Genitourinary Neoplasms
Updated for 2012 Requirements and CSv02.04
FCDS Educational Webcast Series
February 28, 2013
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Susan Smith Pierce, CTR
Gema Midence, MBA, CTR

Presentation Outline
- General Information and Anatomy
  - Kidney – Renal Parenchyma
  - Kidney – Renal Pelvis
  - Ureters
  - Bladder
  - Prostate
- Multiple Primary and Histology Coding Rules (MPH)
- Collaborative Stage Data Collection System (CSv02.04)
- FCDS Required Site Specific Factors (SSFs)
- NCCN Treatment Guidelines
- Text Documentation

Genitourinary System
Source: http://medicaltrue.com/urinary-tract
Genitourinary System


Kidney

U.S. Incidence/Mortality

Risk Factors/Screening

**Risk Factors**
- Cigarette Smoking
- First-degree relative
- Long-term PCB exposure
- Long-term use of medicines
- Obesity

**Screening**
- None
- CT Scan
- Ultrasound
- Incidental Finding

Source: 2007 Multiple Primary and Histology Coding Rules
Kidney - Anatomy

1. Parenchyma
2. Cortex
3. Medulla
4. Perirenal fat
5. Capsule
6. Ureter
7. Pelvis of kidney
8. Renal vessels
9. Hilum
10. Calyx

Source: http://training.seer.cancer.gov

Figure I-2-13. Structures Adjacent to Kidney

Source: Collaborative Stage Data Collection System, Part I, Section 2

Kidney - Histology

Renal Cell Carcinoma and Renal Cell Carcinoma Subtypes

- 8312 Renal cell carcinoma is a GROUP term for glandular (adeno) carcinoma of the kidney
- 8255 Adenocarcinoma with mixed subtypes**
- 8260 Papillary (Chromophil)*
- 8310 Clear Cell
- 8316 Cyst associated, cystic
- 8317 Chromophobe*
- 8318 Sarcomatoid (Spindle cell)
- 8319 Collecting duct type (Bellini duct)
- 8320 Granular cell
- 8510 Medullary carcinoma, NOS; medullary adenocarcinoma
- 8959 Malignant cystic nephroma

Source: 2007 Multiple Primary & Histology Coding Rules
Kidney - MPH Rules

Kidney MPH Includes:
- Kidney Parenchyma
- Renal Parenchyma (C649)
Kidney MPH Rules - Example 1
- Patient has two tumors in upper pole of left kidney.
- Both are T1a neoplasms (small tumor size)
- Histology 1: RCC, NOS (8312/3)
- Histology 2: RCC papillary type (8260/3)
- One Primary or Two Primaries?
  - One Primary per Rule M9
  - RCC, NOS and an RCC Subtype in two tumors
- Histologic Type/Code?
  - 8260/3 – Rule H12 - code the specific type
Kidney MPH Rules - Example 2

- Patient has two tumors in upper pole of left kidney.
- Both are T1a neoplasms (small tumor size)
- Histology 1: RCC papillary type (8260/3)
- Histology 2: RCC tubulocystic type (8316/3)
- One Primary or Two Primaries?
  - Two Primaries per Rule M10
  - Two different subtypes of RCC – not RCC and a subtype
- Histologic Type/Histology Code?
  - 8260/3 – RCC papillary type
  - 8316/3 – RCC cystic type

Kidney MPH Rules - Example 3

- Patient has one tumor in upper pole of right kidney.
- Histology: RCC with papillary and cystic features
- One Primary or Two Primaries?
  - One Primary = One Tumor
- Histologic Type/Histology Code?
  - 8255/3 – adenocarcinoma with mixed subtypes
  - Per Rule H6

Kidney – Collaborative Stage
Kidney Parenchyma

Kidney (Renal Parenchyma)

