2018 Updates for Neoplasms of the Urinary System

2018-2019 FCDS Educational Webcast Series

Steven Peace, CTR
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CDC & Florida DOH Attribution

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FLccSC LMS – CEU Quiz – FCDS IDEA

- 2017 - Florida Changed How FCDS Awards CEUs for FCDS Webcasts
- Attendees must take and pass a 3-5 question CEU Quiz to get CEUs
- CEU Awards are Restricted to Attendees with a FLccSC LMS Account
- The CEU Quiz will be posted to FLccSC 1-2 hours after the webcast ends
- Only registered FLccSC Users will be given access to the CEU Quiz
- Florida attendees must have a Florida FLccSC Account to take the Quiz
- South Carolina attendees must have a South Carolina FLccSC Account
- New FLccSC States will follow similar instructions for the CEU Quiz
- Attendees can attend any of the live webcasts without receiving CEUs
- Recorded Sessions are also available for non-FLccSC Users – No CEUs

2018 - A Year for Major Changes to Cancer Registry Data Standards

- New ICD-O-3 Histology Code & Behavior Codes
- New Histology Coding Rules and Tools
- New Reportable Cancers
- 2018 Solid Tumor MP/H Rules
- 2018 Hematopoietic MP/H Rules
- Cancer Staging Updates
  - SS2018
  - Grade Coding
  - Site-Specific Data Items
  - AJCC TNM 8th ed.
  - 2018 SEER EOD
- EDITS v18
- STORE Manual
- 2018 FCDS DAM

Harmonization & Interconnectivity with Lots of Moving Parts
2018 - A Year for Major Changes to Cancer Registry Data Standards

| 2016 Solid Tumor MP/H Coding Rules | http://seer.cancer.gov/tools/solidtumors/ |
| 2018 Grade Coding Manual, Instructions and Tables | http://apps.nacion.org/sdi/list/ |
| AJCC Histology and Topography Code Supplement | http://cancerstaging.org/references-tools/deskreferences/Pages/BT/Updates.aspx#Histology/Topography |
| 2016 Site-Specific Data Items Manual | http://apps.nacion.org/sdi/list/ |
| 2016 Site/Type Validation Table from SEER | https://seer.cancer.gov/ид-о-3/ |
| CoC CANcer - Inquiry System | http://cancerbulletin.facs.org/forums/ |
| Your State EDITS Metadata – current version | https://edds.med.miami.edu/nci/downloads.html |

Presentation Outline

- Introduction to the Genitourinary System
- FCDS Audit of 2016/2017 GU Cancers
- Anatomy of the Genitourinary System
- Neoplasms of the Kidney
- Neoplasms of the Urothelium
- Neoplasms of the Prostate
- Text Documentation
- Practice Cases - Pending
- Questions
Introduction

Figure 3. Leading Sites of New Cancer Cases and Deaths - 2018 Estimates

<table>
<thead>
<tr>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>Breast</td>
</tr>
<tr>
<td>Lung &amp; bronchus</td>
<td>Lung &amp; bronchus</td>
</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>Colon &amp; rectum</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>Uterine corpus</td>
</tr>
<tr>
<td>Melanoma of the skin</td>
<td>Thyroid</td>
</tr>
<tr>
<td>Kidney &amp; renal pelvis</td>
<td>Melanoma of the skin</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>Non-Hodgkin lymphoma</td>
</tr>
<tr>
<td>Oral cavity &amp; pharynx</td>
<td>Pancreas</td>
</tr>
<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>Liver &amp; intrahepatic bile duct</td>
</tr>
<tr>
<td>Leukemia</td>
<td>Leukemia</td>
</tr>
<tr>
<td>All sites</td>
<td>Kidney &amp; renal pelvis</td>
</tr>
</tbody>
</table>

All sites: 1,708,000 (100%)

Introduction

Figure 1. Trends in Age-adjusted Cancer Death Rates* by Site, Males, US, 1930-2015

*Age adjusted to the 2000 US standard population. Mortality rates for pancreatic and liver cancers are decreasing.

Source: American Cancer Society, Cancer Facts and Figures 2018
FCDS AUDIT Preliminary Results

FCDS Data Quality Audit
31st Diagnosis Year
Urinary System including: Oed 0, Oed 1, Oed 2, 047.0+, 047.9 and O66.9 only
All Cases Reviewed are Anaplastic for the Facility

1. This study has shown that introducing a new staging system (or more) even with what was expected to be sufficient training reached in inadequate quality of data using the new system - even among those thought to be experienced users. This highlights what happens when the data standard changes from something as apparently measurable as an "A" to something making the data essentially useless. Fortunately, PCDS continually captures the data using an older method that has not changed in over 30 years.
2. Registrars do not understand or do not follow the basic rules for assigning T, N, M or Group
3. Clinical path and clinical flags group missing on MSK cases
4. Pathological T and N stage groups differ when case does not meet minimum requirements for staging (partial or total laparotomy for bladder)
5. Stage for optimistic cases measured for unrelated - touch/high grade +2 versus +5 grade +1, +2
6. Most of the following concern lack per protoan - some solutions about data management in the future
7. Tumor classification and reporting should be standardized
8. Tumor classification and reporting should be standardized
9. Tumor classification and reporting should be standardized
10. Tumor classification and reporting should be standardized

Introduction and Anatomy of the Genitourinary System

Risk Factors and Screening

Risk Factors
- Cigarette Smoking
- Obesity (30% of cases)
- High Blood Pressure
- Chronic Kidney Disease
- Occupational Exposures
- Long-term Use of Medicines
- Family History of RCC or
- Family History of Von Hippel-Lindau Disease

Screening
- None
- Incidental Finding
  - Ultrasound
  - CT Scan
Signs and Symptoms

1. Flank Pain – low back pain
2. Hematuria – blood in urine
3. Abdominal Mass
4. Other
   - Weight Loss
   - Anorexia
   - Anemia
   - Polycythemia
   - Discolored Urine
   - Leg and Ankle Swelling

**Flank Pain**
- Pain in one side of the body between the abdomen or upper belly area and the back.
- Normally flank pain is a sign of kidney problems or kidney failure.
- Normally the flank pain is worse on one side of the body.
  - Flank pain could be kidney stone
  - Flank pain could be neoplasm
  - Flank pain could be polycystic
Kidney - Workup

- History and Physical Exam
  - Genetic Testing
- Urine Cytology – blood in urine and/or cancer cells in urine
- Imaging – CT, Ultrasound, MRI, PET or PET/CT – can find incidental usually small cancers (<5cm) that are asymptomatic when looking at other illnesses like gallbladder disease
- Biopsy – histology, behavior, Fuhrman Grade
- Treatment Planning
  - Ablation
  - Resection
  - Embolization
  - Immunotherapy
  - Usually NOT Chemo

Kidney - Anatomy
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

Regional Lymph Nodes

Vena Cava
Hilar LN
Para-Caval LN
Bladder
Hilar LN
Aorta
Para-Aortic LN

Source: http://www.laparoboticsurgery.com
**Kidney - Histology**

Renal Cell Carcinoma and Renal Cell Carcinoma Subtypes

- **8312 Renal cell carcinoma** is a “generic” term – do not use highest code
  - 8255 Adenocarcinoma with mixed subtypes
  - 8260 Papillary (Chromophil) – 15%
  - 8310 Clear Cell (75%)  
  - 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

---

**Component is not equivalent to subtype/variant**

<table>
<thead>
<tr>
<th>Status</th>
<th>Histology</th>
<th>Behavior</th>
<th>Label</th>
<th>Reportable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior code/term</td>
<td>8311</td>
<td>3</td>
<td>Hereditary leiomyomatosis &amp; RCC-associated renal cell carcinoma (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>Behavior code/term</td>
<td>8311</td>
<td>3</td>
<td>Mit family translocation renal cell carcinoma (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8312</td>
<td>3</td>
<td>Renal cell carcinoma, unclassified (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8316</td>
<td>3</td>
<td>Acquired cystic disease-associated renal cell carcinoma (RCC) (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8316</td>
<td>3</td>
<td>Tubulocystic renal cell carcinoma (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8480</td>
<td>3</td>
<td>Mucinous tubular and spindle cell carcinoma (C64.9)</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8510</td>
<td>3</td>
<td>Renal medullary carcinoma (C64.9)</td>
<td>Y</td>
</tr>
</tbody>
</table>
Kidney - Histology

Component is not equivalent to subtype/variant

<table>
<thead>
<tr>
<th>Histologic Type (Note A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear cell renal cell carcinoma</td>
</tr>
<tr>
<td>Multilocular cystic clear cell renal cell neoplasm of low malignant potential</td>
</tr>
<tr>
<td>Papillary renal cell carcinoma</td>
</tr>
<tr>
<td>Papillary renal cell carcinoma, Type 1</td>
</tr>
<tr>
<td>Papillary renal cell carcinoma, Type 2</td>
</tr>
<tr>
<td>Chromophobe renal cell carcinoma</td>
</tr>
<tr>
<td>Collecting duct carcinoma</td>
</tr>
<tr>
<td>Renal medullary carcinoma</td>
</tr>
<tr>
<td>Malignant familial translocation renal cell carcinoma</td>
</tr>
<tr>
<td>Xp11 translocation renal cell carcinoma</td>
</tr>
<tr>
<td>t(6;11) renal cell carcinoma</td>
</tr>
<tr>
<td>Mucinous tubular and spindle renal cell carcinoma</td>
</tr>
<tr>
<td>Tubulocystic renal cell carcinoma</td>
</tr>
<tr>
<td>Acquired cystic disease associated renal cell carcinoma</td>
</tr>
<tr>
<td>Clear cell papillary renal cell carcinoma</td>
</tr>
<tr>
<td>Hereditary leiomyomatosis and renal cell carcinoma-associated renal cell carcinoma</td>
</tr>
<tr>
<td>Succinate dehydrogenase (SDH) deficient renal cell carcinoma</td>
</tr>
</tbody>
</table>

Kidney – Molecular Genetics

- **VHL/HIF** - Problems with the VHL tumor suppressor gene are found in most clear cell RCCs. This allows other genes such as the hypoxia-inducible factor (HIF) gene to be activated when they shouldn’t be, which drives a cell toward being cancerous.

- **MET** – Hereditary papillary renal cell carcinoma – individuals can develop one or more papillary RCCs, but do not have tumors in other parts of the body as in the case of other disorders like VHL.

- **FH** – leiomyoma and RCC

- **FLCN/BHD** – Birt-Hogg-Dube Syndrome – may develop various kidney tumors benign or malignant

- **SDHB/SDHD** – familial renal cell carcinoma – also develop paraganglioma of head and neck and pheochromocytoma of adrenal gland and thyroid cancers

- **PTEN**/Cowden Syndrome – high risk of breast, thyroid and kidney
There are RULES for using this Manual and Menus

- Your Software will direct you – but cannot think for you.
- This is the **GRADE of the PRIMARY TUMOR**.
- **DO NOT ASSIGN** Grade from a metastatic site – EVER.
- Clinical Grade Must NEVER BE BLANK
- Either Pathological or Post-Therapy Grade Must BE BLANK
- Either Pathological or Post-Therapy Grade Must BE FILLED
- There are NOTES that accompany every single Grade Table.

