gleason score on each biopsy was converted to corresponding GGG. WGGG was calculated by summating the GGG from each biopsy core. WGGGs were normalized for 12-core biopsy. Ordinal logistic regression analysis was utilized to compare the ability of conventional GGG with WGGG to predict risk of adverse pathologic features on radical prostatectomy specimen, specifically extraprostatic extension (EPE), lymphovascular invasion, positive surgical margin (PSM), seminal vesicle invasion (SVI), and pathologic upgrading.

Results: WGGG was observed to be a stronger predictor of adverse pathologic features on prostatectomy specimen compared with conventional GGG. The odds ratios (OR) for EPE, SVI, and lymphovascular invasion for increasing WGGG (in 10-point incremental increases) and GGG were 1.81 (95%CI 1.42-2.32, P<0.001) versus 1.16 (95%CI 1.1-1.2, P<0.001), 2.05 (95%CI 1.45-2.90, P<0.001) versus 1.16 (95%CI 1.10-1.22, P<0.001), 3.46 (95%CI 1.99 - 6.04, P<0.001) versus 1.16 (95%CI 1.09 - 1.23 P<0.001), respectively. In addition, WGGG, but not GGG, was significantly associated with PSM (OR 1.07, 95% CI 1.03-1.10, P=0.004) and pathologic upgrading (OR 1.62, 95% CI 1.46 - 1.83) on prostatectomy specimen.

Conclusion: The WGGG provides a more reliable assessment of adverse pathologic features on radical prostatectomy specimen compared with conventional GGG.
Poster #259
MALIGNANT MESOTHELIOMA OF THE TUNICA VAGINALIS TESTIS: OUTCOMES FOLLOWING SURGICAL MANAGEMENT BEYOND RADICAL ORCHIECTOMY
Pedro Recabal Guiraldes, MD; Barak Rosenzweig, MD; Wassim Bazzi, MD; Brett Carver, MD and Joel Sheinfeld, MD
MSKCC, New York, NY
(Presented By: Pedro Recabal Guiraldes, MD)

Introduction: To describe the clinical management and outcomes of a cohort of patients with malignant mesothelioma of the tunica vaginalis testis (MMTVT).

Methods: Retrospective review of patients with confirmed MMTVT at a single tertiary-care institution. Prognostic variables associated with survival were evaluated with a Cox proportional hazards model and Kaplan Meier curves. Laterality was evaluated with a binomial probability test.

Results: Overall, 15 patients were included. Left side was more common (80%, p-value=0.03). Distribution of age at diagnosis was bimodal. Initial presentation was a scrotal mass in 7/15(47%) and hydrocele in 5/15(33%). Clinical staging revealed enlarged nodes in 5/15(33%) patients. Radical Orchietomy was the primary treatment in 5/15(33%). Positive surgical margins were found in 6/14(43%) radical orchietomy specimens. The most frequent histologic subtype was epithelioid 8/15 (53%). In the multivariate analysis factors that predicted better overall survival were epithelioid subtype(p=0.048), age (p <0.001), and negative surgical margins (p=0.007). Additional surgeries were performed in 12/15(80%). Pathologic examination revealed malignant mesothelioma in 6/12(50%) hemiscrotectomies; 7/8(88%) retroperitoneal lymph node dissections; 1/7(14%) pelvic lymph node dissections; and 10/10(100%) groin dissections. Five patients received adjuvant chemotherapy. Two also received adjuvant radiation therapy. After a median followup of 3.5 years (IQR 1.2 – 7.2) five patients have died, all of MMTVT; median overall survival has not been reached. The most common sites of relapse were lungs (5/7) and groin (3/7).

Conclusion: The pattern of metastatic spread of MMTVT is predominantly lymphatic. Nodes in the retroperitoneum and the groin are commonly involved. Prognosis is poor, but there may be a role for aggressive surgical resection including hemiscrotectomy, and inguinal and retroperitoneal lymph nodes.
POST- CHEMOTHERAPY RETROPERITONEAL LYMPH NODE DISSECTION WITH ADJUNCTIVE NEPHRECTOMY FOR NONSEMINOMATOUS GERM CELL TESTICULAR CANCER

Maria Becerra, MD; Brandon Manley, MD; Andrew Winer, MD; John Graham, MD; Brett Carver, MD and Joel Sheinfeld, MD
Urology Service, Department of Surgery, Memorial Sloan Kettering Cancer Center, New York, NY
(Presented By: Maria F. Becerra, MD)

Introduction: A subset of patients undergoing postchemotherapy retroperitoneal lymph node dissection (PC-RPLND) require an adjunctive procedure to assure a complete resection. We aim to characterize the clinical and pathological features, long term changes in renal function, and cancer specific survival associated with adjunctive nephrectomy (AN).

Methods: Following Institutional Review Board approval, we reviewed our prospective institutional testis cancer database for patients with nonseminomatous germ cell tumors who underwent a PC-RPLND between 01/03 – 09/15, identified 797 patients who met the criteria and 55 who required AN. The clinicopathologic characteristics of patients undergoing surgery with and without AN were analyzed. Late relapse, desperation or reoperative surgery, and/or salvage chemotherapy prior to surgery have been previously classified as high risk patients. Variables were assessed by bivariate analysis. Renal function before surgery and at last follow up was evaluated using estimated glomerular filtration rate (eGFR) calculated using the CKD-EPI equation. Paired t-test analysis was used to compare the changes. Kaplan–Meier estimates of survival time were calculated for high risk patients, and subgroups were compared by the log rank test.

