Disclosures

- None
Objectives

- Review of new research from the 2017 AUA Conference

- Highlight Important Bladder Cancer publications in 2017
Bladder Cancer Highlights

- 19 individual Poster/Podium/Video Sessions
- 324 accepted presentations
- 4 Plenary Presentations
- AUA/ASCO/ASTRO/SUO Guidelines 2017: Muscle Invasive Bladder Cancer
Bladder Cancer Highlights
- Best poster finalists
- Late breaking abstracts
- Clinical Relevancy

- Surveillance Strategies
- Urine Biomarkers
- Androgen Receptor in Bladder Cancer
- Robotic Cystectomy
- Intravesical Therapy
- Management of BCG Refractory Disease
- Molecular Subtypes for NAC Selection
Surveillance
Upper Tract Imaging in NMIBC

NCCN Guidelines Version 5.2017
Bladder Cancer
NCCN Evidence Blocks™

FOLLOW-UP

No single follow-up plan is appropriate for all patients. The follow-up tables are to provide guidance, and should be modified for the individual patient based on sites of disease, biology of disease, and length of time on treatment. Reassessments of disease activity should be performed in patients with new or worsening signs or symptoms of disease, regardless of the time interval from previous studies. Further study is required to define optimal follow-up duration.

Table 1: Non-Muscle Invasive Bladder Cancer

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<th>Test</th>
<th>AUA Risk Category</th>
<th>Year (at month intervals)</th>
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<td>Consider: UT baseline, 12 AP baseline</td>
<td>UT every 1–2 y</td>
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<td></td>
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NCCN Guidelines Index
Table of Contents
Discussion
Surveillance

PD19-02: Is there a role for upper urinary tract imaging surveillance in the follow-up of non-muscle invasive bladder cancer? (Kranzbuler et al)

- 315 pts with NMIBC; 396 Scans (230 routine)
  - 4 (1.2%) Diagnosed with UTUC (all LGTa)
  - NNS = 115 to detect one UTUC

Take Home: Upper Tract imaging may have limited benefit in NMIBC surveillance. Risk based surveillance strategies are needed to limit overuse of imaging.
Urine Biomarkers

- Urine cytology >90% specificity
- Low sensitivity of urine cytology has driven search for better urinary markers

<table>
<thead>
<tr>
<th>Markers (or test specifications)</th>
<th>Overall sensitivity (%)</th>
<th>Overall specificity (%)</th>
<th>Sensitivity for high-grade tumours (%)</th>
<th>Point-of-care test</th>
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</table>

- Improved sensitivity at cost of lower specificity
- Can be influenced by UTI/BCG
Urine Biomarkers

- **MP10-20**: Prospective evaluation of a clinical tool for segregation of hematuria patients at risk for high-grade urothelial carcinoma (Raman et al)

  - Cxbladder Resolve, a new urine-based test
    - 2 Clinical Variables and 5 urine based gene expression markers
    - Stratify patients with hematuria into;
      - Low risk of UC
      - Elevated risk of LG UC
      - High risk of HG UC
  
- **863 pts with hematuria**
  - 89 (10.3%) identified with urothelial cancer
Urine Biomarkers

Identifies 96% of HG UC

CxBladder Resolve Low Risk of UC: NPV of >99% for HG UC

### Pathology of bladder tumors stratified by index result

<table>
<thead>
<tr>
<th>CxBladder Resolve Result</th>
<th>Tumor grade</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Low grade (n=40)</td>
<td>High grade (n=49)</td>
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</tr>
<tr>
<td></td>
<td>No (%)</td>
<td>No (%)</td>
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</tr>
<tr>
<td>Low risk UC</td>
<td>4 (10)</td>
<td>0 (0)</td>
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</tr>
<tr>
<td>Elevated risk LG UC</td>
<td>27 (68)</td>
<td>2 (4)</td>
<td></td>
</tr>
<tr>
<td>High risk HG UC</td>
<td>9 (22)</td>
<td>47 (96)</td>
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</table>
Urine Biomarkers

- Identifies 96% of HG UC
- CxBladder Resolve Low Risk of UC: NPV of >99% for HG UC

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</tbody>
</table>
Urine Biomarkers