- DO ASSIGN the highest grade identified from any type of biopsy (FNA, core, excisional, incisional) or resection (partial or complete) of the primary tumor assessed during the clinical time frame.
- If there is only one grade available and it cannot be determined if it is clinical, pathological, or after neo-adjuvant therapy, assign as a clinical grade and code unknown (9) for pathological grade, and blank for post-therapy grade.

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**Clinical Grade** - the grade of a solid primary tumor before any treatment. Treatment may include surgical resection, systemic therapy, radiation therapy, or neo-adjuvant therapy. **NOTE:** All surgical procedures are not treatment, e.g. TURB and endoscopic biopsies.

**Pathological Grade** - the grade of a solid primary tumor that has been surgically resected and for which no neo-adjuvant therapy was administered. If AJCC pathological staging is being assigned, the tumor must have met the surgical resection requirements in the AJCC manual. This may include the grade from the clinical workup, as all information from diagnosis (clinical staging) through the surgical resection is used for pathological staging.

**Post-Therapy Grade** - the grade of a solid primary tumor that has been resected following neoadjuvant therapy. If AJCC post-therapy staging is being assigned, the tumor must have met the surgical resection requirements for yp in the AJCC manual. Neoadjuvant therapy must meet guidelines or standards, and not be that given for variable or unconventional reasons as noted in the AJCC manual.
2018 Grade – Kidney

Kidney – 2018 Grade

Grade Coding Instructions and Tables
Effective with CPT/HCPCS 1/1/2018 and Forward
Published May 2018

Grade 58

Note: In the future:
- Grade from primary site is not documented
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General Instructions

- **TEXT ONLY RULES INCLUDE:**
  - General Instructions **PLUS**
  - 10 Sets of Solid Tumor MP/H Rules
  - Each Module includes Multiple Sections (Notes/Site/MP/Histology)
  - Code subtypes/variants when definitively described (no modifiers)
  - Do Not Use Ambiguous Terminology to Code Histology
  - Ambiguous terminology is used to determine “case reportability”
  - Ambiguous terminology is not to be used to determine histology
  - Ambiguous terminology such as “with features of”, etc. are no longer used to determine a subtype OR to determine which histology should be coded. See the following histology rules for instructions on coding multiple histologies.
  - Use the Histology (H) Rules to determine when to use or not use any ambiguous terminology when an ambiguous term is used to describe a histologic type – sometimes you use the ambiguous term to code a subtype or variant or mixed histology – and sometimes you do not.
General Instructions

- Introduction
- Changes from 2007 MPH Rules
- Definitions
- Equivalent or Equal Terms
- Terms that are NOT Equivalent or Equal
- Table and Instructions for Coding Primary Site
- Table: Specific Histologies, NOS and Subtypes Variants
- Table: Combination/Mixed Histology Codes
- Table: Histologies Not Reportable for This Site
- Illustrations
- Multiple Primary Rules
- Histology Coding Rules

How to Use the Solid Tumor Rules

1. Use the following site-specific rules for tumors diagnosed 1/1/2018 and forward:
   - Malignant CNS and Peripheral Nerves
   - Head and neck
   - Non-Malignant CNS
   - Breast
   - Colon
   - Other sites

2. Use the following site-specific rules for tumors diagnosed 1/1/2007 through 12/31/2018:
   - Malignant melanoma of the skin (not updated for 2018)
   - Other sites (not updated for 2018)

3. 2007 MPH Rules and 2018 Solid Tumor Rules are used based on date of diagnosis.
   - Tumors diagnosed 01/01/2007 through 12/31/2017: Use 2007 MPH Rules
   - Tumors diagnosed 01/01/2018 and later: Use 2018 Solid Tumor Rules

4. The Solid Tumor Rules are not used to determine cause of death, stage, or tumor grade.

5. Other staging systems are not used to determine the number of primaries or histology.

6. Use rules in the following order:
   - General Instructions
   - Equivalent Terms and Definitions
   - Multiple Primary rules
   - Histology rules

7. The Solid Tumor Rules are available in text format.

8. Notes and examples are included with some of the rules to highlight key points or to add clarity to the rules.

Rules are in hierarchical order within each module. Use the first rule that applies and...
General Instructions

How to Use the Histology Rules:

1. Rules are divided into two sections: Single Tumor and Multiple Tumors Abstracted as a Single Primary
2. Each section is complete set of rules.
3. Within each section, the rules are hierarchical. Use the first rule that applies and STOP. Do not continue through the rules.
4. Do not code multiple histologies or subtypes/tumors described by ambiguous terms.

Most likely
- Potential
- Probable
- Suspected
- Typical
- Other

Most likely
- Potential
- Probable
- Suspected
- Typical
- Other

Avoid ambiguous terms when coding histology.

Multiple Primary Rules – Remember:
Most People Have Only One Cancer
Some People or Their Families Have More Than One Cancer

https://www.curetoday.com/journey/cancer-guides/at-diagnosis/

Kidney – 2018 Solid Tumor Rules

Note 3: Renal cell carcinoma (RCC) 8512 is a group term for glandular (adenoc) carcinoma of the kidney. Approximately 85% of all malignancies of the kidney C649 use RCC or subtypes/variants of RCC.

Note 1: See Table 1 for renal cell carcinoma subtypes/variants.

Note 2: Clear cell renal cell carcinoma (ccRCC) 8510 is the most common subtype/variant of RCC.

Note 4: Transitional cell carcinoma rarely arises in the kidney C649. Transitional cell carcinoma of the upper urinary system usually arises in the renal pelvis C659. Only code a transitional cell carcinoma for kidney in the rare instance when pathology confirms the tumor originated in the kidney.

Note 5: For those sites/histologies which have recognized biomarkers, the biomarkers frequently identify the histologic type.

Currently, there are clinical trials being conducted to determine whether these biomarkers can be used to identify multiple primaries. Follow the Multiple Primary Rules; do not code multiple primaries based on biomarkers.

1. New histology terms and codes were included (identified by asterisks (*) in the histology table in the Terms and Definitions).
   A. Histologies with terms that indicate they are hereditary (hereditary leiomyosarcoma and renal cell carcinoma syndrome-associated RCC 8511)
   B. Histologies with genetic anomalies (succinate dehydrogenase–deficient RCC)
Kidney – 2018 Solid Tumor Rules

**Not Reportable Histology Term and Code** | **Synonyms**
--- | ---
Adult cystic teratoma 9959/0 | Mixed-epithelial and stromal tumor
Angiomyolipoma 8860/0 | Renal epithelial stromal tumor
Congenital mesoblastic nephroma 9960/1 | CMN
Cystic partially differentiated nephroblastoma 9955/1
Epithelioid angiomyolipoma 8860/1* | Nephrogenic adenofibroma
Hemangioblastoma 9161/1
Hemangioendothelioma 9120/0
Juxtaglomerular cell tumor 8361/0
Lemmonoma 8890/0
Lymphangioendothelioma 9170/0
Metanephric adenofibroma 9013/0 | Nephrogenic adenofibroma
Metanephric adenoma 8325/0
Metanephric stromal tumor 8335/1
Multilocular cystic renal neoplasm of low malignant potential 8316/1*
Nephrogenic rests (no code)
Oncocytoma 8250/0
Papillary adenoma 8260/0
Papillary adenoma 8791/0 | Extra-adrenal pheochromocytoma
Pediatric cystic nephroma 9959/0
Renal oncocytoma 8366/0 | Medullary fibroma
Schwannoma 9560/0
Solitary fibrous tumor 8815/1

---

**Not Reportable Histology Term and Code** | **Synonyms**
--- | ---
Renal cell carcinoma NO 8312
*Note 1: WHO, IARC, and CAP agree that sarcomatoid carcinoma is a pattern of differentiation, not a specific subtype, of renal cell carcinoma.
Note 2: Sarcomatoid is listed in the CAP Kidney protocol under the header “features.”

RCC | Wilms tumor
Sarcomatoid carcinoma | Acquired cystic disease associated renal cell carcinoma/tubulocystic renal cell carcinoma 8316*
Sarcomatoid renal cell carcinoma
Saccular dehydrogenase-deficient renal cell carcinoma (SDHDef)
Unclassified renal cell carcinoma

Acquired cystic disease-associated renal cell carcinoma/tubulocystic renal cell carcinoma 8316*
Chronogenic renal cell carcinoma (CISCC) 8317*
Clear cell papillary renal cell carcinoma 8323/3
*Note: The 2016 WHO 4th Edition Classification of Tumors of the Urinary System and Male Genital Organs has reclassified this histology as a 1 because it is now thought to be a neoplasm. This change was not implemented in the 2018 ICD-O update.
Clear cell renal cell carcinoma (cCACC) 8310
Collecting duct carcinoma 8319
Hereditary leiomyomatosis and renal cell carcinoma-associated renal cell carcinoma 8311*
*MIT family translocation renal cell carcinoma 8311
*Note: Hereditary leiomyomatosis and renal cell carcinoma-associated renal cell carcinoma and MIT family translocation renal cell carcinoma have the same ICD-O code but are distinctly different histologies. Because they are different, they are on different lines in column 3.
Mucinous tubular and spindle cell carcinoma 8480*
Papillary renal cell carcinoma (PRCC) 8260
Renal medullary carcinoma 8310*
*Note: This is a new term (previously called renal spindle cell carcinoma).
**Kidney – 2018 Solid Tumor Rules**

2. **Do not** code the histology when:
   A. The following modifiers are used as a descriptor:
      - Architecture
      - Differentiation
      - Features (e.g., with features of...)
   B. The following ambiguous terminology is used as a modifier:
      - Apparently
      - Appears
      - Compatible with
      - Consistent with
      - Favor(s)
      - Malignant appearing
      - Most likely
      - Presumed
      - Probable
      - Suspicious (for)
      - Typical (of)

**Staging Kidney Cancers**

<table>
<thead>
<tr>
<th>Histology</th>
<th>Behavior</th>
<th>AICC ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8000, 8010, 8140</td>
<td>3</td>
<td>60</td>
<td>Kidney</td>
</tr>
<tr>
<td>8255, 8260</td>
<td>3</td>
<td>60</td>
<td>Kidney</td>
</tr>
<tr>
<td>8110-8312, 8316-8319, 8323</td>
<td>3</td>
<td>60</td>
<td>Kidney</td>
</tr>
<tr>
<td>8480, 8510</td>
<td>3</td>
<td>60</td>
<td>Kidney</td>
</tr>
<tr>
<td>8000, 8010, 8140</td>
<td>2</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8255, 8260</td>
<td>2</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8110-8312, 8316-8319, 8323</td>
<td>2</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8480, 8510</td>
<td>2</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8001-8005, 8011-8131, 8141-8254</td>
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<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8256-8257, 8261-8300</td>
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<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8313-8315, 8320-8322, 8324-8474</td>
<td>&lt;Any value&gt;</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
<tr>
<td>8481-8509, 8512-8700, 8720-8790, 9700-9701</td>
<td>&lt;Any value&gt;</td>
<td>XX</td>
<td>Other Kidney</td>
</tr>
</tbody>
</table>
2018 SEER Summary Stage