Results: The incidence of AN was 6.9% (55/797), high risk features were noted in 27 (49%) of the AN cohort compared to 112 (15%) of the PC-RPLND without AN (p= <0.001). In the AN cohort retroperitoneal pathology revealed residual disease (teratoma +/- viable cancer) in 39 (70%) patients compared to 359 (48%) of the PC-RPLND cohort (p=0.001). In the AN cohort, with a median follow-up 46 months, 14 patients recurred and 1 patient had persistent disease. There was a mean decrease of 13.97 mL/min/1.73m² (95% CI 9.46-18.49, p=<0.001) between preoperative and last follow up eGFR in the AN cohort. Clinically significant renal dysfunction was noted in 4 patients, and one required dialysis. The 5 year cancer specific survival (CSS) in the AN group was 88.6%.

Conclusion: The CSS and morbidity data support the role of AN in order to achieve complete resection in the post-chemotherapy setting, particularly in high risk patients, given the high incidence of residual disease, and acceptable compromise in renal function.

Funding: Supported by the Richard Capri Foundation
Poster #261

CLINICAL AND RADIOGRAPHIC PREDICTORS OF GREAT VESSEL RESECTION OR RECONSTRUCTION DURING RETROPERITONEAL LYMPH NODE DISSECTION

Scott Johnson, MD; Charles Nottingham, MD; Stephen Thomas, MD and Scott Eggener, MD
The University of Chicago Medicine, Chicago, IL
(Presented By: Scott Charles Johnson, MD)

Introduction: Retroperitoneal lymph node dissection (RPLND) for the treatment of germ cell tumors (GCT) following chemotherapy is a major surgery which can involve resection and/or reconstruction of the abdominal aorta (AA) or inferior vena cava (IVC). These additional vascular procedures add considerable complexity and morbidity. Identifying patients at highest risk for these additional procedures would be beneficial for preoperative planning and counseling. The purpose of this study is to evaluate whether specific clinical or radiographic factors can help predict the need for great vessel resection or reconstruction (RoR) at the time of post-chemotherapy RPLND.

Methods: Data were collected on 67 patients undergoing post-chemotherapy RPLND for GCT at a single institution with complete pre-operative imaging and clinical data available. Preoperative imaging was reviewed by a radiologist blinded to operative details. The primary outcome of interest was resection of the IVC or AA requiring patch or replacement grafting or IVC resection and ligation. Univariable and multivariable analysis were performed using logistic regression to determine the association with RoR of the IVC or AA.

Results: Of the 67 patients reviewed, 11 (16.4%) underwent RoR at the time of RPLND, 5 (7.4%) involving the AA and 8 (11.9%) involving the IVC. On univariable analysis, size of the dominant mass by axial or craniocaudal dimension was associated with IVC or AA RoR, as was the number of chemotherapy cycles and history of salvage chemotherapy. The degree of circumferential involvement of the IVC, deformity of the IVC and right-sided primary tumor were all associated with IVC RoR. Similarly, circumferential involvement of the aorta and deformity of the aorta were associated with AA RoR. On multivariable analysis, circumferential involvement of the IVC > 120° (OR 30.5, CI 3.4-274, p = 0.002) was predictive for IVC RoR while circumferential involvement of the AA > 300° (OR 29.5, CI 3.5-249, p = 0.002) was predictive for AA RoR.

Conclusion: Circumferential involvement of the great vessels is an independent predictor for the need to resect or reconstruct the IVC or AA at the time of post-chemotherapy RPLND. Patients with greater than 300° involvement of the AA or 120° of the IVC should be identified as high risk and have the proper teams available for complex vascular reconstruction.
<table>
<thead>
<tr>
<th>Alphabetical Index of Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABREU, ANDRE</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #124</td>
</tr>
<tr>
<td><strong>ADAMSKY, MELANIE</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #223</td>
</tr>
<tr>
<td><strong>AHLERING, THOMAS</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #257</td>
</tr>
<tr>
<td><strong>ALONZO, DAVID</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #39</td>
</tr>
<tr>
<td><strong>ALSINNAWI, MAZEN</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #77</td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #81</td>
</tr>
<tr>
<td><strong>ANDERSON, CHRISTOPHER</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #170</td>
</tr>
<tr>
<td><strong>ARORA, HANS</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #238</td>
</tr>
<tr>
<td><strong>AUFFENBERG, GREGORY</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #97</td>
</tr>
<tr>
<td><strong>AZIZI, MOUNSIF</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #216</td>
</tr>
<tr>
<td><strong>BAACK KUKREJA, JANET</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #146</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #145</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #148</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #150</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #151</td>
</tr>
<tr>
<td><strong>BACHMAN, ANDREW</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #10</td>
</tr>
<tr>
<td><strong>BAEKER BISPO, JORDAN</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #246</td>
</tr>
<tr>
<td><strong>BALASUBRAMANIAN, ADITHYA</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #154</td>
</tr>
<tr>
<td><strong>BALL, MARK</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #256</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #202</td>
</tr>
<tr>
<td><strong>BAZARGANI, SOROUSH</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #160</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #161</td>
</tr>
<tr>
<td><strong>BECERRA, MARIA</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #260</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #182</td>
</tr>
<tr>
<td><strong>BHINDI, BIMAL</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #193</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #204</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #207</td>
</tr>
<tr>
<td><strong>BLACK, PETER</strong></td>
</tr>
<tr>
<td>12/1/2016 11:30 a.m.</td>
</tr>
<tr>
<td><strong>BOLEY, SHAWNA</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #184</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #185</td>
</tr>
<tr>
<td><strong>BOYSEN, WILLIAM</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #167</td>
</tr>
<tr>
<td><strong>BREAM, MATTHEW</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #44</td>
</tr>
<tr>
<td><strong>BROOKS, NATHAN</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #7</td>
</tr>
<tr>
<td><strong>CALIO, BRIAN</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #213</td>
</tr>
<tr>
<td><strong>CARRASCO, ALONSO</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #52</td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #129</td>
</tr>
<tr>
<td><strong>CHANDRASEKAR, THENAPPAN</strong></td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #142</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #155</td>
</tr>
<tr>
<td><strong>CHANG, PETER</strong></td>
</tr>
<tr>
<td>12/2/2016 8:08 am</td>
</tr>
<tr>
<td>AB #2</td>
</tr>
<tr>
<td><strong>CHAPPIDI, MEERA</strong></td>
</tr>
<tr>
<td>11/30/2016 4:30 pm</td>
</tr>
<tr>
<td>Poster #27</td>
</tr>
<tr>
<td>12/1/2016 4:55 pm</td>
</tr>
<tr>
<td>Poster #172</td>
</tr>
</tbody>
</table>
CHENNAMSETTY, AVINASH
12/1/2016  4:55 pm  Poster #205