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<th>Description</th>
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<tbody>
<tr>
<td>26</td>
<td>Code in Kidney, B00 (renal parenchyma)</td>
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<tr>
<td>27</td>
<td>Penile. Usually must be coded for H10 site</td>
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<th>Description</th>
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</tr>
<tr>
<td>20</td>
<td>Type</td>
</tr>
<tr>
<td>21</td>
<td>Location</td>
</tr>
<tr>
<td>22</td>
<td>Microscopic Focus or Microscopic Invasion</td>
</tr>
<tr>
<td>23</td>
<td>Tumor</td>
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<tr>
<td>24</td>
<td>Size</td>
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<td>25</td>
<td>Weight</td>
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<tr>
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<td>Spread</td>
</tr>
<tr>
<td>27</td>
<td>Other Sites</td>
</tr>
<tr>
<td>28</td>
<td>Radiographic Findings</td>
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<td>27</td>
<td>Other Sites</td>
</tr>
<tr>
<td>28</td>
<td>Radiographic Findings</td>
</tr>
</tbody>
</table>
CS Extension

- T1a: Tumor invasion involves the renal pelvis or calyces
- T1b: Tumor extends into the renal sinus or fat
- T2a: Tumor invades the pararenal or paranephric fat
- T2b: Tumor invades the renal vein or inferior vena cava but not to the level of the diaphragm
- T3a: Tumor invades the renal vein or inferior vena cava to the level of the diaphragm
- T3b: Tumor invades the aorta, superior mesenteric artery, or inferior mesenteric artery
- T4a: Tumor invades the diaphragm
- T4b: Tumor invades the liver or other organs

CS Lymph Nodes

- Regional lymph nodes include those in the para-aortic, paracaval, and iliac regions

Source: AJCC Cancer Staging Atlas
CS Mets at Dx

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>00</td>
<td>No distant metastases</td>
</tr>
<tr>
<td>10</td>
<td>Distant lymph nodes</td>
</tr>
<tr>
<td>20</td>
<td>Extension to Collecting Ducts or Cortex</td>
</tr>
<tr>
<td>30</td>
<td>Other than skin, subcutaneous fat, or bone</td>
</tr>
<tr>
<td>40</td>
<td>No distant metastases or extranodal involvement</td>
</tr>
<tr>
<td>50</td>
<td>Distant metastases or extranodal involvement</td>
</tr>
</tbody>
</table>

CS Site-Specific Factors

SSF1: Invasion Beyond Capsule
SSF2: Vein Involvement
SSF3: Ipsilateral Adrenal Gland Involvement
SSF4: Sarcomatoid Features
SSF5: Histologic Tumor Necrosis
SSF6: Fuhrman Nuclear Grade
SSF7: Size of Metastasis in Lymph Nodes
SSF8: Extranodal Extension

Kidney Cancers - Treatment
Kidney – Early Stage

Kidney – Early Stage

Kidney – Early Stage

Kidney – Early Stage

PRINCIPLES OF SURGERY:

- Open, laparoscopic, or robotic surgical techniques may be used to perform radical and partial nephrectomies.
- Partial nephrectomy may be performed to minimize loss of kidney function.
- Synchronized resection of enucleated solid renal masses may be necessary to preserve renal function.
- Preoperative imaging and staging are important for planning and surgical decision making.
- Postoperative management includes monitoring for complications such as hemorrhage, infection, and renal function.
Urothelial Neoplasms

Urothelium

The layer of transitional epithelium that lines the wall of the renal pelvis, ureters, the bladder, and parts of the urethra.

The lining is made up of transitional epithelial cells that stop urine from entering the body.

Urine consists of water and waste products.

Field Effect Theory

The field effect theory suggests that the urothelium has undergone a widespread change, perhaps in response to a carcinogen, making it more sensitive to malignant transformations.

As a result, multiple tumors arise more easily.
Implantation Theory

The implantation theory suggests that tumor cells in one location lose their attachments and float in the urine until they attach (implant) on another site.

Urothelial tumors commonly spread in a head-to-toe direction, for example from the renal pelvis to the ureter(s) to the bladder.