Purpose of Staging
Biochemical Tumor Markers
Molecular Tumor Markers
Genetic Mutations/Variations
Risk Stratification

Primary organ
Localized Stage

Regional Stages
A. Direct extension
B. To regional lymph nodes
C. Combination of A and B

Implantation metastases

Summary Stage

0 In situ: noninvasive, intrapithelial

1 Localized only (localized, NOS)
- Confined (limited) to the kidney, NOS
- Invasion of renal capsule
- Invasive cancer confined to kidney cortex and/or medulla
- Pelvic and/or system
- Renal pelvis or calyces involved
- Separate focus of invasion in renal pelvis/calix

2 Regional by direct extension only
- A renal gland (isolated) (contiguous metastasis)
- Ascending colon from right kidney
- Beyond Gerota's fascia, NOS
- Blood vessel(s) (saphenous)
- External portal of renal vein or segmental (muscle containing branch

- Hilum blood vessel
- Inferior vena cava
- Perirenal vein/vein
- Renal artery
- Renal vein, NOS/veins fat
- Tumor thrombus in a renal vein, NOS
- Descending colon from left kidney
- Duodenum
- Jejunum from right kidney
- Perirenal tissue
- Penile scrotum
- Psoas muscle
- Quadratus lumborum muscle
- Retroperitoneal soft tissue
- Tail of pancreas
- Urinary (pelvisad), excluding implant(s)
SS2018 - Kidney

3 Regional lymph node(s) involved only
- Aortic, NOS
  - Lateral (lumbar)
  - Para-aortic
  - Para-aortic
  - Para-aortic
  - Retroaortic
- Caval, NOS
  - Interarterial
  - Paracaval
  - Paracaval
  - Preaortic
  - Retrocaval
- Renal hilar
- Retroperitoneal, NOS
- Regional lymph node(s), NOS
  - Lymph node(s), NOS

7 Distant site(s)/lymph node(s) involved
- Distant site(s) (including further contiguous extension)
  - Adrenal gland
    - Consolateral
    - Ipsilateral, noncontiguous
  - Aorta
  - Consolateral kidney
  - Consolateral liver
  - Liver
  - Bile
  - Spleen
  - Stomach
- Regional lymph node(s), NOS
- Distant metastasis, NOS
  - Carcinomatous
  - Distant metastasis WITH or WITHOUT distant lymph node(s)

9 Unknown if extension or metastasis

AJCC TNM -- Helpful Information
https://cancerstaging.org
AJCC TNM Staging - Kidney

Stage I
Tumor ≤ 7 cm in greatest dimension and limited to kidney. 5-year survival: 95%

Stage II
Tumor >7 cm in greatest dimension and limited to kidney. 5-year survival: 88%

Stage III
Tumor in major veins or adrenal gland, tumor within Gerota’s fascia, or 1 regional lymph node involved.
5-year survival: 35%

Stage IV
Tumor beyond Gerota’s fascia or ≥3 regional lymph nodes involved.
5-year survival: 20%

Primary Tumor – T Category

T Primary Tumor
TX Primary tumor cannot be assessed
T0 No evidence of primary tumor
T1 Tumor ≤ 7 cm in greatest dimension, limited to the kidney
T1a Tumor ≤ 4 cm in greatest dimension, limited to the kidney
T1b Tumor >4 cm but ≤ 7 cm in greatest dimension, limited to the kidney
T2 Tumor >7 cm in greatest dimension, limited to the kidney
T2a Tumor >7 cm but ≤ 10 cm in greatest dimension, limited to the kidney
T2b Tumor >10 cm, limited to the kidney
T3 Tumor extends into major veins or periureteric tissues, but not into the ipsilateral adrenal gland and not beyond Gerota’s fascia
T3a Tumor extends into the renal vein or its segmental branches, or invades the pelviccalyceal system, or invades perirenal and/or renal sinus fat but not beyond Gerota’s fascia
T3b Tumor extends into the vena cava below the diaphragm
T3c Tumor extends into the vena cava above the diaphragm or invades the wall of the vena cava
T4 Tumor invades beyond Gerota’s fascia (including contiguous extension into the ipsilateral adrenal gland)
Primary Tumor – T Category

<table>
<thead>
<tr>
<th>T</th>
<th>Primary Tumor</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>Tumor ≥7 cm in greatest dimension, limited to the kidney</td>
</tr>
<tr>
<td>T1a</td>
<td>Tumor ≥4 cm in greatest dimension, limited to the kidney</td>
</tr>
<tr>
<td>T1b</td>
<td>Tumor &gt;4 cm but ≤7 cm in greatest dimension, limited to the kidney</td>
</tr>
<tr>
<td>T2</td>
<td>Tumor &gt;7 cm but ≤10 cm in greatest dimension, limited to the kidney</td>
</tr>
<tr>
<td>T2a</td>
<td>Tumor &gt;7 cm but ≤10 cm in greatest dimension, limited to the kidney</td>
</tr>
<tr>
<td>T2b</td>
<td>Tumor &gt;10 cm, limited to the kidney</td>
</tr>
<tr>
<td>T3</td>
<td>Tumor extends into major veins or perinephric tissues, but not into the ipsilateral adrenal gland and not beyond Gerota's fascia</td>
</tr>
<tr>
<td>T3a</td>
<td>Tumor extends into the renal vein or its segmental branches, or invades the peripelvic system, or invades perirenal or/ or renal sinus fat but not beyond Gerota's fascia</td>
</tr>
<tr>
<td>T3b</td>
<td>Tumor extends into the vena cava below the diaphragm</td>
</tr>
<tr>
<td>T3c</td>
<td>Tumor extends into the vena cava above the diaphragm or invades the wall of the vena cava</td>
</tr>
<tr>
<td>T4</td>
<td>Tumor invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland)</td>
</tr>
</tbody>
</table>


Regional Lymph Nodes – N Category

Vena Cava

Hilar LN

Para-Caval LN

Para-Aortic LN

Bladder

Hilar LN

Aorta

Source: http://www.laparoboticsurgery.com
AJCC Stage/Prognostic Group

Table 2. AJCC Prognostic Groups

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage II</td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>T1-T2</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>N0-N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>T4</td>
<td>Any N</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>

Regional Lymph Nodes (N)
- NX: Regional lymph nodes cannot be assessed
- N0: No regional lymph node metastasis
- N1: Metastasis in regional lymph node(s)

Distant Metastasis (M)
- M0: No distant metastasis
- M1: Distant metastasis


Introduction to SSDI Manual

https://apps.naaccr.org/ssdi/list/
Introduction to SSDI Manual

Types of Site Specific Data Items

- Prognostic Factors “Required for Stage Grouping” (All Cases)
  - Not ALL SSDIs Labeled “Required for Stage Grouping” are actually required for staging.
  - Some “Required for Stage Grouping” Items have “Prognostic Significant” and are Required.
- Additional Factors Recommended for Clinical Care (CoC/NCDB and SEER)
- Emerging Factors for Clinical Care (Web Only – Not Required)
- May Include Molecular or Protein Biomarkers, Genetic Markers, Lab Test Value, Interpretation of Lab Value, Clinical Factors such as Size of Lymph Node, Alternate Staging such as FIGO, Measured Depth of Invasion (Breslow Depth), Site Specific Grade Detail (Gleason), Cytogenetics, Immunohistochemistry, Surgical Margin Details, MSI or Microsatellite Instability and More
- You may not see the SSDIs that clinicians reference and think are important today… the reason is that it takes time for cancer registry standards to catch up with present day technology and testing – particularly for genetic factors.
- Your Cancer Program can define any additional SSDIs you would like to capture for your physicians – genetic markers for lung for example - approve these through your Cancer Committee and carefully define user-defined instructions and codes
Types of Site Specific Data Items

- Molecular Genetics still minimally addressed in 2018 SSDIs
- 2018 SSDIs support TNM data - not biomarkers/molecular markers or genetics
- Most evaluate genetic mutations and/or protein surface markers
- Some have targeted therapy(s) associated with mutation

- Chromosomal Abnormality(s) – Mutation
- Biochemical Abnormality
- Genetic/DNA Mutation

- Prognostic
- Diagnostic
- Predictive
- Tumor Burden
- Pharmacodynamics
- Recurrence Monitoring

Questions that can be answered by cancer biomarkers

<table>
<thead>
<tr>
<th>Prognostic</th>
<th>Diagnostic</th>
<th>Predictive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it likely to develop this cancer?</td>
<td>What type of cancer is it?</td>
<td>Is this the optimal drug for my cancer?</td>
</tr>
<tr>
<td>Pharmacodynamics</td>
<td>Recurrence</td>
<td>Will the cancer return?</td>
</tr>
</tbody>
</table>

What's the optimal dose for my body?

Schema ID Drives the SSDI Tables

https://apps.naaccr.org/ssdi/list/
Site-Specific Data Items - Kidney

- **Required by FCDS – NONE**
- **AJCC/CoC Registry Data Collection Variable**
  - Invasion Beyond Capsule
  - Ipsilateral Adrenal Gland Involvement
  - Major Vein Involvement
  - Sarcomatoid Features

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>006</td>
<td>Sarcomatoid features not present/not identified</td>
</tr>
<tr>
<td>001:100</td>
<td>Sarcomatoid features 1-10% present</td>
</tr>
<tr>
<td>010:100:01</td>
<td>Sarcomatoid features 1-10% present, percentage unknown</td>
</tr>
<tr>
<td>020:100:01</td>
<td>Sarcomatoid features 1-50% present, percentage unknown</td>
</tr>
<tr>
<td>020</td>
<td>Sarcomatoid features 1-50% present</td>
</tr>
<tr>
<td>025:100:01</td>
<td>Sarcomatoid features 1-50% present, percentage unknown</td>
</tr>
<tr>
<td>030:100:01</td>
<td>Sarcomatoid features 1-100% present, percentage unknown</td>
</tr>
<tr>
<td>030</td>
<td>Sarcomatoid features 1-100% present</td>
</tr>
<tr>
<td>X11 X12</td>
<td>Not applicable: Not a renal cell carcinoma morphology</td>
</tr>
<tr>
<td>X13</td>
<td>Not applicable: Information not collected for this code</td>
</tr>
<tr>
<td>X14</td>
<td>Not applicable: Information not collected for this code</td>
</tr>
<tr>
<td>X15</td>
<td>Not documented in medical record: Sarcomatoid features not assessed/unknown if assessed No surgical resection of primary site is performed</td>
</tr>
</tbody>
</table>


---

Treatment Options - Kidney

![Image of treatment options](image_url)
Active Surveillance

- Active surveillance is an option for the initial management of patients with clinical stage T1 renal lesions, for example:
  - Patients with small renal masses <2 cm given the high rates of benign tumors and low metastatic potential of these masses.
  - Patients with clinical stage T1 masses and significant competing risks of death or morbidity from intervention.
  - Active surveillance entails serial abdominal imaging with timely intervention should the mass demonstrate growth (eg, tumor size, growth rate, infiltrative pattern) indicative of increasing metastatic potential.
  - Active surveillance should include periodic metastatic survey including blood work and chest imaging, particularly if the mass demonstrates growth.