CHEVINSKY, MICHAEL
12/1/2016  4:55 pm  Poster #245

CHIPOLLINI, JUAN
12/1/2016  4:55 pm  Poster #157

CHOPRA, SAMEER
12/1/2016  4:55 pm  Poster #178
12/1/2016  4:55 pm  Poster #179
12/1/2016  4:55 pm  Poster #177
12/1/2016  4:55 pm  Poster #187

CLIFFORD, THOMAS
11/30/2016  4:30 pm  Poster #114

CONCEPCION, RAOUL
11/30/2016  4:30 pm  Poster #96

COOPERBERG, MATTHEW
11/30/2016  4:30 pm  Poster #115

DAMODARAN, SHIVASHANKAR
12/1/2016  4:55 pm  Poster #192

DAVIS, JOHN
11/30/2016  4:30 pm  Poster #93

DE OLIVEIRA SOARES, RICARDO
11/30/2016  4:30 pm  Poster #110
11/30/2016  4:30 pm  Poster #108
11/30/2016  4:30 pm  Poster #109

DELANCEY, JOHN
12/1/2016  4:55 pm  Poster #214

DOBBS, RYAN
12/1/2016  4:55 pm  Poster #254

DRUSKIN, SASHA
11/30/2016  4:30 pm  Poster #89

EAPEN, RENU
12/1/2016  4:55 pm  Poster #174

EHDAIE, BEHFAR
12/1/2016  4:55 pm  Poster #230

ELLENBURG, JAMES
12/1/2016  4:55 pm  Poster #231

ELMASRI, MATTHEW
12/1/2016  4:55 pm  Poster #258

FANG, JUSTIN
12/1/2016  4:55 pm  Poster #140

FARNUM, JEFFREY
12/1/2016  4:55 pm  Poster #158

FAY, CARLOS
12/1/2016  4:55 pm  Poster #206

FENG, FELIX
11/30/2016  4:30 pm  Poster #94

FILIPPOU, PAULINE
11/30/2016  4:30 pm  Poster #36

FREEDLAND, STEPHEN
12/1/2016  4:55 pm  Poster #208

FREITAS, DANIEL
11/30/2016  4:30 pm  Poster #22

GALSKY, MATTHEW
11/30/2016  4:30 pm  Poster #16

GHAFFARY, CAMERON
11/30/2016  4:30 pm  Poster #83

GHANAAT, MAZYAR
11/30/2016  4:30 pm  Poster #66
12/1/2016  4:55 pm  Poster #191

GLASER, ZACHARY
11/30/2016  4:30 pm  Poster #47
11/30/2016  4:30 pm  Poster #46

GOLOMBOS, DAVID
11/30/2016  4:30 pm  Poster #122

GOMELLA, PATRICK
12/1/2016  4:55 pm  Poster #194

GOPALAKRISHNA, AJAY
12/1/2016  4:55 pm  Poster #168

Back to Table of Contents ↑
# Alphabetical Index of Authors

<table>
<thead>
<tr>
<th>Name</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
<th>Poster #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gore, John</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#75</td>
</tr>
<tr>
<td></td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#76</td>
</tr>
<tr>
<td>Gregg, Justin</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#60</td>
</tr>
<tr>
<td>Greiman, Alyssa</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#201</td>
</tr>
<tr>
<td></td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#169</td>
</tr>
<tr>
<td>Ha, Albert</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#42</td>
</tr>
<tr>
<td></td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#43</td>
</tr>
<tr>
<td>Hainlfer, Michael</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#51</td>
</tr>
<tr>
<td>Hamilton, Zachary</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#95</td>
</tr>
<tr>
<td>Han, Daniel</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#65</td>
</tr>
<tr>
<td>Hanna, Nawan</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#152</td>
</tr>
<tr>
<td></td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#153</td>
</tr>
<tr>
<td>Haseebuddin, Mohammed</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#195</td>
</tr>
<tr>
<td>Hawkins, Katherine</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#186</td>
</tr>
<tr>
<td>Herlemann, Annika</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#224</td>
</tr>
<tr>
<td></td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#227</td>
</tr>
<tr>
<td></td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#244</td>
</tr>
<tr>
<td>Herrel, Lindsey</td>
<td>12/2/16</td>
<td>2:28 pm</td>
<td>AB #8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#41</td>
</tr>
<tr>
<td>Hillelsohn, Joel</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#37</td>
</tr>
<tr>
<td>Hugan, Cory</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#132</td>
</tr>
<tr>
<td></td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#135</td>
</tr>
<tr>
<td>Hutchinson, Ryan</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#28</td>
</tr>
<tr>
<td>Isharwal, Sudhir</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#217</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isharwal, Sumit</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#147</td>
</tr>
<tr>
<td>James, Maxwell</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#8</td>
</tr>
<tr>
<td>Jarrard, David</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#243</td>
</tr>
<tr>
<td>Johnson, Scott</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#261</td>
</tr>
<tr>
<td>Joshi, Shreyas</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#181</td>
</tr>
<tr>
<td>Kashan, Mahyar</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#183</td>
</tr>
<tr>
<td>Kasraeian, Ali</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#255</td>
</tr>
<tr>
<td>Kates, Max</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#164</td>
</tr>
<tr>
<td></td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#29</td>
</tr>
<tr>
<td>Katz, Matthew</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#11</td>
</tr>
<tr>
<td>Kaushik, Dharam</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#49</td>
</tr>
<tr>
<td>Kenigsberg, Alexander</td>
<td>12/1/16</td>
<td>4:55 pm</td>
<td></td>
<td>#253</td>
</tr>
<tr>
<td>Kim, Eric</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#121</td>
</tr>
<tr>
<td></td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#119</td>
</tr>
<tr>
<td>Klaassen, Zachary</td>
<td>11/30/16</td>
<td>4:30 pm</td>
<td></td>
<td>#82</td>
</tr>
<tr>
<td>Klein, Eric</td>
<td>12/2/16</td>
<td>2:14 pm</td>
<td>AB #6</td>
<td></td>
</tr>
<tr>
<td>Authors</td>
<td>Dates</td>
<td>Times</td>
<td>Sessions</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------</td>