U.S. Incidence/Mortality

[Map with data: New Cases 1,638,910 all sites, 73,510 bladder; Deaths 577,190 all sites, 14,880 bladder]

Source: American Cancer Society Cancer Facts and Figures 2012

Risk Factors/Screening

Risk Factors
- Cigarette Smoking
- Chemical Exposures: dyes, solvents, paints, rubber, benzene, etc.
- Cyclophosphamide
- Chronic Inflammation
- Parasite Schistosoma

Screening
- None
- Blood in Urine
- Ultrasound
- Cystoscopy
- Incidental Finding
Anatomy

- Urothelium
  - Mucosa
  - Epithelium
  - Transitional Epithelium
  - Mucosal Surface
  - Transitional Mucosa
  - Tunica Mucosa
  - Vesicae Urinariae

- Lamina Propria
  - Submucosa
  - Suburothelial Connective Tissue
  - Subepithelial Tissue
  - Stroma
  - Muscularis Mucosa
  - Transitional Epithelium

- Muscularis Propria
  - Submucosa
  - Muscularis Externa
  - Smooth Muscle

Histology

- Urothelial Carcinoma = Transitional Cell Carcinoma
- Squamous Cell Carcinoma
- Adenocarcinoma
- Small Cell Carcinoma
- Small Cell Neuroendocrine

Source: http://iws.collin.edu/mweis/A&P
Histology

Table 1 - Urothelial Tumors

<table>
<thead>
<tr>
<th>Unidentified Transitional Cell Tumor: Code</th>
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</thead>
<tbody>
<tr>
<td>With squamous differentiation</td>
</tr>
<tr>
<td>With glandular differentiation</td>
</tr>
<tr>
<td>Normal</td>
</tr>
<tr>
<td>Microcystic</td>
</tr>
<tr>
<td>Transitional Cell NOS</td>
</tr>
<tr>
<td>Papillary carcinoma</td>
</tr>
<tr>
<td>Papillary transitional cell</td>
</tr>
<tr>
<td>Metaplastic</td>
</tr>
<tr>
<td>Lymphoplasmacytic</td>
</tr>
<tr>
<td>Granulocyte</td>
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<tr>
<td>Undifferentiated</td>
</tr>
</tbody>
</table>

Source: http://pathguy.com/lectures/bladder.htm

Tumor Grade

Urothelial Neoplasia

- Grade I
  - Unidentified
  - Normal
  - Papillary

- Grade II
  - "Low Grade"
  - "High Grade"

- Grade III
  - Carcinoma in situ
  - Carcinoma with invasion

Source: http://pathguy.com/lectures/bladder.htm
Tumor Grade

Table 1. Principles of Pathology Management: Malignancy Grading of Bladder Carcinoma. Oligo and New Systems.¹

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Papillary transitional, low-grade</td>
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<tr>
<td>2</td>
<td>Papillary transitional, high-grade</td>
</tr>
<tr>
<td>3</td>
<td>Urothelial carcinoma, low-grade</td>
</tr>
<tr>
<td>4</td>
<td>Urothelial carcinoma, high-grade</td>
</tr>
</tbody>
</table>

Source: nccn.org

Urothelial MPH Rules

- Kidney Renal Pelvis
- Ureter
- Bladder
- Urinary Other
  (C650, C669, C670-C679, C680-C689)

Source: http://sciencedirect.com
Urothelial MPH – Example 1

- Patient with history of invasive cancer of the bladder diagnosed in 1996 and treated with TURBT and BCG.
- Patient seen in 2013 with new non-invasive papillary TCC.

- Histology 1: Urothelial Carcinoma – 8120/3
- Histology 2: Non-Invasive PTCC of Bladder – 8130/2

- One Primary or Two Primaries? One – Rule M6

- Histology – 8120/3 – Rule H14 code the invasive histology
Urothelial MPH – Example 2

- Patient with history of invasive cancer of the bladder in 2001 being seen in 2013 with new tumor in right ureter (TCC).