Thermal Ablation

- Thermal ablation (eg, cryosurgery, radiofrequency ablation) is an option for the management of patients with clinical stage T1 renal lesions.
  - Thermal ablation is an option for masses <3cm, but may also be an option for larger masses in select patients. Ablation in masses >3cm is associated with higher rates of local recurrence/persistence and complications.
  - Biopsy of small lesions confirms a diagnosis of malignancy for surveillance, cryosurgery, and radiofrequency ablation strategies.
  - Ablative techniques are associated with a higher local recurrence rate than conventional surgery and may require multiple treatments to achieve the same local oncologic outcomes.\textsuperscript{a,b}
Ablation or Embolization

- “Ablation” is destruction of tumor by vaporization, chipping away (like chipping ice) or various other erosive processes. Ablation may be used when tumor(s) are small (<3cm), peripheral lesions, inferior pole or posterior location. Large (>5cm) or centrally located tumors or tumors in anterior location are generally not suitable for ablation as primary tx.
- Thermal (heat) ablation used to be called “hyper-thermia”
- **Tumor Ablation is coded as Surgery – ablation directly destroys the tumor**

Types of Ablation Include:
- Cryo-Ablation – Uses Cold
- Laser-Ablation – Uses Light
- Microwave-Ablation – Uses Heat
- PDT – photodynamic therapy is a type of laser ablation
- High-Intensity Ultrasound – Uses Sound Waves to create heat

Ablation or Embolization

- “Embolization” is a procedure performed to create an embolus, a blocked or hardened blood vessel, to shut down blood flow and blood supply to the primary tumor/metastasis. This method of treatment indirectly kills tumor by cutting off the blood supply to tumor.
- Embolization can also include injection of a chemical like alcohol or a chemotherapy agent that acts to sclerose or harden key blood vessel(s) OR the approach may even be designed to trap chemo behind the embolus using 2 approaches; or performed by injecting a foreign material or substance like coils or radioactive beads to block the artery and prevent any blood flow to the tumor. The chemotherapy agent(s) or radioactive beads directly treat the tumor but not the embolization…the embolization is still only indirectly killing tumor cells.
- **Treatment Code Will Depend on Type of Embolization** - Code the type of treatment.

Types of Embolization Include:
- Chemo-Embolization – Uses Chemotherapy Agent(s) - TACE
- Alcohol-Embolization – Uses Alcohol
- Radioactive Beads/Spheres – Combines Radioisotopes / Mechanical Block
- Artificial Embolus – plastic or metal coils, foam, other plugs to Block
Resection

- Energy Ablation (heat or cold) of Primary Tumor
- Partial Nephrectomy – Stage I-III tumors (unilateral)
- Radical Nephrectomy – usually robotic – may be laparoscopic
- Regional Node Dissection is Optional BUT is Recommended for Patients with Adenopathy on Imaging or Visible at Surgery
- Cytoreductive Nephrectomy – advanced stage
- Kidney Transplant

Targeted Therapies

- Sorafenib (Nexavar) – blocks angiogenesis and growth stimulating proteins – tyrosine kinase inhibitor (TKI)
- Sunitinib (Sutent) – tyrosine kinase inhibitor (TKI) blocks blood vessel growth
- Temsirolimus (Torisel) – blocks mTOR protein (mTOR Inhibitor)
- Everolimus (Afinitor) – blocks mTOR Protein (mTOR Inhibitor)
- Bevacizumab (Avastin) – angiogenesis inhibitor – blocks growth of new blood vessels – usually used with alfa interferon
- Pazopanib (Votrient) – TKI Inhibitor
- Axitinib (Inlyta) – TKI Inhibitor
- Cabozantinib (Cabometyx) – TKI-Inhibitor
- Lenvatinib (Lenvima) – TKI-Inhibitor
Immunotherapy

- Cytokines – man-made versions of activation proteins used to activate the immune system – interleukin-2 and interferon-alpha

- Interleukin-2 (IL-2) – used to be first line therapy before targeted drugs came onto the scene. Only a small percentage of patients respond to IL-2. However, for those who do respond they have long-lasting response

- Interferon-alfa – Usually used with a targeted drug often Avastin

- Immune CheckPoint Inhibitors like Nivolumab (Opdivo) which targets PD-1. When PD-1 is blocked there is a boost in the body's own immune system to respond against cancer cells

- CTLA-4 Inhibitors like Ipilimumab (Yervoy) which blocks a different checkpoint protein called CTLA-4.
Neoplasms of the Urothelium

Includes:
- C65.9 - Renal Pelvis *
- C66.9 – Ureter *
- C67.0-C67.9 - Bladder
- C68.0-C68.9 - Urinary Other
  * Has Laterality (right & left)

Urothelium - 4 Sites as 1 “Organ”

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

The urothelial lining may be exposed to urinary carcinogens derived from tobacco smoke, dietary, occupational or environmental chemicals while the lining is performing its usual function to collect, store, and transport urine.

Carcinogenic urine can sit in the bladder or collecting ducts for long periods of time – constantly exposing the urothelial lining to carcinogens.
Male and Female Anatomy

In US, 90% of bladder tumors are urothelial carcinoma, less than 5% are pure squamous cell carcinoma or pure adenocarcinoma.

Risk Factors/Screening

Risk Factors
- Cigarette Smoking
- Chemical Exposures:
  - Aromatic Amines
  - dyes, solvents, paints, rubber, benzene, etc.
- Arsenic
- Exhaust Fumes
- Dietary Supplements
- Cyclophosphamide
- Chronic Inflammation
- Schistosoma - blood fluke worm

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

Recent scientific evidence supported by molecular analysis of microsatellite alterations and X-chromosome inactivation status in cells examining coexisting tumors leads to the development of multiple, genetically unrelated tumors further supporting the field effect theory.

Implantation Theory

Implantation theory suggests that the multiple tumors are of monoclonal origin, arising from a single malignant transformed cell which proliferates and spreads throughout the urothelium either by intraluminal spread with secondary implantation at different sites within the urinary tract or by intraepithelial migration.

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

### Table 1 – Urothelial Tumors

<table>
<thead>
<tr>
<th>Classification</th>
<th>Grade 1</th>
<th>Grade 2</th>
<th>Grade 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tumor extent</td>
<td>Low grade</td>
<td>High grade</td>
<td></td>
</tr>
<tr>
<td>Tumor invasion</td>
<td>In situ</td>
<td>Invasive</td>
<td></td>
</tr>
</tbody>
</table>

Source: 2007 MPH Rules - Table 1 – Urothelial Tumors and www.nature.com/nrc/journal/v15/n1

Anatomy of Wall of Urothelium

Sources: [http://www.cancer.org](http://www.cancer.org) and [http://topmedicaljournals.com](http://topmedicaljournals.com)
Layers of Wall Lining the Urothelium

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

- **Submucosa**
  - Lamina Propria
  - Muscularis Mucosa
  - Subepithelial Tissue
  - Suburothelial Connective Tissue
  - Stroma

- **Muscle / Muscularis**
  - Muscularis Propria
  - Muscularis Externa
  - Smooth Muscle

Source: https://anatomyeshs/ch17

---

Diagnostic Workup

- Lab Tests – urinalysis
- Urine Cytology – bladder washings
- Urine Culture – to rule out infection caused symptoms
- Urine Tumor Marker Tests
  - NMP22 (BladderChek)
  - BTA (BTA stat)
  - Immuocyt
  - UroVysion
- Cystoscopy (including Fluorescence or Blue Light Cystoscopy)
- TURBT/Biopsy to confirm cancer location and whether or not the tumor has invaded the muscle layer of the bladder wall
- TURBT/Biopsy Results Drive the Rest of the Workup
- Explore Treatment Options Based on Biopsy Results
- Follow-Up is Very Important
Bladder Histology

ALL ARE CODED to Urothelial Carcinoma 8120

- Clear cell (glycogen-rich) urothelial carcinoma
- Infiltrating urothelial carcinoma
- Infiltrating urothelial carcinoma with divergent differentiation
- Infiltrating urothelial carcinoma with endodermal sinus lines
- Infiltrating urothelial carcinoma with glandular differentiation
- Infiltrating urothelial carcinoma with squamous differentiation
- Infiltrating urothelial carcinoma with trophoblastic differentiation
- Lipid-rich urothelial carcinoma
- Microcystic urothelial carcinoma
- Nested urothelial carcinoma
- Plasmacytoid urothelial carcinoma
- Urothelial carcinoma in situ

2018 New Histology - Urothelial

<table>
<thead>
<tr>
<th>Status</th>
<th>Histology Value</th>
<th>Behavior or Term</th>
<th>Preferred</th>
<th>Reportable</th>
</tr>
</thead>
<tbody>
<tr>
<td>New term</td>
<td>8010</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
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<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
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<td>8120</td>
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</tr>
<tr>
<td>New term</td>
<td>8120</td>
<td>3</td>
<td>FALSE</td>
<td>Y</td>
</tr>
</tbody>
</table>

Source: 2018 Updates to ICD-O-3
2018 Site Specific Grade

There are RULES for using this Manual and Menus

◦ Your Software will direct you – but cannot think for you.
◦ This is the GRADE of the PRIMARY TUMOR.
◦ DO NOT ASSIGN Grade from a metastatic site – EVER.
◦ Clinical Grade Must NEVER BE BLANK.
◦ Either Pathological or Post-Therapy Grade Must BE BLANK.
◦ Either Pathological or Post-Therapy Grade Must BE FILLED.
◦ There are NOTES that accompany every single Grade Table.

◦ DO ASSIGN the highest grade identified from any type of biopsy (FNA, core, excisional, incisional) or resection (partial or complete) of the primary tumor assessed during the clinical time frame.

◦ If there is only one grade available and it cannot be determined if it is clinical, pathological, or after neo-adjuvant therapy, assign as a clinical grade and code unknown (9) for pathological grade, and blank for post-therapy grade.

2018 Site Specific Grade

◦ **Clinical Grade** - the grade of a solid primary tumor before any treatment. Treatment may include surgical resection, systemic therapy, radiation therapy, or neoadjuvant therapy. NOTE: All surgical procedures are not treatment, e.g. TURB and endoscopic biopsies.

◦ **Pathological Grade** - the grade of a solid primary tumor that has been surgically resected and for which no neoadjuvant therapy was administered. If AJCC pathological staging is being assigned, the tumor must have met the surgical resection requirements in the AJCC manual. This may include the grade from the clinical workup, as all information from diagnosis (clinical staging) through the surgical resection is used for pathological staging.