<td>--------------------</td>
<td>--------------------</td>
<td></td>
</tr>
<tr>
<td>KOSAREK, CHRISTOPHER</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #84, Poster #88</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/2/2016</td>
<td>2:35 pm</td>
<td>AB #9</td>
<td></td>
</tr>
<tr>
<td>KRAASNOW, ROSS</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #198</td>
<td></td>
</tr>
<tr>
<td>LAI, WIN SHUN</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #125</td>
<td></td>
</tr>
<tr>
<td>LANE, GIULIA</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #3</td>
<td></td>
</tr>
<tr>
<td>LEBASTCHI, AMIR</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #212, Poster #141</td>
<td></td>
</tr>
<tr>
<td>LEE, DANIEL</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #233</td>
<td></td>
</tr>
<tr>
<td>LENIS, ANDREW</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #139, Poster #138, Poster #71</td>
<td></td>
</tr>
<tr>
<td>LEONE, ANDREW</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #4</td>
<td></td>
</tr>
<tr>
<td>LI, QIANG</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #30, Poster #31, Poster #130</td>
<td></td>
</tr>
<tr>
<td>LI, ROGER</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #162</td>
<td></td>
</tr>
<tr>
<td>LIN, JEFFERY</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #134</td>
<td></td>
</tr>
<tr>
<td>LUCKENBAUGH, AMY</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #45, Poster #173</td>
<td></td>
</tr>
<tr>
<td>MANLEY, BRANDON</td>
<td>12/2/2016</td>
<td>8:00 am</td>
<td>AB #1</td>
<td></td>
</tr>
<tr>
<td>MANO, ROY</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #85</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Date</td>
<td>Time</td>
<td>Session</td>
<td>Poster #</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------</td>
<td>----------</td>
<td>-----------</td>
<td>----------</td>
</tr>
<tr>
<td>NGUYEN, HAO</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #226</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #222</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #228</td>
<td></td>
</tr>
<tr>
<td>NYAME, YAW</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #123</td>
<td></td>
</tr>
<tr>
<td>ODISHO, ANOBEL</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #103</td>
<td></td>
</tr>
<tr>
<td>PACKIAM, VIGNESH</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #34</td>
<td></td>
</tr>
<tr>
<td>PARKER, ALEXANDER</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #176</td>
<td></td>
</tr>
<tr>
<td>PARKER, WILLIAM</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #20</td>
<td></td>
</tr>
<tr>
<td>PATEL, NEAL</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #199</td>
<td></td>
</tr>
<tr>
<td>PATHAK, PIYUSH</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #159</td>
<td></td>
</tr>
<tr>
<td>PAULUCCI, DAVID</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #203</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #188</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #156</td>
<td></td>
</tr>
<tr>
<td>PETRYLAK, DANIEL</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #24</td>
<td></td>
</tr>
<tr>
<td>PIECZONKA, CHRISTOPHER</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #215</td>
<td></td>
</tr>
<tr>
<td>PIETZAK, EUGENE</td>
<td>12/2/2016</td>
<td>2:00 pm</td>
<td>AB #4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/2/2016</td>
<td>2:21 pm</td>
<td>AB #7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #149</td>
<td></td>
</tr>
<tr>
<td>POCH, MICHAEL</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #35</td>
<td></td>
</tr>
<tr>
<td>POOLI, AYDIN</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #74</td>
<td></td>
</tr>
<tr>
<td>PRUTHI, DEEPAK</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #63</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #180</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #197</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #175</td>
<td></td>
</tr>
<tr>
<td>RAYFORD, WALTER</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #236</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #237</td>
<td></td>
</tr>
<tr>
<td>RECABAL GUIRALDES, PEDRO</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #259</td>
<td></td>
</tr>
<tr>
<td>RISTAU, BENJAMIN</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #59</td>
<td></td>
</tr>
<tr>
<td>RITCH, CHAD</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #165</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/2/2016</td>
<td>2:07 pm</td>
<td>AB #5</td>
<td></td>
</tr>
<tr>
<td>RIVERO, JESUS</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #64</td>
<td></td>
</tr>
<tr>
<td>ROBINS, DENNIS</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #2</td>
<td></td>
</tr>
<tr>
<td>RODRIGUEZ, JOSEPH</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #190</td>
<td></td>
</tr>
<tr>
<td>ROSENZWEIG, BARAK</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #54</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #18</td>
<td></td>
</tr>
<tr>
<td>ROSS, ASHLEY</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #99</td>
<td></td>
</tr>
<tr>
<td>RUSSELL, CHRISTOPHER</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #72</td>
<td></td>
</tr>
<tr>
<td>SALAMI, SIMPA</td>
<td>12/2/2016</td>
<td>8:16 am</td>
<td>AB #3</td>
<td></td>
</tr>
<tr>
<td>SALARI, KEYAN</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>Poster #232</td>
<td></td>
</tr>
<tr>
<td>SALTZSTEIN, DANIEL</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>Poster #101</td>
<td></td>
</tr>
</tbody>
</table>
Alphabetical Index of Authors