- Histology 1: Urothelial Carcinoma of Bladder – 8120/3
- Histology 2: TCC of Ureter – 8120/3

- One Primary or Two Primaries? Two
- Rule M7 – tumors greater than 3 years apart
- NOTE: Rule M8 includes all urothelial (except C679 only M6)

- Seq 01 – dx 2001 – C679 M8120/3
- Seq 02 – dx 2013 – C639 M8120/3

Urothelial MPH – Example 3

- Patient with history of invasive cancer of the bladder in 2011 being seen now with new tumor in right ureter (TCC).

- Histology 1: Urothelial Carcinoma of Bladder – 8120/3
- Histology 2: TCC of Ureter – 8120/3

- One Primary or Two Primaries? One
- Rule M8 – tumors less than 3 years apart
- NOTE: Rule M8 includes all urothelial (except neoplasms that occur only in the bladder C679 – then use Rule M6)

- Diagnosis 2011 with Primary Site C679 and Histology 8120/3
- Ureter TCC diagnosed less than 3 years after bladder – Rule M8

Bladder– Collaborative Stage
<table>
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<tr>
<th>Code</th>
<th>Description</th>
<th>Date</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Start Time</th>
<th>End Time</th>
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<td>2002</td>
<td>General X-ray in public health</td>
<td>2012.10.02</td>
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<td>9:30</td>
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<td>10:00</td>
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<td>2013</td>
<td>Medical examination of patients</td>
<td>2012.10.02</td>
<td>9:00</td>
<td>9:30</td>
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<td>11:00</td>
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Note: The above table is a sample of the content available in the document.
Bladder Site-Specific Factors

- SSF1: WHO/ISUP Grade
- SSF2: Size of Metastasis in Lymph Node
- SSF3: Extranodal Extension

Renal Pelvis – Collaborative Stage
Urothelial Cancers - Treatment

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)
Bladder Cancer
Version 1.2013
NCCN.org

Principles of Therapy Management

- Cancer staging (eg, T stage, N stage, M stage)
- Histological grade (eg, G stage)
- Presence of distant metastasis (eg, M stage)
- Presence of adjacent organ involvement

- Surgical treatment (eg, radical cystectomy, bladder preservation)
- Radiation therapy
- Chemotherapy
- Immunotherapy
- Targeted therapy

- Clinical decision making based on patient factors (eg, age, comorbidities)
- Cost considerations

References:
- National Comprehensive Cancer Network (NCCN)
- American Society for Clinical Oncology (ASCO)
- American Urological Association (AUA)
- European Society for Medical Oncology (ESMO)

For the latest version of the NCCN Guidelines, please visit NCCN.org.
PROSTATE

Age-Adjusted Cancer Death Rates, Males by Site, U.S. 1930-2007

Incidence / Mortality

Prostate Cancer 1975-2008
Risk Factors/Screening
- Most common male cancer
- 2nd leading cause of cancer death in U.S. men
- African-American men 2.5 x higher death rate others
- Estimated new cases: 240,890; deaths: 33,720
- Risk Factors:
  - Age
  - Race/Ethnicity
  - Family history
  - Genetics
  - Diet
- Screening
  - DRE
  - PSA

Screening Recommendations
- U.S. Preventive Services Task Force
- American Urological Association
- American Cancer Society
- ASCO/NCCN Guidelines
- Individual Urologist
- High-Risk Patients

Anatomy
- The prostate is a gland found ONLY in men
- It is located in front of the rectum and under the bladder
- The size of a healthy prostate gland is about the size of a walnut
Anatomy

- Vas Deferens (vas deferens)
- Seminal Vesicle (surface view)
- Seminal Vesicle (cutaway view)
- Base of prostate
- Prostatic urethra
- Apex of prostate


Anatomy

- Lateral lobes
- Anterior lobe
- Median lobe
- Posterior lobe
- Prostate capsule
- Urethra
- Ejaculatory ducts