◦ **Post-Therapy Grade** - the grade of a solid primary tumor that has been resected following neoadjuvant therapy. If AJCC post-therapy staging is being assigned, the tumor must have met the surgical resection requirements for yp in the AJCC manual. Neoadjuvant therapy must meet guidelines or standards, and not be that given for variable or unconventional reasons as noted in the AJCC manual.
2018 Grade – Bladder

<table>
<thead>
<tr>
<th>Schema ID</th>
<th>Schema ID Name</th>
<th>AJCC ID</th>
<th>AJCC Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>00610</td>
<td>Kidney Renal Pelvis</td>
<td>61.1</td>
<td>Renal Pelvis and Ureter: Urothelial Carcinomas</td>
</tr>
<tr>
<td>00620</td>
<td>Bladder</td>
<td>62.1</td>
<td>Urinary Bladder: Urothelial Carcinomas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62.2</td>
<td>Urinary Bladder: Squamous Cell Carcinoma and Adenocarcinoma</td>
</tr>
<tr>
<td>00631</td>
<td>Urethra</td>
<td>63.1</td>
<td>Urothelial Male Penile Urethra and Female Urethra</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63.2</td>
<td>Squamous Male Penile Urethra and Female Urethra</td>
</tr>
<tr>
<td>00633</td>
<td>Urethra-Prostatic</td>
<td>63.3</td>
<td>Prostatic Urethra: Urothelial Carcinomas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>63.4</td>
<td>Prostatic Urethra: Squamous Cell Carcinoma and Adenocarcinoma</td>
</tr>
</tbody>
</table>

Note: Clinical grade must not be blank.

<table>
<thead>
<tr>
<th>Code</th>
<th>Grade Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>G1: Well differentiated</td>
</tr>
<tr>
<td>2</td>
<td>G2: Moderately differentiated</td>
</tr>
<tr>
<td>3</td>
<td>G3: Poorly differentiated</td>
</tr>
<tr>
<td>L</td>
<td>LG: Low-grade</td>
</tr>
<tr>
<td>H</td>
<td>HG: High-grade</td>
</tr>
<tr>
<td>9</td>
<td>Grade cannot be assessed (GX); Unknown</td>
</tr>
</tbody>
</table>
Tumor Grade and Treatment

**PRINCIPLES OF INTRAVESICAL TREATMENT**
Indications: Based on probability of recurrence and progression to muscle-invasive disease, such as size, number, and grade.

- Immediate Intravesical Chemotherapy
  - Initiated within 24 hrs after resection
  - Use after TUR lowers recurrence rate in Ta low-grade tumors
  - Treatment should not be given if extensive TURBT or if suspected bladder perforation

- Induction Intravesical Chemotherapy
  - Initiated 3-4 wks after resection
  - Maximum of 2 inductions without complete response
  - Maintenance therapy is optional

- Induction Intravesical Immunotherapy
  - Initiated 3-4 wks after resection
  - Withhold if traumatic catheterization, bacteriuria, persistent symptoms
  - Maximum of 2 inductions without complete response
  - Some data suggest benefit of maintenance therapy
  - Dose reduction is encouraged if there are substantial lesions

**APPROXIMATE PROBABILITY OF RECURRENCE AND PROGRESSION**

<table>
<thead>
<tr>
<th>Pathology</th>
<th>Approximate Probability of Recurrence in 5 years</th>
<th>Approximate Probability of Progression to Muscle Invasion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ta, low grade</td>
<td>50%</td>
<td>Minimal</td>
</tr>
<tr>
<td>Ta, high grade</td>
<td>60%</td>
<td>Moderate</td>
</tr>
<tr>
<td>T1, low grade (rare)</td>
<td>50%</td>
<td>Moderate</td>
</tr>
<tr>
<td>T1, high grade</td>
<td>50%-70%</td>
<td>Moderate-High</td>
</tr>
<tr>
<td>Tis</td>
<td>50%-80%</td>
<td>High</td>
</tr>
</tbody>
</table>

Source: 2015 NCCN Guidelines - Bladder

Genetics in Urothelial Cancers

- TP53
- GSTM1
- NAT2
- RB1
- FGFR3
- RAS
- Chromosome 9

2018 Solid Tumor MP/H Rules

Published June 2018 – but still had MAJOR changes in October 2018 – be sure you have the correct set of rules

328 pages

General Instructions

- **TEXT ONLY RULES INCLUDE:**
  - General Instructions **PLUS**
  - 10 Sets of Solid Tumor MP/H Rules
  - Each Module includes Multiple Sections (Notes/Site/MP/Histology)
  - Code subtypes/variants when definitively described (no modifiers)
  - Do Not Use Ambiguous Terminology to Code Histology
  - Ambiguous terminology is used to determine “case reportability”
  - Ambiguous terminology is not to be used to determine histology
  - Ambiguous terminology such as “with features of”, etc. are no longer used to determine a subtype OR to determine which histology should be coded. See the following histology rules for instructions on coding multiple histologies.
  - Use the Histology (H) Rules to determine when to use or not use any ambiguous terminology when an ambiguous term is used to describe a histologic type – sometimes you use the ambiguous term to code a subtype or variant or mixed histology -- and sometimes you do not.
General Instructions

- Introduction
- Changes from 2007 MPH Rules
- Definitions
- Equivalent or Equal Terms
- Terms that are NOT Equivalent or Equal
- Table and Instructions for Coding Primary Site
- Table: Specific Histologies, NOS and Subtypes Variants
- Table: Combination/Mixed Histology Codes
- Table: Histologies Not Reportable for This Site
- Illustrations
- Multiple Primary Rules
- Histology Coding Rules

How to Use the Solid Tumor Rules

Note: The rules do not apply to hematopoietic primaries (lymphoma and leukemia) of any site. Use the Hematopoietic & Lymphoid Neoplasm Coding Manual and Database for hematologic M9590-M9592.

1. Use the following site-specific rules for tumors diagnosed 1/1/2018 and forward:
   - Malignant CNS and Peripheral Nerves
   - Non-Malignant CNS
   - Breast
   - Colon
   - Upper aerodigestive tract
2. Use the following site-specific rules for tumors diagnosed 1/1/2007 through 12/31/2018:
   - Malignant melanoma of the skin (not updated for 2018)
   - Other sites (not updated for 2013) for solid tumors which occur in primary sites not covered by the site-specific rules.
3. 2007 MPH Rules and 2018 Solid Tumor Rules are used based on date of diagnosis.
   - Tumors diagnosed 01/01/2007 through 12/31/2017: Use 2007 MPH Rules
   - Tumors diagnosed 01/01/2018 and later: Use 2018 Solid Tumor Rules
4. An in situ tumor diagnosed before 1/1/2018 and a subsequent tumor diagnosed 1/1/2018 or later in the same primary site: Use the 2018 Solid Tumor Rules.
5. The Solid Tumor Rules are not used to determine case reportability, stage, or tumor grade.
6. Use rules in the following order:
   - General Instructions
   - Equivalent Terms and Definitions
   - Multiple Primary rules
   - Histology rules

STOP

Rules are in hierarchical order within each module. Use the first rule that applies and
General Instructions

How to Use the Histology Rules:

Note 1: Do not use these rules to determine case reportability.
Note 2: First use the Multiple Primary Rules to determine whether this is a single primary or multiple primaries. Determine the histology for each case.

1. Rules are divided into two sections: Single Tumor and Multiple Tumors Abstracted as a Single Primary
   A. Each section is a complete set of rules.
   B. Within each section, the rules are hierarchical. Use the first rule that applies and STOP. Do not continue through the rules.
2. Code the histology diagnosis prior to neoadjuvant therapy. Neoadjuvant therapy can change the histological profile of the tumor.
3. A list of terms which may be used to describe a term which cannot be used to code histology prior to neoadjuvant therapy rules.
4. Do not code histologies or subtypes/tumors described by ambiguous terms:
   - Apparently
   - Compatible with
   - Consistent with
   - Suggestive
   - Typical
   - Most likely
   - Presumed
   - Probable
   - Suspected
   - Suspicious
   - Typical
   - Typical

Note: Histology described by ambiguous terminology is coded QA (when a case is abstracted based on ambiguous terminology and no other histology information is available/document).

Ambiguous terminology from the SEER Manual and CCR Manual is used to determine reportability, not to determine histology.

Multiple Primary Rules – Remember:
Most People Have Only One Cancer
Multiple Urothelial Neoplasms
(Sites with Laterality)

Rule M3  Abstract multiple primaries when there are:
- Separate/non-contiguous tumors in both the right AND left renal pelvis AND
- No other urinary sites are involved

Note 1: Only abstract a single primary when pathology confirms tumor(s) in the contralateral renal pelvis are metastatic.
Note 2: This rule is used only when there is no involvement (tumor) in the ureter(s), bladder, or urethra.

Rule M4  Abstract multiple primaries when there are:
- Separate/non-contiguous tumors in the right AND left ureter AND
- No other urinary sites are involved

Note 1: Only abstract a single primary when pathology confirms tumor(s) in contralateral ureter are metastatic.
Note 2: This rule is used only when there is no involvement (tumor) in the renal pelvis, bladder, and urethra.

Multiple Urothelial Neoplasms
(Multiple Tumors – no other sites involved)

Rule M5  Abstract a single primary when tumors are noninvasive in situ, urothelial carcinoma (flat tumor) 8120/2 in the following sites:
- Bladder C67, AND
- One or both ureter(s) C669

Note 1: No other urinary organs are involved.
Note 2: Use this rule ONLY for noninvasive in situ urothelial carcinoma. For other histologies, continue through the rules.
Note 3: Urothelial carcinoma in situ spreads by intramucosal extension and may involve large areas of mucosal surface. The default for these cases is coding a bladder primary.

Rule M6  Abstract a single primary when the patient has multiple occurrences of invasive tumors in the bladder that are:
- Papillary urothelial carcinoma 8150/3 AND OR
- Urothelial carcinoma 8120/3

Note 1: This rule applies to subtypes/variants of both urothelial carcinoma and papillary urothelial carcinoma.
Note 2: A patient can have only one invasive urothelial bladder tumor per lifetime.
Note 3: The rules are hierarchical. Only use this rule when previous rules do not apply.

Rule M7  Abstract a single primary when the patient has multiple recurrences of in situ papillary urothelial carcinoma 8130/2 OR non-invasive urothelial carcinoma 8120/2 which:
- Occur in the same urinary site OR
- Are multifocal/multicentric tumors in multiple urinary sites

Note 1: Once the patient has the original in situ tumor, subsequent in situ tumors are recorded as a recurrence for those registers who collect recurrence data.
Note 2: This rule includes multiple in situ tumors of the bladder.
Note 3: Tumors do not apply.
Multiple Urothelial Neoplasms
(One Site with In-situ and Invasive Neoplasm)

Rule M11 Abstract a single primary\(^\d\) (the survivor) when an in situ tumor is diagnosed after an invasive tumor AND tumors:
- Occur in the same urinary site OR
- Are multifocal/multicentric tumors in multiple urinary sites
Example: The first presentation was multifocal/multicentric invasive tumors in multiple urinary organs, the subsequent presentation was an in situ tumor in at least one of the previously involved urinary organs.
Note 1: The rules are hierarchical. Only use this rule when previous rules do not apply.
Note 2: The tumors may be a NOS and a subtype/variant of that NOS. See Table 1 in the Equivalent Terms and Definitions for listings of NOS and subtype/variants.
Note 3: Once the patient has an invasive tumor, the subsequent in situ is recorded as a recurrence for those registries who collect recurrence data.