- MP15-15: Urine sample derived CK20- and IGF2-expression as biomarker for the detection of bladder cancer (Salomo et al)
  - Cytokeratin 20 (CK20) and Insulin-like growth factor 2 (IGF2) were previously proposed to be elevated in patients with bladder cancer
  - Urine mRNA analysis
    - CK20 – 0.83 AUC for Detection of BCa
    - IGF2 – 0.82 AUC for Detection of BCa
  - Cytology + IGF2 and CK20 increased sensitivity to 93%, but with slightly reduced specificity to 84%

Take Home: Urine Biomarkers still work in progress, but these new markers may help us identify high risk patients
Androgen Receptor and Bladder Cancer

Gender Differences in Bladder cancer

- Males 3-4x more likely to develop Bladder Cancer
- Females present with more aggressive disease

Androgen Receptor signaling involved in etiology and progression of disease
Androgen Receptor and Bladder Cancer

Androgen Receptor

• AR = Transcription Factor

• Rat models have suggested role of AR in normal physiologic bladder function

• >50% expression in bladder tumors

• AR expression decreases with worsening stage

Boorjian et al, 2004
C Tuygyn et al, 2011
Androgen Receptor and Bladder Cancer

MP10-09: Suppressed recurrent bladder cancer after androgen suppression therapy (AST) with androgen-deprivation therapy or 5α-reductase inhibitor (Shiota et al)

- Examined the intravesical recurrence rate among men treated with or without androgen-deprivation therapy for prostate cancer or 5α-reductase inhibitor dutasteride for benign prostatic hyperplasia

- 228 males
  - 32 AST
  - 196 without AST

- 4% vs 30.1% recurrence rate with/without AST

- AST independent predictor of disease recurrence (HR 0.36)

- Progression to MIBC occurred in six (3.1%) men without AST, while no case in men with AST
Androgen Receptor and Bladder Cancer

PD57-07: Race and Finasteride Use: Differential Impact on Bladder Cancer Risk (Srivastava et al)

- A recent subset analysis of the Prostate, Lung, Colorectal, and Ovarian cancer (PLCO) study has suggested that Finasteride use was associated with a reduced incidence of bladder cancer

- 42,774 patients with BPH
  - BCa Risk 1.5% (84/5698) on Finasteride
  - BCa Risk 2.3% (863/37076) no Finasteride  p<.001

- Multivariate regression: Finasteride protective against BCa
Androgen Receptor and Bladder Cancer

MP88-07: Androgen receptor activity modulates radiosensitivity in bladder cancer cells (Ide et al)
- Radiation worked best in AR-negative and AR-positive cells treated with anti-androgen

MP88-09: Androgen receptor activity modulates direct cytotoxicity of bacillus Calmette-Guérin (BCG) in bladder cancer cells (Chen et al)
- BCG treatment reduced the numbers of viable cells or colonies of AR-negative lines more significantly than those of AR-positive lines. AR-positive cells treated with anti-androgen enhanced response to BCG

Take Home: Emerging clinical and preclinical evidence suggesting involvement of AR in urothelial tumorigenesis and clinical response. Potential space for further clinical trials
Intravesical Therapy

PNFLBA-10: Late-Breaking Abstract - A Phase III Blinded Study of Immediate Post-TURBT Instillation of Gemcitabine versus Saline in Patients with Newly Diagnosed or Occasionally Recurring Grade I/II Non-Muscle Invasive Bladder Cancer: SWOG S0337 (Messing et al)

- Evaluation of one instillation of G (2 gm/100 ml saline) versus saline (S) alone (100 ml), held for one hour immediately following transurethral resection of bladder tumor (TURBT), on time to recurrence (TTR)
- 416 (406 eligible) patients were randomized to G or S
- 34% reduction in risk of recurrence in the G arm compared to S (HR=0.66, 95% CI 0.48, 0.90, p=0.010).
- Safe and well tolerated: No Grade 4 or 5 complications, and no difference in Grade 3 AEs (G 2.4%, S 3.4%).