Histology

- 99% Adenocarcinoma
  - Code acinar as adenoca
- 1% Other
  - Sarcoma
  - Small cell carcinoma
  - Lymphoma
- PIN III
  - Do NOT abstract
  - 30% men develop Ca
  - Follow-up for 2 years

Image source: National Cancer Institute
Prostate - MPH Rules

- Only **ONE** Prostate Cancer DX per patient lifetime
- Dx of Acinar Carcinoma, Code to 8140 (Adenocarcinoma)

**Prostate - MPH - Example**

- Patient seen as outpatient as follow-up to elevated PSA.
- Patient had multiple biopsies in multiple prostate lobes
- All specimens were positive for adenocarcinoma

- One primary or Multiple? One
  - Single Tumor
  - Multiple Biopsies

- Histologic Type? Adenocarcinoma
### Clinical Stage/Pathological Stage

<table>
<thead>
<tr>
<th>Clinical Extension</th>
<th>Pathological Extension</th>
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<tbody>
<tr>
<td>CS Ext – Clinical Stage</td>
<td>SSF3 – Pathological Stage</td>
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<tr>
<td>Prior to Prostatectomy</td>
<td>PROSTATECTOMY</td>
</tr>
<tr>
<td>Clinical Evaluation Only</td>
<td>Pathological Evaluation</td>
</tr>
<tr>
<td>Bx for Elevated PSA</td>
<td>Surgical Findings</td>
</tr>
<tr>
<td>Clinically Inapparent</td>
<td>Prostatectomy Specimen</td>
</tr>
<tr>
<td>Clinically Apparent</td>
<td>Code 970 if No Surgery</td>
</tr>
<tr>
<td>Used to Develop a Treatment Plan</td>
<td>Surgery is Part of the Treatment Plan</td>
</tr>
</tbody>
</table>

### Clinical Stage: Why Important??

- **Clinical Stage T1a and T1b**
  - Incidentally detected during a TURP

- **Clinical stages T1c and T2**
  - PSA test positive – detects earlier stage

- **Clinical Stage T3**
  - DRE detects palpable disease sufficient to indicate that the tumor has penetrated through the prostate capsule

- **Clinical Stage T4**
  - Indicates local invasion of a structure adjacent to the prostate other than the seminal vesicle(s).
    - T4a indicates a DRE exam with tumor invading the bladder neck, external sphincter or rectum.
    - T4b indicates clinical findings of invasion into the levator muscles or a tumor that is fixed to the pelvis.
Clinical Stage Illustrations

T1c

T2 (a, b, c)

T3 (a, b, c)

T4 (a, b)

Material provided by Prostate Cancer Research Institute (PCRI)

Pathological Stage Criteria

Prostate

CS Site-Specific Factor 3

CS Extension - Pathological Extension

NOT A PROSTECTOMY

Material provided by PCRI

3/18/2013

2/28/2013
NOT A PROSTATECTOMY

When NO PROSTATECTOMY
CS SSF 3 **MUST** = 970

Prostatectomy Procedures

When PROSTATECTOMY IS PERFORMED
CS SSF 3 **CANNOT** = 970

Pathologic Extension – SSF 3
Pathologic Extension – SSF 3

Other Prostate Site Specific Factors

PSA Lab Value – SSF 1
Gleason Pattern(s) and Score

http://www.stjohnprovidence.org

Gleason Score to Grade Conversion

<table>
<thead>
<tr>
<th>Gleason Score</th>
<th>Grade/Differentiation</th>
</tr>
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<tbody>
<tr>
<td>Gleason 2-6</td>
<td>Well Differentiated</td>
</tr>
<tr>
<td>Gleason 7</td>
<td>Moderately Differentiated</td>
</tr>
<tr>
<td>Gleason 8-10</td>
<td>Poorly Differentiated</td>
</tr>
</tbody>
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Prostate Cancer - Treatment
Prostate Cancer

Treatment Options

- Observation
- Seed RT
- Beam RT
- Experimental
- Hormone
- Surgery