Rule M14 Abstract multiple primaries\(^\d\) when an invasive tumor occurs more than 60 days after an in situ tumor AND tumors:
- Occur in the same urinary site OR
- Are multifocal/multicentric tumors in multiple urinary sites

Multiple Urothelial Neoplasms
(Multiple Bladder Tumors)

EXPLAIN THE 3-YEAR RULE

Rule M12 Abstract multiple primaries\(^\d\) when the patient has a subsequent tumor after being clinically disease-free for greater than three years after the original diagnosis or last recurrence.
Note 1: This rule applies to all histologies and urinary sites with the exception of invasive urothelial carcinoma of the bladder (see previous rules).
Note 2: Clinically disease-free means that there was no evidence of recurrence on follow-up.
- Scans are NED
- Urine cytology is NED
- Scope is NED
Note 3: When there is a recurrence within three years of diagnosis, the “clock” starts over. The time interval is calculated from the date of last recurrence.
Note 4: When it is unknown/not documented whether the patient had a recurrence, default to date of diagnosis to compute the time interval.
Note 5: The physician may state this is a recurrence, meaning the patient had a previous urinary site tumor and now has another urinary site tumor. Follow the rules; do not attempt to interpret the physician’s statement.
Example: Patient was diagnosed with multifocal/multicentric urothelial carcinomas in the ureter and renal pelvis in January 2018. Both the kidney and ureter are surgically removed. In June 2022 the patient presents with tumor in the contralateral ureter. The physician states this is a recurrence of the original urothelial carcinomas. Code a new primary for the 2022 ureter carcinoma.
Urothelial Cancer Staging

While the Solid Tumor Multiple Primary Rules may group four anatomy codes into one 'site'; TNM and other staging systems do not group them for staging. Staging relies on the anatomy of the most significant neoplasm which is often the largest, deepest and most extensive tumor when there are multiple anatomic locations involved. So, how do you go about selecting chapter & tumor?

Urothelial Cancer Staging

<table>
<thead>
<tr>
<th>AJCC Chapter Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histology</td>
</tr>
<tr>
<td>8000-8010, 8020-8031, 8041, 8082</td>
</tr>
<tr>
<td>8120, 8122, 8130, 8131</td>
</tr>
<tr>
<td>8070, 8140</td>
</tr>
<tr>
<td>8011-8015, 8021-8030, 8012-8040, 8042-8090, 8071-8091, 8883-8110</td>
</tr>
<tr>
<td>8121, 8122, 8124, 8142-8799, 8720-8790, 9700-9791</td>
</tr>
</tbody>
</table>
### UROTHELIAL/URINARY SYSTEM

#### BLADDER, RENAL PELVIS AND URETERS ANATOMIC STRUCTURES

<table>
<thead>
<tr>
<th>PRIMARY SITE</th>
<th>MUCOSA (Epithelium)</th>
<th>MUSCULARIS PROPERA</th>
<th>SEROSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bladder (CCF)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, on superior surface</td>
</tr>
<tr>
<td>Renal pelvis (CCF)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Ureter (CCF)</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The layers of the urinary tract include:

1. **The EPITHELIAL LAYER** contains no blood vessels or lymphatics.
2. The **BASEMENT MEMBRANE** is a sheet of extracellular material, functions as a filtration barrier and a boundary involved in generating and maintaining tissue structure.
3. The **LAMINA PROPIA**, composed of areolar connective tissue, contains blood vessels, nerves, and, in some regions, glands. Once tumor has broken through the basement membrane into the lamina propria, it can spread by way of the lymphatics and blood vessels to other parts of the body.
4. The urinary sites do **NOT** have a MUSCULARIS MUCOSAE and, therefore, the lamina propria and the submucosa are difficult to separate. These terms are used interchangeably.
5. The **SUBMUCOSA** is a thick layer of either dense or areolar connective tissue. It contains blood vessels, lymphatic vessels, nerves, and, in some regions, glands.
6. The **MUSCULARIS PROPRIA** is composed of multiple layers of muscle tissue; it constitutes the wall of the organ.
7. The **SEROSA**, the outermost layer covering, is a serous membrane, part of the visceral peritoneum. It covers only the superior surface of the bladder. There is no serosa on the renal pelvis or ureters.
   - Where there is no serosa, the connective tissue of surrounding structures merges with the connective tissue of the urinary organs and is called ADVENTITIA.
Primary Tumor – T Category

Source: http://topmedicaljournals.com
Pathological Stage 0

- In situ neoplasia is an exception to the stage grouping guidelines that otherwise require regional lymph node evaluation for pathological classification. By definition, in situ neoplasia has not involved any structures in the primary organ that would allow tumor cells to spread to regional nodes or distant sites.
- **The primary tumor surgical resection criteria for pathological stage must be met in order to assign pathological Stage 0.**
- Lymph node microscopic assessment is not necessary to assign pathological Stage 0.

Summary
The following rules should be applied for carcinoma in situ depending on when the case was diagnosed. This is based on a diagnostic biopsy with microscopic evidence of in situ for the clinical stage, and the appropriate surgical resection performed for the pathological stage.

- Cases diagnosed 2010 – 2016, Seventh Edition:
  - pTis cN0 cM0 clinical stage 0
  - pTis cN0 cM0 pathological stage 0

- Cases diagnosed 2017 – , Eighth Edition:
  - cTis cN0 cM0 clinical stage 0
  - pTis cN0 cM0 pathological stage 0

Regional Lymph Nodes – N Category

Includes both Primary and Secondary Lymph Node Drainage Areas

NO SSDI’s REQUIRED

Table 2. AJCC Prognostic Groups

<table>
<thead>
<tr>
<th>Stage Grade</th>
<th>T</th>
<th>N</th>
<th>M</th>
<th>Stage Grade</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 0a</td>
<td>Ta</td>
<td>N0</td>
<td>M0</td>
<td>Stage IIIA</td>
<td>T4a</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage 0b</td>
<td>Tb</td>
<td>N0</td>
<td>M0</td>
<td>Stage IIIA</td>
<td>T4b</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td>Stage I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
<td>Stage IIIB</td>
<td>T1-T4a</td>
<td>N2,N3</td>
<td>M0</td>
</tr>
<tr>
<td>Stage II</td>
<td>T2a</td>
<td>N0</td>
<td>M0</td>
<td>Stage IVA</td>
<td>T4b</td>
<td>Any N</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2b</td>
<td>N0</td>
<td>M0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T3b</td>
<td>N0</td>
<td>M0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T4a</td>
<td>N0</td>
<td>M0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>T1,T4a</td>
<td>N1</td>
<td>M0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

NCCN/AJCC
Staging When Multiple Tumors

- Multiple Tumors Abstracted as a Single Primary
- How do You Code Primary Site in These Cases?
- Multiple Urothelial Tumors in Single Site (multiple bladder tumors)
- Multiple Urothelial Tumors in More Than One Site (within 3 yrs)
- Multiple Urothelial Tumors in More Than One Site (>3 years)
- Urothelial and non-Urothelial Tumors in One Site/Multiple Sites

Treatment - Surgery

**TURBT IS NOT A CYSTECTOMY – NO PATHOLOGICAL STAGE**
Treatment - Surgery

**TURBT IS NOT A CYSTECTOMY – NO PATHOLOGICAL STAGE**

- Partial Cystectomy – cT2 muscle invasive disease – solitary lesion
- Total Cystectomy – high-grade cT1 or muscle-invasive disease
- Radical Cystectomy – cT2, cT3, cT4a disease (plus chemo)
- Radical Cystoprostatectomy (for bladder cancer)
- Radical Nephroureteroectomy – high-grade upper GU tract tumors

---

Treatment - Intravesical

- Given for non-muscle invasive disease
- Often missing in first course of therapy in hospital records – why?
- Most cases are actually diagnosed in urologist office on cysto
- Most cases get intravesical treatment in urologist office
- Registrars do not look for intravesical treatment in medical record
- Can be Intravesical Chemotherapy or Intravesical BCG (Immuno) – why different?
- Three Points in Time Intravesical Treatment is Given
  - Immediate Postoperative following TURBT – Gemcitabine or Mitomycin
  - Induction (Adjuvant) Chemo or BCG – 3-4 weeks after TURBT – once a week X 4
  - Maintenance BCG – 1 year post dx for intermediate-risk and 3 years for high risk non-muscle invasive disease
Treatment – Photodynamic Therapy

Tingsheng Lin, Xiaozhi Zhao, Sheng Zhao, Hang Yu, Wenmin Cao, Wei Chen, Hui Wei, Hongqian Guo

Genetics and Targeted Therapies

Investigational - Immune Checkpoint Inhibitors for Urothelial Cancers

- Target PD
  - atezolizumab (Tecentriq)
  - durvalumab (Imfinzi)
  - avelumab (Bavencio)

- Target PDL-1
  - pembrolizumab (Keytruda)
  - nivolumab (Opdivo)

- Anti-angiogenesis Drugs
  - Bevacizumab (Avastin)
  - Sorafenib (Nexavar)
  - cabozantinib (Cometriq)
  - Pazopanib (Votrient)
Neoplasms of the Prostate

Prostate Regional 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

Source: [http://www.abbottdiagnostics.com](http://www.abbottdiagnostics.com), U.S. National Cancer Institute
Prostate Regional Anatomy

Source: American Cancer Society

Prostate Regional Anatomy

Source: SEER Training Website
Prostate Anatomy

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

Source: SEER Training Website

Regional Lymph Nodes

- Nodes of the True Pelvis: Sacral, Obturator, Hypogastric, Internal and External Iliac, Pelvis, NOS

Regional lymph nodes (N):
- Clinical
  - N0: Regional lymph nodes not assessed
  - N1: No regional lymph node metastasis
- Pathologic
  - pN0: No positive regional lymph nodes
  - pN1: Metastases in regional lymph nodes
Anatomy Related to Diagnosis

Patterns for Needle Biopsy of Prostate

Material provided by Prostate Cancer Research Institute (PCRI)

Anatomy Related to Stage - DRE

Material provided by Prostate Cancer Research Institute (PCRI)
Anatomy Related to Stage

Source: http://www.prostatecareqld.com.au

PSA Lab Value
Screening and Staging

- Rapid change in PSA over 1 year\(^1\)
  - 0.75 ng/mL/year when PSA is 4-10 ng/mL
- High PSA value for age\(^1,2\)
  - 4.0 ng/mL was originally used to differentiate normal PSA level from pathologic elevation
- Age-specific references have been used to improve sensitivity

<table>
<thead>
<tr>
<th>Parameter(^3)</th>
<th>40-49</th>
<th>50-59</th>
<th>60-69</th>
<th>70-79</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum PSA Concentration (ng/mL)</td>
<td>0-2.5</td>
<td>0-3.5</td>
<td>0-4.5</td>
<td>0-6.5</td>
</tr>
</tbody>
</table>
PSA Monitoring Over Time

- No Cancer Diagnosis
- Clinically Localized Disease
- Rising PSA: No Visible Metastases: Castrate
- Rising PSA: Non-Castrate
- Clinical Metastases: Castrate 1st Line
- Clinical Metastases: Castrate 2nd Line
- Clinical Metastases: Castrate 3rd Line