SANFORD, THOMAS
11/30/2016 4:30 pm Poster #25
11/30/2016 4:30 pm Poster #26

SAYYID, RASHID
12/1/2016 4:55 pm Poster #240

SCHROECK, FLORIAN
11/30/2016 4:30 pm Poster #6

SCHULMAN, ARIEL
12/1/2016 4:55 pm Poster #241

SCOTLAND, KYMORA
11/30/2016 4:30 pm Poster #105

SHARMA, VIDIT
11/30/2016 4:30 pm Poster #67
12/1/2016 4:55 pm Poster #219
11/30/2016 4:30 pm Poster #127

SHIN, TOSHITAKA
11/30/2016 4:30 pm Poster #120
12/1/2016 4:55 pm Poster #229

SILVER, HAYLEY
12/1/2016 4:55 pm Poster #189

SINGLA, NIRMISH
11/30/2016 4:30 pm Poster #87

SIVARAMAN, ARJUN
12/1/2016 4:55 pm Poster #242

SMITH, ZACHARY
12/1/2016 4:55 pm Poster #196

SONG, JUN
11/30/2016 4:30 pm Poster #86

STEINBERG, GARY
11/30/2016 4:30 pm Poster #21

STEINBERG, RYAN
11/30/2016 4:30 pm Poster #9

SUGANO, DORDANEH
12/1/2016 4:55 pm Poster #251

SUI, WILSON
11/30/2016 4:30 pm Poster #68
11/30/2016 4:30 pm Poster #1

SYAN-BHANVADIA, SUMEET
12/1/2016 4:55 pm Poster #171

SYED, JAMIL
11/30/2016 4:30 pm Poster #62

SYED, JOHAR
11/30/2016 4:30 pm Poster #90
11/30/2016 4:30 pm Poster #98
11/30/2016 4:30 pm Poster #100

TALLMAN, JACOB
11/30/2016 4:30 pm Poster #58

TAY, KAE JACK
12/1/2016 4:55 pm Poster #209
12/1/2016 4:55 pm Poster #210

TILKI, DERYA
12/1/2016 4:55 pm Poster #247

TOBERT, CONRAD
11/30/2016 4:30 pm Poster #14

TSIVIAN, MATVEY
12/1/2016 4:55 pm Poster #249

TYSON, MARK
11/30/2016 4:30 pm Poster #102

VASHISTHA, VISHAL
11/30/2016 4:30 pm Poster #5

VENKATRAMANI, VIVEK
11/30/2016 4:30 pm Poster #116
11/30/2016 4:30 pm Poster #117

WANG, JONATHAN
12/1/2016 4:55 pm Poster #235

WASHINGTON, SAMUEL
12/1/2016 4:55 pm Poster #136
12/1/2016 4:55 pm Poster #137
12/1/2016 4:55 pm Poster #221
12/1/2016 4:55 pm Poster #225

Back to Table of Contents ↑
### Alphabetical Index of Authors

<table>
<thead>
<tr>
<th>Author</th>
<th>Date</th>
<th>Time</th>
<th>Poster #</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATSON, MATTHEW</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>239</td>
</tr>
<tr>
<td>WATTS, TANYA</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>50</td>
</tr>
<tr>
<td>WEINER, ADAM</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>78</td>
</tr>
<tr>
<td>WESTERMAN, MARY</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>112</td>
</tr>
<tr>
<td>WOLDU, SOLOMON</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>113</td>
</tr>
<tr>
<td>WU, JUNLONG</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>48</td>
</tr>
<tr>
<td>ZABELL, JOSEPH</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>56</td>
</tr>
<tr>
<td>ZAID, HARRAS</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>17</td>
</tr>
<tr>
<td>ZAREBA, PIOTR</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>53</td>
</tr>
<tr>
<td>ZHANG, CHRISTOPHER</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>200</td>
</tr>
<tr>
<td>ZHU, GONGJIAN</td>
<td>11/30/2016</td>
<td>4:30 pm</td>
<td>33</td>
</tr>
<tr>
<td>ZLOTTA, ALEXANDRE</td>
<td>12/1/2016</td>
<td>4:55 pm</td>
<td>234</td>
</tr>
</tbody>
</table>
The following urologic oncology fellowship programs have earned the credentials of the Society of Urologic Oncology:

**Combined Harvard Urologic Oncology Fellowship at Massachusetts General Hospital and Brigham & Women's Hospital**
Program Director: Adam S. Feldman, MD, MPH
Assistant in Urology, Massachusetts General Hospital
Assistant Professor of Surgery, Harvard Medical School
Email: afeldman@mgh.harvard.edu

Associate Program Director: Steven L. Chang, MD, MS
Assistant Professor, Division of Urologic Surgery
Brigham & Women’s Hospital
Email: slchang@partners.org

Fellowship Coordinator: Kimberly A. Williams
kwilliams40@mgh.harvard.edu
55 Fruit St., Yawkey Building 7E
Boston, MA 02114
Phone: (617) 726-8078
Fax: (617) 726-6131

www.massgeneral.org/urology


**Duke University Medical Center**
Program Director: Thomas J. Polascik, MD
Professor, Division of Urologic Surgery
PO Box 2804, Room 1080
Yellow Zone Duke South
Durham, NC 27710
Phone: (919) 684-4946
Email: polas001@mc.duke.edu

http://urology.surgery.duke.edu/education-and-training/fellowship-programs/urologic-oncology

**Fox Chase Cancer Center, Division of Urologic Oncology**
Program Director: David Y. T. Chen, MD
Department of Surgical Oncology
333 Cottman Avenue
Philadelphia, PA 19111
Phone: (215) 728-2548
Email: david.chen@fccc.edu

http://www.fccc.edu/healthProfessionals/fellowships/urologic.html

**Glickman Urological and Kidney Institute, Cleveland Clinic**
Program Director: Andrew J. Stephenson, MD
9500 Euclid Avenue – Desk Q10-1
Cleveland, OH 44195-0001
Phone: (216) 445-1062
Fax: (216) 636-4492
Email: stephea2@ccf.org

http://my.clevelandclinic.org/services/urology-kidney/for-medical-professionals/educational-opportunities/urology-fellowships

**Indiana University, Urology Department**
Program Director: Timothy A. Masterson, MD
Indiana University Health, Department of Urology
535 N. Barnhill, Suite 420
Indianapolis, IN 46202
Phone: (317) 948-7560
Fax: (317) 944-0174
Email: tamaster@iuhealth.org or tamaster@iupui.edu

Fellowship Contact: Tina Hedges
Email: klhedges@iupui.edu

urology.iupui.edu/education/fellowships/uro_onc_program.php

**Johns Hopkins Brady Urological Institute**
Program Director: Christian Pavlovich, MD
Associate Professor
Johns Hopkins Bayview Medical Center
4940 Eastern Avenue, 301 Building, Suite 3100
Baltimore, MD 21224
Phone: (410) 550-0013
Fax: (410) 550-3341
Email: cpavlov2@jhmi.edu

urology.jhu.edu/professionals/oncology_fellowship.php
SUO FELLOWSHIP PROGRAMS

Mayo Clinic Cancer Center, Mayo School of Graduate Medical Education
Program Director: Stephen A. Boorjian, MD
Professor of Urology
Mayo Clinic
200 First Street, SW
Rochester, MN 55905-2981
Phone: (507) 284-4015
Email: boorjian.stephen@mayo.edu

Education Coordinator: Joan E. Simon
Phone: (507) 284-1330
Email: simon.joan@mayo.edu

MD Anderson Cancer Center, Urology Department
Program Director: Ashish M. Kamat, MD
University of Texas MD Anderson Cancer Center
1515 Holcombe Blvd. Unit 1373
Houston, TX 77030
Phone: (713) 792-3250
Email: akamat@mdanderson.org

Fellowship Coordinator: Christina Medina
Phone: (713) 794-1466
Fax: (713) 792-4824
Email: CMedina@mdanderson.org


Memorial Sloan Kettering Cancer Center, Urology Department
Program Director: Joel Sheinfeld, MD
1275 York Ave.
New York, NY 10021
Phone: (212) 639-2593
Email: sheinfej@mskcc.org

Moffitt Cancer Center
Program Director: Wade Sexton, MD
12092 Magnolia Drive, Suite 4035
Tampa, FL 33612
Phone: (813) 745-3131
Fax: (813) 745-4064
Email: wade.sexton@moffitt.org

Assistant Program Director: Michael A. Poch
12902 Magnolia Drive
Tampa, FL 33612
Phone: (813) 745-3973
Fax: (812) 745-8494
Email: michael.poch@moffitt.org

Jackie Campbell, Fellowship Coordinator
Email: jackie.campbell@moffitt.org

National Cancer Institute, Urologic Oncology Program
Program Director: Peter Pinto, MD
National Institutes of Health, Bldg. 10, CRC, Room 2-5940
10 Center Drive
Bethesda, MD 20892
Phone: (301) 496-6353
Fax: (301) 402-0922
Email: pintop@mail.nih.gov