Take Home: Gemcitabine potential new standard for post TURBT instillation for Low risk NMIBC. Comparison to MMC?
BCG Refractory Disease

PNFLBA-13: Late-Breaking Abstract - Interim Results from A Single-Arm Multicenter Phase II Trial of CG0070, an Oncolytic Adenovirus, for BCG-Unresponsive Non-Muscle-Invasive Bladder Cancer (NMIBC) (Packiam et al)

- CG0070 is a replication selective oncolytic adenovirus that destroys bladder tumor cells through their defective retinoblastoma pathway
- Single Arm Phase II trial of 36 patients
- Patients had either failed BCG induction therapy within 6 months or had been successfully treated with BCG with subsequent recurrence
- Overall 6 month CR: 44%
  - 72% CR for Pure CIS only
  - 52% CR for CIS containing tumors
  - 27% CR for Ta/T1 (No CIS)
- AE rate: 5.6% (No Grade 4/5 complications)

**Take Home:** Promising results in CIS, need further follow up
Robotic Radical Cystectomy

Randomized Trials

- 3 Trials
- Single Institution
- 199 total Patients
- All underwent Robotic Radical Cystectomy with open extracorporeal diversion
- Similar PSM/LN/Complications
- Robot improved EBL
- No oncologic outcome data

<table>
<thead>
<tr>
<th>Trial</th>
<th>Robotic (n)</th>
<th>Open (n)</th>
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<tbody>
<tr>
<td>Nix et al. 2009</td>
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<tr>
<td>Parekh et al. 2012</td>
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<tr>
<td>Bochner et al. 2014</td>
<td>60</td>
<td>58</td>
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</tbody>
</table>
PNFLBA-18: Late-Breaking Abstract - A Prospective, Multicenter, Randomized Trial of Open versus Robotic Radical Cystectomy (RAZOR) (Parekh et al)

- 2 year Oncologic Outcomes data:
  - No difference in progression free survival (HR 0.91)
  - No difference in overall survival (HR 0.80)
- No difference in overall margins, but higher robotic soft tissue margins
- Robotic: EBL less, less transfusion rate, improved LOS
- Open: Decreased operative time

**Take home:** Robotic cystectomy not inferior to open cystectomy with respect to oncologic outcomes. Surgeons will decide based on experience and proficiency on which modality they will offer to patients.
Molecular Subtypes and NAC Selection

PD62-03: The Effect of Intrinsic Subtype on Response to Neoadjuvant Chemotherapy for Muscle Invasive Bladder Cancer (Metcalfe et al)

- Whole-genome analysis was performed on TURBT specimens and were classified into basal, luminal or p53-like subtypes
- 273 TURBT specimens
- Downstaging
  - Basal: 51%
  - p53 like: 33%
  - Luminal: 57%
- Despite downstaging no OS survival seen in Luminal/p53 like subtypes
- OS survival advantage with NAC only seen in Basal subtype (MP34-01: Seiler et al)

**Take home:** Variable response to NAC based on molecular subtypes which has survival implications. Determine candidates for NAC vs those who are resistant and should be included in protocols investigating other treatments such as immunotherapy
What is a significant publication?

Newsworthiness vs Scientific Impact

Traditional Metrics

- **Citation # =** Indicator of importance
- **h index:** Author level metric
  - Reflects both # of citations and # publications
- **Journal Impact Factor**
  - Dependent on discipline and volume of research in given field
  - Influenced by self citations and # of review articles, and timing of publication
Subscription Based Databases

- 12K Journals
- 160,000 Conference Proceedings

- 21K Journals
- 40K Books
- 6.5 Million Conference Proceedings
- 24 Million Patents
What is a significant publication?

Newsworthiness vs Scientific Impact

Alternative Metrics

- Online Footprint
- Represents social and conventional media sharing of article
- Measure is based on quantity of posts mentioning article and quality of the post’s source

Susceptible to skew in favor of articles that appeal to general public and not scientific community
• Online resource that collates relevant online discussions regarding published research

• Altmetric Bookmark

![Altmetric logo with count 431]
2016 Highest Altmetric Score

Medical error—the third leading cause of death in the US

BMJ 2016; 353 doi: https://doi.org/10.1136/bmj.i2139 (Published 03 May 2016)
Cite this as: BMJ 2016;353;i2139
Newsworthiness vs scientific impact: are the most highly cited urology papers the most widely disseminated in the media?