Death from cancer exceeds death from other causes

http://clinicalgate.com/testicular-cancer-4/

Prostate Tissue-Based Tests

Table 1. Available Tissue-Based Tests for Prostate Cancer Prognosis

<table>
<thead>
<tr>
<th>Test</th>
<th>Population Studied</th>
<th>Outcome Reporting (Two Independent Positive Results)</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAN</td>
<td>Tumors</td>
<td>2.5% of patients with positive test results</td>
<td>Corman et al. (2016)</td>
</tr>
<tr>
<td>PCA3</td>
<td>Bladder</td>
<td>75% of patients with positive test results</td>
<td>Corman et al. (2016)</td>
</tr>
<tr>
<td>PNET</td>
<td>Prostate</td>
<td>90% of patients with positive test results</td>
<td>Corman et al. (2016)</td>
</tr>
<tr>
<td>GCIG</td>
<td>Bladder</td>
<td>85% of patients with positive test results</td>
<td>Corman et al. (2016)</td>
</tr>
<tr>
<td>GCIG</td>
<td>Bladder</td>
<td>90% of patients with positive test results</td>
<td>Corman et al. (2016)</td>
</tr>
</tbody>
</table>

http://clinicalgate.com/testicular-cancer-4/
Workup

- Annual Physical Exam
  - Symptoms
  - Digital Rectal Examination
  - PSA Monitoring (timing?)
- TRUS (black & white) or color Doppler Ultrasound with Biopsy
  - Advantage of color Doppler is visualize more blood vessels near tumor
- Imaging with CT and/or MRI
- Multiparametric MRI - regular MRI plus one or more other type MRI
- Enhanced MRI – 2 scans on different days with magnetic injection
- PET Scan for advanced disease
- Bone Scan when bone metastases are suspected
- Treatment Depends on Outcome from Above Testing

Histology

- Adenocarcinoma is primary histology in more than 95% of cases
- Adenocarcinoma In-Situ and PIN III are Not Reportable Cancers
- Other Histologies: ductal (adeno)carcinoma, squamous cell carcinoma, neuroendocrine (large cell and small cell) & endometrioid carcinoma (see use of ambiguous terms for these)
- Growth Patterns: glandular, cribriform, and solid-undifferentiated.
- Gleason/Grade is most relevant over histology for Prostate cases.
Histology

Protocol for the Examination of Specimens From Patients With Carcinoma of the Prostate Gland

Version: Prostate 4.0.3.0  Protocol Posting Date: June 2017
Includes pTNM requirements from the 8th Edition, AJCC Staging Manual

For accreditation purposes, this protocol should be used for the following procedures AND tumor types:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostatectomy</td>
<td>Includes specimens designated radical prostatectomy</td>
</tr>
<tr>
<td>Carcinoma</td>
<td>Including all adenocarcinomas and histologic variants, neuroendocrine tumors, and small cell carcinomas.</td>
</tr>
</tbody>
</table>

This protocol is NOT required for accreditation purposes for the following:

- Needle biopsies, transurethral resection of the prostate gland (TURP)* or enucleations
- Primary resection specimen with no residual cancer (e.g., following neoadjuvant therapy)

* Transurethral resection of the prostate is NOT considered to be the definitive resection specimen, even though the entire cancer may be removed. This protocol is recommended for reporting TURP specimens for clinical care purposes, but it is not required for accreditation purposes.

Histology – CAP Checklist

Histologic Type (select all that apply) (Note B)
- Acinar adenocarcinoma
- Ductal adenocarcinoma
- Small-cell neuroendocrine carcinoma
- Isolated intraductal carcinoma
- Other histologic type not listed (specify): __________________________

Histologic Grade (Note C)
Grade Group and Gleason Score
- Not applicable
- Cannot be assessed
- Grade group 1 (Gleason Score 3+3=6)
- Grade group 2 (Gleason Score 3+4=7)
- Grade group 3 (Gleason Score 4+3=7)
- Grade group 4 (Gleason Score 4+4=8)
- Grade group 5 (Gleason Score 5+3=8)
- Grade group 4 (Gleason Score 5+4=9)
- Grade group 5 (Gleason Score 5+5=10)
2018 Site Specific Grade

- **Clinical Grade** - the grade of a solid primary tumor before any treatment. Treatment may include surgical resection, systemic therapy, radiation therapy, or neoadjuvant therapy. NOTE: All surgical procedures are not treatment, e.g. TURB and endoscopic biopsies.

- **Pathological Grade** - the grade of a solid primary tumor that has been surgically resected and for which no neoadjuvant therapy was administered. If AJCC pathological staging is being assigned, the tumor must have met the surgical resection requirements in the AJCC manual. This may include the grade from the clinical workup, as all information from diagnosis (clinical staging) through the surgical resection is used for pathological staging.

- **Post-Therapy Grade** - the grade of a solid primary tumor that has been resected following neoadjuvant therapy. If AJCC post-therapy staging is being assigned, the tumor must have met the surgical resection requirements for yp in the AJCC manual. Neoadjuvant therapy must meet guidelines or standards, and not be that given for variable or unconventional reasons as noted in the AJCC manual.

2018 Grade – Prostate
Grade – Prostate Gleason Pattern and Score

1. Grade Group 1: Gleason score less than or equal to 6
2. Grade Group 2: Gleason score 7
   Gleason pattern 3+4
3. Grade Group 3: Gleason score 7
   Gleason pattern 4+3
4. Grade Group 4: Gleason score 8
5. Grade Group 5: Gleason score 9 or 10
A. Well differentiated
B. Moderately differentiated
C. Poorly differentiated
D. Undifferentiated, anaplastic
E. Stated as “Gleason score 7” with no patterns documented or
   Any Gleason patterns combination equal to 7 not specified in 2 or 3
9. Grade cannot be assessed. Unknown

Note 6: If you are assigning an AJCC 8th edition stage group
   • Grade is required to assign stage group
   • Codes A-E are treated as an unknown grade when assigning AJCC stage group
   • An unknown grade may result in an unknown stage group
2018 Solid Tumor Rules – MP/H

Rule M5  Adenocarcinoma of the prostate is always a single primary. *

Note 1: Report only one adenocarcinoma of the prostate per patient per lifetime.
Note 2: 95% of prostate malignancies are the common (acinar) adenocarcinoma histology (8140). See Equivalent Terms, Definitions and Tables for more information.
Note 3: If patient has a previous acinar adenocarcinoma of the prostate in the database and is diagnosed with adenocarcinoma in 2007 it is a single primary.

Rule H10  Code 8140 (adenocarcinoma, NOS) for prostate primaries when the diagnosis is acinar (adeno)carcinoma.

Do not code histologies or subtypes/variants described by ambiguous terms:

- Apparently
- Appears
- Comparable with
- Compatible with
- Consistent with
- Favor(e) of
- Malignant appearing

Most likely
Presumed
Probable
Suspect(e) of
Suspicious (for)
Typical (of)
**SS2018 Manual**

### Summary Stage 2018

**General Coding Instructions April 2018**

#### 1. Localized only (localized, NOS)
- Clinical apparent or apparent tumor
- Confined to prostate, NOS
- Metastatic or unknown extent
- Secondary tumor (satellite or second primary)
- Peripheral, NOS
- No nonsurgical extension
- One or more sites involved

#### 2. Regionally by direct extension only
- Bladder neck
- Bladder, NOS
- External iliac node
- Extraprostatic extension beyond prostate capsule, seminal vesicle, bladder, NOS
- Extracapsular extension (undetermined method)
- Prostatic sinus
- Lymph nodes
- Periprostatic tissue
- Rectovaginal septum
- Rectum
- Seminal vesicle
- Urethra
- Through capsule, NOS
- Ureter

#### 3. Regional lymph node(s) involved only
- Hypogastric
- Iliac, NOS
- External
- Internal (hypogastric) (obturator), NOS
- Pelvic, NOS
- Periprostatic
- Sacral, NOS

#### 4. Regionally by both direct extension AND regional lymph node(s) involved
- Codes (2) + (3)

#### 5. Distant site(s)/lymph node(s) involved
- Distant site(s) (including further contiguous extension)
  - Bone
  - Extension to or fixation to pelvic wall or pelvic bone
  - "Fixed pelvic", NOS
  - Other organs
  - Penis
  - Perineal colon
  - Soft tissue not other than periprostatic
- Distant lymph node(s), NOS
  - Axillary (lateral,[medial], para-aortic, periaortic, NOS)
  - Cervical
  - Common iliac
  - Inguinal (deep, NOS)
  - Node of Cloquet or Rovsingdahl (highest deep inguinal)
  - Superficial (inguinal)
  - Retropertioneal, NOS
  - Supraclavicular (infraygular cervical)
- Distant metastasis, NOS
  - Carcinomatous
  - Distant metastasis WITH or WITHOUT distant lymph node(s)

#### 9. Unknown if extension or metastasis

---

### AJCC TNM Staging - Prostate

**AJCC TNM Staging System for Prostate Cancer (8th ed., 2017)**

<table>
<thead>
<tr>
<th>Pathological T (pT)</th>
<th>Clinical T (T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>T0</td>
<td>T0</td>
</tr>
<tr>
<td>Primary tumor cannot be assessed</td>
<td>Organ confined</td>
</tr>
<tr>
<td>T1a</td>
<td>T1a</td>
</tr>
<tr>
<td>Clinically apparent tumor that is not palpable</td>
<td>Extracapsular extension</td>
</tr>
<tr>
<td>T1b</td>
<td>T1b</td>
</tr>
<tr>
<td>Tumor localized histologically; tumor in or less than 0.5 cm in greatest diameter</td>
<td>Extracapsular extension (unilateral or bilateral) or microscopic invasion of the bladder neck</td>
</tr>
<tr>
<td>T1c</td>
<td>T1c</td>
</tr>
<tr>
<td>Tumor identified by needle biopsy found in one or both sides, but not palpable</td>
<td>Tumor involves seminal vesicles</td>
</tr>
<tr>
<td>T2</td>
<td>T2</td>
</tr>
<tr>
<td>Tumor is palpable and confined within prostate</td>
<td>Tumor is fixed or involves adjacent structures other than seminal vesicles such as external sphincter, rectum, bladder, levator muscles, and/or pelvic wall</td>
</tr>
<tr>
<td>T2a</td>
<td>T2a</td>
</tr>
<tr>
<td>Tumor involves one-half of one side or less</td>
<td>T2b</td>
</tr>
<tr>
<td>T2b</td>
<td>T2b</td>
</tr>
<tr>
<td>Tumor involves more than one-half of one side but not both sides</td>
<td></td>
</tr>
<tr>
<td>T2c</td>
<td>T2c</td>
</tr>
<tr>
<td>Tumor involves both sides</td>
<td></td>
</tr>
<tr>
<td>T3</td>
<td>T3</td>
</tr>
<tr>
<td>Extracapsular tumor that is fixed or does not invade adjacent structures</td>
<td></td>
</tr>
<tr>
<td>T3a</td>
<td>T3a</td>
</tr>
<tr>
<td>Extracapsular extension (unilateral or bilateral)</td>
<td></td>
</tr>
<tr>
<td>T3b</td>
<td>T3b</td>
</tr>
<tr>
<td>Tumor involves seminal vesicles(s)</td>
<td></td>
</tr>
<tr>
<td>T4</td>
<td>T4</td>
</tr>
<tr>
<td>Tumor fixed or involves adjacent structures other than seminal vesicles such as external sphincter, rectum, bladder, levator muscles, and/or pelvic wall</td>
<td></td>
</tr>
</tbody>
</table>