Fellowship Coordinator: Crystal Fuller
Phone: (301) 496-6353
Email: crystal.fuller@nih.gov

cancer.gov/labs/lab.asp?labid=92

New York Presbyterian Hospital - Weill Cornell Medical Center
Program Director: Douglas Scherr, MD
525 East 68th Street, Starr 900
New York, NY 10065
Phone: (212) 746-5788
Fax: (212) 746-0975
dss2001@med.cornell.edu
Roswell Park Cancer Institute  
Program Director: James L. Mohler, MD  
Elm and Carlton Streets  
Buffalo, NY 14263  
Phone: (716) 845-3389  
Fax: (716) 845-3300  
Email: james.mohler@roswellpark.org

http://www.roswellpark.edu/education/clinical-fellowships/urology

UCLA Medical Center, Urology Department  
Program Director: Allan J. Pantuck, MD  
UCLA School of Medicine  
300 Stein Plaza, 3rd Floor  
Los Angeles, CA 90095  
Phone: (310) 206-2436 or (310) 794-7224  
Email: apantuck@mednet.ucla.edu  
Fellowship Coordinator: Ira Sarian  
Phone: (310) 794-8492  
Fax: (310) 794-8653  
Email: isarian@mednet.ucla.edu

University of California, San Diego  
Comprehensive Cancer Center Urologic Oncology Fellowship  
200 West Arbor Drive #8897  
San Diego, CA 92103-8897  
Program Director: Ithaar Derweesh, MD  
Phone: (619) 543-2659  
Fax: (619) 543-6573  
Email: iderweesh@ucsd.edu  
Fellowship Coordinator: Adela Lopez  
Email: alopez@ucsd.edu

University of California, San Francisco, Urologic Oncology Program  
Program Director: Maxwell V. Meng, MD  
University of California, San Francisco  
Department of Urology  
1600 Divisadero St. Room A609  
San Francisco, CA 94143-1695  
Telephone: (415) 885-7748  
Email: max.meng@ucsf.edu  
Sima Porten, MD, MPH  
Assistant Professor of Urology  
Associate Urology/Oncology Fellowship Director  
University of California, San Francisco  
Telephone: (415) 885-3690  
Email: Sima.porten@ucsf.edu  
Joannie O’Leary and Katherine Jung  
Residency and Fellowship Program Coordinator Office  
Dept of Urology, MZ Campus  
1600 Divisadero Street, UCSF Box 1695  
San Francisco, CA 94143-1695  
Fax: 415 885-7443  
Telephone: (415) 885-7748  
Email: joan.oleary@ucsf.edu  
Telephone: (415) 885-3690  
Email: katherine.jung@ucsf.edu

University of Chicago Medical Center, Section of Urology  
Program Director: Gary D. Steinberg, MD  
5841 South Maryland Avenue, MC 6038  
Chicago, IL 60637  
Phone: (773) 702-3080  
Fax: (773) 702-1001  
Email: gsteinbe@surgery.bsd.uchicago.edu  
Fellowship Coordinator: Joanne Swanson  
Phone: (773) 702-9757  
Email: jswanson@surgery.bsd.uchicago.edu

www.ucurology.org/fellowship
SUO Fellowship Programs

University of Iowa
Program Director: Ken Nepple, MD
University of Iowa Hospitals and Clinics
3228 RCP
200 Hawkins Dr.
Iowa City, IA 52242
Phone: 319-467-5074
Fax: 319-356-3900
Email: kenneth-nepple@uiowa.edu

Fellowship Coordinator: Sandy Moenk
Phone: 319-356-0748
Email: sandy-moenk@uiowa.edu

www.medicine.uiowa.edu/urology

University of Kansas Medical Center
Program Director: Jeffrey M. Holzbeierlein, MD
3901 Rainbow Blvd, Mail Stop 3016
Kansas City, KS 66160
Phone: (913) 588-7571
Fax: (913) 588-0603
Email: jholzbeierlein@kumc.edu

University of Michigan, Urology Department
Program Director: Jeffrey S. Montgomery, MD, MHSA
Associate Professor of Urology
University of Michigan Department of Urology
Division of Urologic Oncology
Urology Section Chief
Ann Arbor VA Health System
1500 E. Medical Center Dr.
Ann Arbor, MI 48109-5946
Phone: (734) 615-6662
Fax: (734) 647-9480
Email: montros@med.umich.edu

Fellowship Coordinator: Michelle Vigo
Phone: (734) 615-6662
Email: mvigo@med.umich.edu

https://medicine.umich.edu/dept/urology/education/fellowships/
society-urologic-oncology-fellowship

University of Pittsburgh Medical Center
Program Director: Benjamin Davies, MD
5200 Center Avenue, Suite 209
Pittsburgh, PA 15232
Phone: (412) 605-3020
Fax: (412) 605-3030
Email: daviesbj@upmc.edu

University of Southern California, Keck School of Medicine
Program Director: Sia Daneshmand, MD
Director of Urologic Oncology
1441 Eastlake Avenue, MS 74, Suite 7416
Los Angeles, CA 90089
Phone: 323-865-3700
Fax: 323-865-0120
Email: daneshma@med.usc.edu

Shannon N. Piazza
1441 Eastlake Avenue, Suite 7416
Los Angeles, CA 90089
Phone (323) 865-3716
Fax (323) 865-0120
Email: shannon.piazza@med.usc.edu

University of Texas Health Science Center, Department of Urology
Program Director: Dharam Kaushik, MBBS, MD
Phone: 210-567-5676
Fax: 210-567-6868
Email: kaushik@uthscsa.edu