Eabhan M. O’Connor*, Gregory J. Nason†, Fardod O’Kelly‡, Rustom P. Manecksha§ and Stacy Loeb**

BJU International
### 2015 Urology Papers Ranked by Citations

<table>
<thead>
<tr>
<th>Rank</th>
<th>First author</th>
<th>Title</th>
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<tbody>
<tr>
<td>1</td>
<td>Heidenreich</td>
<td>EAU guidelines on prostate cancer. Part 1: Screening, diagnosis, and local treatment with curative intent-update 2013</td>
</tr>
<tr>
<td>2</td>
<td>Heidenreich</td>
<td>EAU guidelines on prostate cancer. Part II: Treatment of advanced, relapsing, and castration-resistant prostate cancer</td>
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<td>3</td>
<td>Witjes</td>
<td>EAU guidelines on muscle-invasive and metastatic bladder cancer: summary of the 2013 guidelines</td>
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<td>4</td>
<td>Ljungberg</td>
<td>EAU guidelines on renal cell carcinoma: 2014 update</td>
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<td>5</td>
<td>Schrader</td>
<td>Enzalutamide in castration-resistant prostate cancer patients progressing after docetaxel and abiraterone</td>
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### 2015 Urology Papers Ranked by Altmetric Scores

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<tr>
<td>1</td>
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<td>Am I normal? A systematic review and construction of nomograms for flaccid and erect penis length and circumference in up to 15,521 men</td>
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<tr>
<td>2</td>
<td>Joyal</td>
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<td>Salama</td>
<td>Nature and origin of ‘squirting’ in female sexuality</td>
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<td>Garcia</td>
<td>Variation in orgasm occurrence by sexual orientation in a sample of U.S. singles</td>
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<td>5</td>
<td>Ruppen-Greeff</td>
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Loeb et al. BJUI 2017
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<th>Citations</th>
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<td>2</td>
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<td>Salama</td>
<td>Nature and origin of ‘squirtling’ in female sexuality</td>
<td>2015</td>
<td><em>J Sex Med</em></td>
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</tbody>
</table>

Loeb et al. BJUI 2017
Traditional Metrics vs Altmetrics

- Inverse Relationship: High Altmetrics scores associated with lower citation rate
- 20% of top 100 cited Urology Articles had Altmetric score of zero

- Highlights that conventional and social media serve a general audience with different interests from the academic-based audience that traditional metrics measure
Tradational Metrics + Altmetrics

**Usage:** clicks, views, downloads, library holdings, video plays

**Captures:** bookmarks, favorites, reference manager saves

**Citations:** citation indexes, patent citations, clinical citations, policy citations

**Mentions:** blog posts, news mentions, comments, reviews, Wikipedia mentions

**Social media:** tweets, +1s, likes, shares
Molecular Classification
Perspectives in Immunotherapy
Regionalization of Care

Traditional Metrics
Citation #:IF

Altmetric
Impact of Molecular Subtypes in Muscle-invasive Bladder Cancer on Predicting Response and Survival after Neoadjuvant Chemotherapy


Associate Editor: James Catto

97% Percentile
Impact of Molecular Subtypes/NAC

4 Published molecular classification methods

- Correlate molecular subtyping of pre-NAC specimens according to four published classification methods with outcomes in multi-institutional patient (n = 250) cohort after NAC
Impact of Molecular Subtypes/NAC

None of published molecular subtypes can be used for clinical use since an entire patient population cohort is needed just to generate an individual patient to a subtype.

Single Sample Genomic Subtyping Classifier Model

Claudin Low  Basal  Luminal  Luminal-infiltrated
Impact of Molecular Subtypes/NAC

Consensus Genomic Subtype Classifier

Basal          Luminal

GSC classes
- Claudin-low
- Basal
- Luminal
- Luminal-infiltrated
- Luminal
Impact of Molecular Subtypes/NAC

Overall Survival

Graph A: Non-NAC dataset (n = 476) and NAC dataset (n = 269) showing the impact of molecular subtypes on overall survival. The graphs illustrate the survival probability over time for Luminal, Luminal-inf, Claudin-low, and Basal subtypes in both datasets.
Basal tumors had a 3-yr OS rate of 49.2% in the non-NAC cohort compared with 77.8% (95% CI 67.2–90.0%; p < 0.001) in the NAC cohort. Derive most benefit from NAC.
Luminal tumors: Best prognosis, irrespective of NAC. No apparent benefit of NAC
Impact of Molecular Subtypes/NAC

Overall Survival

Luminal infiltrated tumors: Worst prognosis with and without NAC; ??Check point inhibition
Impact of Molecular Subtypes/NAC

Conclusions

- Single Specimen Genetic Subtype Classifier:
  - Different molecular subtypes can be identified in muscle-invasive bladder cancer
- Basal subtype should be prioritized for NAC
- Non-responders (Luminal Infiltrated) should be evaluated for different treatment protocols