**N**

- **N0**: regional lymph nodes cannot be assessed
- **N1**: positive regional nodes
- **N2**: distant metastasis
- **N3**: non-regional lymph nodes
- **N4a**: bone(s)
- **N4b**: other sites with or without bone disease

**M**

- **M0**: no distant metastasis
- **M1**: distant metastasis
- **M1a**: non-regional lymph node(s)
- **M1b**: bone(s)
- **M1c**: other sites with or without bone disease

*Note: Clinical stage should be determined according to the T category, with the most advanced category used.*
**TWO Staging Systems in One**

**Clinical T (cT)**
- T0: No evidence of primary tumor
- T1: Clinically apparent tumor that is not palpable
- T1a: Tumor incidental histology, finding in 5% or less of tissue resected
- T1b: Tumor incidental histologic finding in more than 5% of tissue resected
- T1c: Tumor identified by needle biopsy found in one or both sides, but not palpable
- T2: Tumor is palpable and confined within prostate
  - T2a: Tumor involves one-half of one side or less
  - T2b: Tumor involves more than one-half of one side but not both sides
  - T2c: Tumor involves both sides
- T3: Extraprostatic tumor that is not fixed or does not invade adjacent structures
  - T3a: Extraprostatic extension (unilateral or bilateral)
  - T3b: Extraprostatic extension (unilateral or bilateral) or microscopic involvement of the bladder neck
- T4: Tumor is fixed or invades adjacent structures other than seminal vesicles such as external sphincter, rectum, bladder, levator muscles, and/or pelvic wall

**Pathological T (pT)**
- T0: Primary tumor cannot be assessed
- T1: Organ-confined
- T2: Extraprostatic extension
  - T2a: Extraprostatic extension (unilateral or bilateral)
  - T2b: Extraprostatic extension (unilateral or bilateral) or microscopic involvement of the bladder neck
- T4: Tumor invades seminal vesicle(s)
  - T4a: Tumor invades seminal vesicle(s)
  - T4b: Tumor invades seminal vesicle(s) and involves pelvic wall

**N** Regional Lymph Nodes
- Nx: Regional lymph nodes cannot be assessed
- N0: No positive regional nodes
- N1: Metastases in regional lymph nodes

**M** Distant Metastasis
- M0: No distant metastasis
- M1: Distant metastasis
- M1a: Non-regional lymph node(s)
- M1b: Bone(s)
- M1c: Other site(s) with or without bone disease

*Note: When more than one site of metastasis is present, the most advanced category is used. M1c is most advanced.*

---

**Prostatectomy Procedures**

- **50** Radical prostatectomy, NOS; total prostatectomy, NOS
  - Excised prostate, prostatic capsule, ejaculatory duct, seminal vesicle(s) and may include a narrow cuff of bladder neck.

- **70** Prostatectomy WITH resection in continuity with other organs; pelvic exenteration
  - Surgery codes 70 are any prostatectomy WITH resection in continuity with any other organ.
  - The other organs may be partially or totally removed. Procedures may include, but are not limited to, cystoprostatectomy, radical cystectomy, and prostatectomy.
  - [NOTE: In continuity with or “in bloc” means that all of the tissues were removed during the same procedure, but not necessarily in a single specimen. A Prostatectomy would be coded as any other prostatectomy depending on the extent of the procedure codes 50-90 per CPT/HCPCS.](#)
TWO Staging Systems in One

Gleason System has been compressed into "Grade Groups" used in AJCC Stage

<table>
<thead>
<tr>
<th>Grade Group</th>
<th>Gleason Score</th>
<th>Gleason Pattern</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≤6</td>
<td>3+3</td>
</tr>
<tr>
<td>2</td>
<td>7</td>
<td>3+4</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>4+3</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>4+3, 3+5, 5+3</td>
</tr>
<tr>
<td>5</td>
<td>9 or 10</td>
<td>4+5, 5+4, 5+5</td>
</tr>
</tbody>
</table>

AJCC Site-Specific Data Items

- Prostate
- PSA (Prostatic Specific Antigen) Lab Value
- Gleason Patterns and Scores
  - Gleason Patterns Clinical
  - Gleason Score Clinical
  - Gleason Patterns Pathological
  - Gleason Score Pathological
  - Gleason Tertiary Pattern
- Number of Cores Positive and Examined
- Number of Cores Positive
- Number of Cores Examined

AJCC Cancer Staging Manual, 8th ed. and SSDI Manual, 2018
FCDS Site-Specific Data Items

<table>
<thead>
<tr>
<th>FCDS Required</th>
<th>Item Number</th>
<th>Item Name</th>
<th>Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>3810</td>
<td>Brain Molecular Markers</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3817</td>
<td>Tumor Location</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3827</td>
<td>Estrogen Receptor Summary</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3835</td>
<td>Prostate Score</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3845</td>
<td>Grade Clinical</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3844</td>
<td>Grade Pathological</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3845</td>
<td>Grade Post Therapy</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3855</td>
<td>HER2 Overall Summary</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3860</td>
<td>Mitochondria Instability (MSI)</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3016</td>
<td>Progesterone Receptor Summary</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3820</td>
<td>Serum Discriminator 1</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3827</td>
<td>Serum Discriminator 2</td>
<td>2018</td>
</tr>
<tr>
<td>C</td>
<td>3852</td>
<td>LDH Pretreatment Lab Value</td>
<td>2018</td>
</tr>
</tbody>
</table>

2018 FCDS DAM and 2018-2020 NPCR Reporting Requirements

Treatment - Prostate

- Watchful Waiting – Active Surveillance
- High Intensity Focused Ultrasound – ultrasound ablation – early stage
- Surgery – radical prostatectomy with/out lymphadenectomy
- Radiation Therapy
  - Brachytherapy
  - Conformal Radiation Therapy
  - Intensity Modulated Radiation Therapy
  - Proton Beam Radiation
- Hormone Therapy
  - 5-alpha reductase inhibitors – supplement active surveillance or PSA rise
    - Finasteride (Proscar)
    - Dutasteride (Avodart)
  - Abiraterone (Zytiga)
  - Enzalutamide (Xtandi)
- Chemotherapy – docetaxel and cabazitaxel – advanced disease
- Vaccine Therapy for Prevention
- Immune Checkpoint Inhibitors combined with Vaccine Therapy
- RFA (Radiofrequency ablation) to help control pain from bone mets
Treatment - Prostate

**Initial Prostate Cancer Diagnosis**
- DRE
- PSA
- Prostate biopsy
- Life expectancy estimation
- Family history

**Initial Clinical Assessment**
- Very low, low, or intermediate risk groups: No further workup or treatment until symptomatic
- High or very high risk groups: Observation or ADT or EBT
- High or very high risk groups: Observation or ADT

**Life expectancy**
- 25 y and asymptomatic
- >5 y and symptomatic

**See Risk Stratification and Staging Workup**
- (PROS-2)

**Risk Stratification and Staging Workup**

<table>
<thead>
<tr>
<th>Risk group</th>
<th>Clinical/pathologic features</th>
<th>Imaging*</th>
<th>Molecular testing of tumor</th>
<th>Germline testing</th>
<th>Initial therapy*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low</td>
<td>T1a T2a NO R0</td>
<td>Not indicated</td>
<td>Not indicated</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-4</td>
</tr>
<tr>
<td>Low</td>
<td>T1b T2a NO R0</td>
<td>Not indicated</td>
<td>Not indicated</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-5</td>
</tr>
<tr>
<td>Favorable</td>
<td>T1b T2a NO R0</td>
<td>Not indicated</td>
<td>Consider if life expectancy &gt;10 y</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-6</td>
</tr>
<tr>
<td>Unfavorable</td>
<td>T1b T2a NO R0</td>
<td>Not indicated</td>
<td>Consider if life expectancy &gt;10 y</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-7</td>
</tr>
<tr>
<td>High</td>
<td>T1b T2a NO R0</td>
<td>Not indicated</td>
<td>Consider if life expectancy &gt;10 y</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-8</td>
</tr>
<tr>
<td>Very high</td>
<td>T1b T2a NO R0</td>
<td>Not indicated</td>
<td>Consider if life expectancy &gt;10 y</td>
<td>Consensus if life expectancy &gt;10 y</td>
<td>See PROS-9</td>
</tr>
</tbody>
</table>

**Regional**
- Any T, N1, M0
- Already performed
  - Consider routine testing for homologous recombination gene mutations (HRR) (BRCA1 or 2) or; germline testing for HRR (BRCA1 or 2)

**Metastatic**
- Any T, Any N, M1
- Already performed
  - Consider routine testing for homologous recombination gene mutations (HRR) (BRCA1 or 2) or; germline testing for HRR (BRCA1 or 2)
Treatment - Prostate

PRINCIPLES OF LIFE EXPECTANCY ESTIMATION

1. Life expectancy estimation is critical to informed decision-making in prostate cancer early detection and treatment.
2. Estimation of life expectancy is possible for groups of men but challenging for individuals.
3. Life expectancy can be estimated using the Social Security Administration tables (www.ssa.gov/OACT/STATS/tabl...live.htm) or the WHO's Life Tables by country (http://www.who.int/globalatlas/tablen.Repmen.0600016aehmen).
4. Life expectancy can then be adjusted using the clinician's assessment of overall health as follows:
   - Best quartile of health - add 5%
   - Worst quartile of health - subtract 5%
   - Middle two quartiles of health - no adjustment
5. Example of 5-year increments of age are reproduced in the NCCN Guidelines for Older Adult Oncology for life expectancy estimation.

Text Documentation - Prostate

Source: NCRA Informational Abstracts – Improving Text
Staging Practice

References

- SEER Training Website - https://training.seer.cancer.gov/
- FCDS Data Quality Audit – Urinary System – 2016/2017 Diagnosis Years
  - Kidney
  - Renal Pelvis
  - Bladder
  - Prostate
  - Kidney
  - Renal Pelvis
  - Bladder
  - Prostate
- NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) – https://nccn.org/
  - Kidney Cancer – Version 2.2019 – September 17, 2018
  - Bladder Cancer – Version 5.2018 – July 3, 2018
  - Prostate Cancer – Version 4.2018 – August 15, 2018
  - Kidney – Invasive Carcinoma of Renal Tubular Origin – June 2017
  - Urinary Bladder – June 2017
  - Prostate Gland – June 2017
- Protocols for Biomarkers - NONE
- World Cancer Research Fund/American Institute for Cancer Research – Continuous Update Project – Diet, nutrition, physical activity and bladder cancer, Revised 2018
Questions