Fellowship Coordinator: Crystal Montez
Academic Program Coordinator, Urology
Phone: (210) 567-5644
Fax: (210) 567-5977
Email: montezcm@uthscsa.edu

University of Toronto, Uro-Oncology Fellowship Program, Division of Urology
Program Director: Alex Zlotta, MD
60 Murray Street, 6th Floor
Toronto, Ontario M5T 3L9
Canada
Phone: (416) 586-4800 ext 3910 or 3933
Fax: (416) 586-8354
Email: AZlotta@Mtsinai.on.ca

Fellowship Coordinator: Stephanie Wong
Phone: (416) 586-4800 x3910
Email: swong5@mtsinaion.ca

www.surgery.utoronto.ca


**University of Washington Medical Center, Urology Department**
Program Director: Daniel W. Lin, MD  
Department of Urology  
Box 356510, BB-1115  
University of Washington  
Seattle, WA 98195  
Phone: (206) 543-4740  
Email: dlin@u.washington.edu  

Assistant Director: John L. Gore, MD  
1959 NE Pacific St.  
Box 356510  
Seattle, WA  
Phone: (206) 221-6430  
Email: jlgore@u.washington.edu  

Fellowship Coordinator: Jess Morales  
Phone: (206) 685-1982  
Email: jessm2@uw.edu

---

**University of Western Ontario, Uro-Oncology Fellowship Program**
Program Director: Jonathan I. Izawa, MD, FRCSC  
Associate Professor, Departments of Surgery & Oncology  
Divisions of Surgical Oncology & Urology  
Schulich School of Medicine & Dentistry  
The University of Western Ontario  
London Health Sciences Centre-Victoria Hospital  
800 Commissioners Road East, Room E2-649  
London, Ontario, Canada N6A 4G5  
Phone: (519) 685-8550  
Fax: (519) 685-8455  
Email: jonathan.izawa@lhsc.on.ca

---

**University of Wisconsin, Department of Urology**
Program Director: David Jarrard, MD  
1685 Highland Avenue, 3rd Floor  
Madison, WI 53705-2281  
Phone: (608) 263-9534  
Fax: (608) 262-6453  
Email: jarrard@urology.wisc.edu  

Educational Programs Manager: Barb Lewis, RN, MS  
3224 MFCB 1685 Highland Avenue  
Madison, WI 53705-2281  
Phone: (608) 263-1363  
Fax: (608) 262-6453  
Email: lewis@urology.wisc.edu  

*Not taking applications this year.*

---

**UT Southwestern Medical Center at Dallas**
Program Director: Vitaly Margulis, MD  
Assistant Professor: Dept. of Urology  
5323 Harry Hines Blvd.  
Dallas, TX 75390  
Phone: (214) 648-0567  
Fax: (214) 648-8786  
Email: vitaly.margulis@utsouthwestern.edu  

Fellowship Coordinator: Tisha Franklin  
Email: Tisha.Franklin@utsouthwestern.edu
Vanderbilt University Program, Department of Urologic Surgery
Program Director: Sam S. Chang, MD
Vanderbilt University
A1302 MCN, Dept. of Urologic Surgery
1161 21st Avenue
Nashville, TN 37232
Phone: (615) 322-2101
Fax: (615) 322-8990
Email: sam.chang@vanderbilt.edu
Fellowship Coordinator: Michele Clark
Phone: (615) 322-2101
Email: michele.clark@vanderbilt.edu

Virginia Mason Medical Center
Program Director: Christopher R. Porter, MD
1100 9th Avenue
Seattle, WA 98101
Phone: (206) 223-6600
Email: urocrp@vmmc.org
Program Coordinator: Joy Mala, BSHA
Phone: (206) 583-6430

The Society of Urologic Oncology (SUO) was created in 1984 to include members interested in the care of patients with malignant genitourinary disease. The SUO develops educational and research initiatives, studies in urologic oncology, and provides physician statements representing state-of-the-art assessments of these issues to other organizations.

For more information, visit www.suonet.org.

The National Cancer Institute (NCI) is the government’s primary agency for conducting and supporting research in cancer causes, diagnosis, prevention, and treatment. In support of the entire community of cancer researchers, NCI employs its funding mechanisms, organizations, and networks to support basic, translational, and clinical research, and to invest in extraordinary opportunities to further progress made possible by previous discoveries.

For more information, visit www.cancer.gov.
### 2018 Urologic Oncology Fellowship Matching Program

#### Match Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 28, 2017</td>
<td>Registration deadline for both applicants and programs.</td>
</tr>
<tr>
<td>May 8, 2017</td>
<td>Preference list phase begins.</td>
</tr>
<tr>
<td>May 31, 2017</td>
<td>Deadline for receipt of all online preference lists.</td>
</tr>
<tr>
<td></td>
<td>(You will receive e-mail instructions on how to submit your list.)</td>
</tr>
<tr>
<td>June 9-16, 2017</td>
<td>The Match is performed, using all possible safeguards to ensure accuracy and confidentiality.</td>
</tr>
<tr>
<td>June 20, 2017</td>
<td>Match results sent out via e-mail.</td>
</tr>
</tbody>
</table>
SUO-SBUR Joint Meeting at the 2017 AUA Annual Meeting
May 13, 2017
Boston, Massachusetts

SUO at the 2017 AUA Annual Meeting
May 13, 2017
Boston, Massachusetts

18th Annual Meeting of the SUO
November 29 – December 1, 2017
Renaissance Washington DC Downtown Hotel
Washington, DC