Needs further Validation
2017 Bladder Cancer Highlights

Pembrolizumab as Second-Line Therapy for Advanced Urothelial Carcinoma

Abstract | Article | References | Citing Articles (68) | Comments (1) | Letters | Metrics
--- | --- | --- | --- | --- | --- | ---

99% Percentile

Article Metrics Since Publication

- Page Views: 75,532
- Citations: 68
- Media Coverage: 39
- Social Media: 625th
Pembrolizumab

- Monoclonal antibody against PD-1
- Inhibits interaction between PD-1 and PD-L1 on tumor cell
- Potentiates T-cell response = Anti-tumor activity

Drake CG et al. Nat Rev Clin Oncol 2014
Study Overview – KEYNOTE 045

- International Multi-institutional Phase III Trial
- 542 patients with advanced urothelial cancer who recurred or progressed after platinum-based chemotherapy

Randomization
- 270 pts Pembrolizumab
- 272 pts Chemotherapy (Paclitaxel, Docetaxel, or vinflunine)

Primary End points
- Overall Survival
- Progression Free Survival
  - Total Population
  - PD-1 Ligand expression >10%
KEYNOTE - 045

Overall Survival

- Overall Survival benefit also seen in PD-L1 Expression Population (8.0 mo vs. 5.2 mo, p = 0.005)
KEYNOTE - 045

Progression Free Survival

Hazard ratio for disease progression or death, 0.98 (95% CI, 0.81–1.19)
P = 0.42

No difference in median progression free survival
Treatment-related events of grade 3, 4, or 5 severity were less frequent in the pembrolizumab group than in the chemotherapy group (15.0% vs. 49.4% of patients)
Conclusions

- Pembrolizumab resulted in significantly longer overall survival by approximately 3 months.
- Higher rate of objective response and a lower rate of treatment-related adverse events than chemotherapy as second-line therapy in patients with advanced urothelial carcinoma, regardless of tumor PD-L1 expression status.
  - FDA approved in May 2017
  - Objective response rate only 21%

Future Directions

- Combination therapy with chemotherapy/radiation therapy
- Multi-agent Immunotherapy
- First line therapy in platinum eligible and non eligible patients
Causes, Timing, Hospital Costs and Perioperative Outcomes of Index vs Nonindex Hospital Readmissions after Radical Cystectomy: Implications for Regionalization of Care

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97% Percentile
Review of Nationwide Readmissions Database for causes of index and non-index hospital readmissions following radical cystectomies

- Index: Readmission to same hospital where surgery was performed
- Non-index: Readmissions to different hospitals

4991 RC patients

- 29% (1447) Index Hospital Readmission
- 11% (571) Non-index Hospital Readmission

No difference in LOS
<table>
<thead>
<tr>
<th>Costs</th>
<th>Index Readmission</th>
<th>Non-Index Readmission</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean initial hospitalization costs (SE)</td>
<td>$35,845 (2,221)</td>
<td>$33,546 (1,157)</td>
<td>0.3</td>
</tr>
<tr>
<td>Mean readmission costs (SE)</td>
<td>$15,102 (2,521)</td>
<td>$14,147 (1,256)</td>
<td>0.7</td>
</tr>
<tr>
<td>Mean 30-day followup costs (SE)</td>
<td>$12,328 (2,541)</td>
<td>$11,824 (895)</td>
<td>0.9</td>
</tr>
<tr>
<td>Mean 90-day followup costs (SE)</td>
<td>$20,760 (2,730)</td>
<td>$20,529 (1,376)</td>
<td>0.9</td>
</tr>
</tbody>
</table>
## Causes of Readmissions

### Hospital Mortality
- **Index:** 2.4%
- **Non-Index:** 2.1% \( (p = 0.8) \)

### Table 2 Causes of index and nonindex readmission using principal ICD-9 diagnosis code

<table>
<thead>
<tr>
<th>Causes</th>
<th>% Index Readmission</th>
<th>% Non-index Readmission</th>
<th>( p ) Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clostridium difficile</td>
<td>31.9</td>
<td>Less than 2**</td>
<td>0.4</td>
</tr>
<tr>
<td>Sepsis</td>
<td>15.5</td>
<td>20.4</td>
<td>0.1</td>
</tr>
<tr>
<td>Pyelonephritis</td>
<td>4.2</td>
<td>2.9</td>
<td>0.3</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>7.9</td>
<td>8.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Abscess</td>
<td>0.8</td>
<td>Less than 2**</td>
<td>0.6</td>
</tr>
<tr>
<td>Fever</td>
<td>1.3</td>
<td>Less than 2**</td>
<td>0.6</td>
</tr>
<tr>
<td>Bacteremia</td>
<td>Less than 1**</td>
<td>Less than 1**</td>
<td>0.1</td>
</tr>
<tr>
<td>Wound:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehiscence</td>
<td>16.7</td>
<td>5.3</td>
<td>0.00001</td>
</tr>
<tr>
<td>Seroma</td>
<td>3.1</td>
<td>Less than 2**</td>
<td>0.04</td>
</tr>
<tr>
<td>Surgical site infection</td>
<td>12.2</td>
<td>3.9</td>
<td>0.0001</td>
</tr>
<tr>
<td>Genitourinary:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute renal failure</td>
<td>12.3</td>
<td>11.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Hydronephrosis</td>
<td>5.6</td>
<td>6.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Ureteral stricture</td>
<td>Less than 1**</td>
<td>Less than 2**</td>
<td>0.9</td>
</tr>
<tr>
<td>Urethral stricture</td>
<td>0</td>
<td>Less than 2**</td>
<td>0.1</td>
</tr>
<tr>
<td>Catheter related infection or mechanical obstruction</td>
<td>3.2</td>
<td>Less than 2**</td>
<td>0.08</td>
</tr>
<tr>
<td>Fistula</td>
<td>Less than 1**</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td>Not specified</td>
<td>2.3</td>
<td>3.4</td>
<td>0.3</td>
</tr>
<tr>
<td>Stoma</td>
<td>Less than 1**</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Gastrointestinal:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obstruction</td>
<td>11.0</td>
<td>6.0</td>
<td>0.04</td>
</tr>
<tr>
<td>Nausea/vomiting</td>
<td>4.5</td>
<td>4.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Not specified</td>
<td>0.8</td>
<td>Less than 2**</td>
<td>0.5</td>
</tr>
<tr>
<td>Cardiovascular:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>5.7</td>
<td>Less than 2**</td>
<td>0.006</td>
</tr>
<tr>
<td>Deep vein thrombosis</td>
<td>2.0</td>
<td>7.6</td>
<td>0.003</td>
</tr>
<tr>
<td>Myocardial infarction or coronary artery disease</td>
<td>Less than 1**</td>
<td>Less than 2**</td>
<td>0.2</td>
</tr>
<tr>
<td>Electrolyte abnormality</td>
<td>2.2</td>
<td>2.9</td>
<td>0.7</td>
</tr>
<tr>
<td>Bleeding:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hemorrhage/haematoma</td>
<td>1.6</td>
<td>3.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Hematuria</td>
<td>Less than 1**</td>
<td>Less than 2**</td>
<td>0.4</td>
</tr>
<tr>
<td>Anemia</td>
<td>1.2</td>
<td>2.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Ca related:</td>
<td>3.6</td>
<td>2.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Bladder cancer</td>
<td>1.3</td>
<td>Less than 2**</td>
<td>0.4</td>
</tr>
<tr>
<td>Recurrence</td>
<td>Less than 1**</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Metastatic disease</td>
<td>1.5</td>
<td>Less than 2**</td>
<td>0.9</td>
</tr>
<tr>
<td>Anemia</td>
<td>2.0</td>
<td>2.8</td>
<td>0.1</td>
</tr>
<tr>
<td>Ca related:</td>
<td>Less than 1**</td>
<td>Less than 2**</td>
<td>0.7</td>
</tr>
<tr>
<td>Failure to thrive</td>
<td>Less than 1**</td>
<td>0.3</td>
<td></td>
</tr>
</tbody>
</table>

\( *p* \text{-values} < 0.05 \)
Higher % of Non-index Readmissions >30 days
Predictors of Non-index Readmission

- Longer LOS
- Discharge to facility/home health
- Older patients
- Patient Location in less populated region
- Had surgery at high RC volume Centers

Regionalization of Radical Cystectomy

**Take Home:**
Higher risk of care fragmentation does not lead to increased costs or perioperative harms, thus practice of referring RC cases to high volume tertiary care centers should continue to gain momentum.
Conclusions

- Research in genomics and immune check point inhibition represents the present and future in bladder cancer.
- With volume of information now available, physicians will need technology to help organize data.
- Patient care will ultimately driven by health information technology.
Thank You