Genitourinary Neoplasms

2014/2015 FCDS Educational Webcast Series

January 15, 2015
Steven Peace, CTR

2015 Update; Background, Anatomy, Risk Factors,
Screening Guidelines, MPH Rules Review
AJCC TNM 7th ed, SS2000, CSv02.05 and SSFs
Plus…NCCN 2015 Tx Guidelines

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Presentation Outline

- Background, Anatomy and Risk Factors
  - Kidney – Renal Parenchyma
  - Kidney – Renal Pelvis
  - Ureters
  - Bladder
  - Prostate
- GU Cancer Screening Guidelines
- Multiple Primary and Histology Coding Rules (MPH)
- GU Cancer Staging – CSv02.05, AJCC TNM 7th ed, SS2000
- NCCN Treatment Guidelines
- Questions

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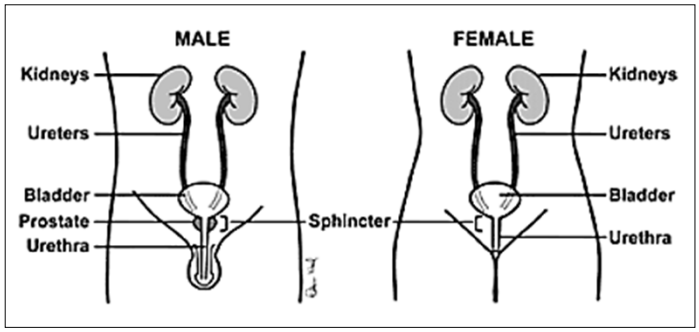
Genitourinary System



Source: http://seekwellness.com/images

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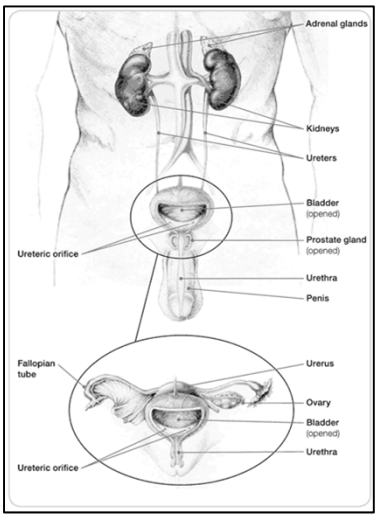
Genitourinary System



Source: http://cancervic.org.au/bladder_cancer

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KIDNEY

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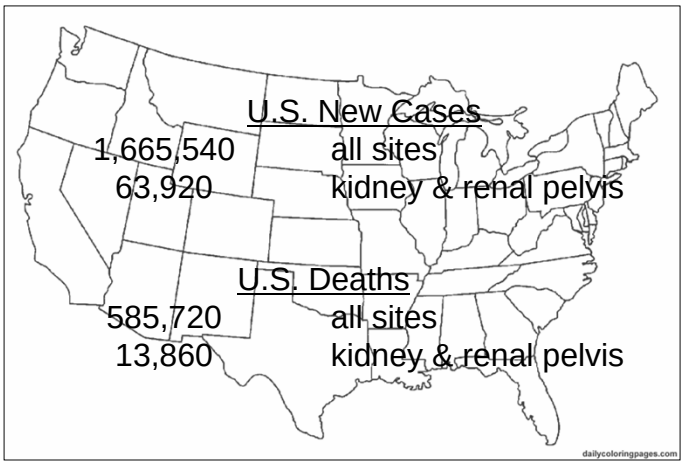
U.S. Incidence/Mortality



Source: American Cancer Society Cancer Facts and Figures 2014

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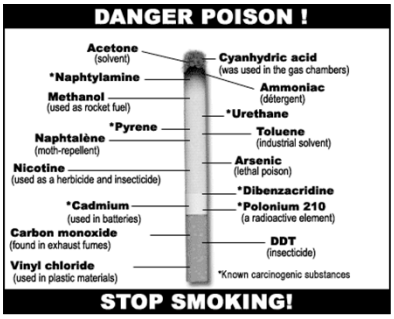
Risk Factors/Screening

Risk Factors

- Cigarette Smoking (renal pelvis cases – not RCC)
- Obesity (30% of cases)
- High Blood Pressure
- Chronic Kidney Disease
- Occupational Exposures
- Long-term use of medicines
- Family History of RCC



Screening

- None
- Incidental Finding
  - Ultrasound
  - CT Scan

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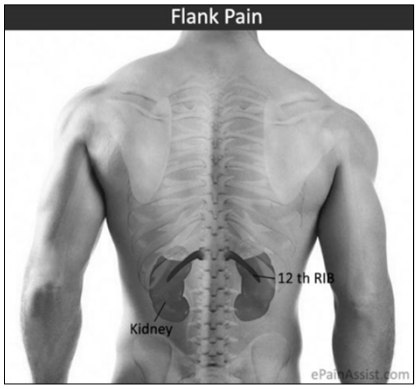
Signs and Symptoms

1. Flank Pain
2. Hematuria
3. Abdominal Mass

- Weight Loss
- Anorexia
- Anemia
- Polycythemia
- Discolored Urine
- Leg and Ankle Swelling



Source: ePainAssist.com

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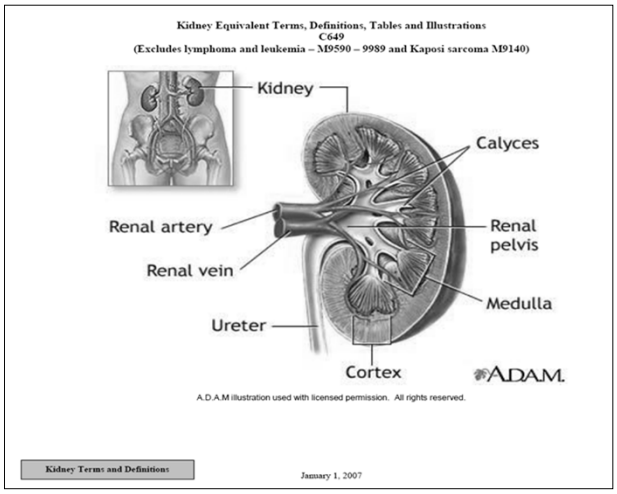
Kidney – Anatomy



Source: 2007 Multiple Primary and Histology Coding Rules and ADAM

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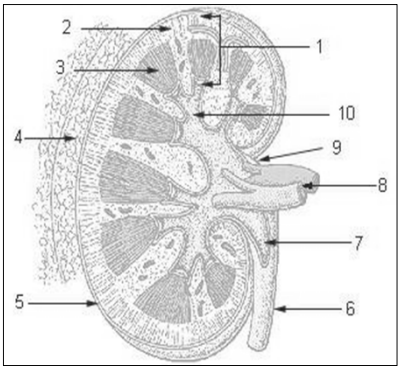
Kidney – Anatomy



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

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Kidney – Histology

Renal Cell Carcinoma and Renal Cell Carcinoma Subtypes

- ❖ **8312** **Renal cell carcinoma is a "generic" term the includes all glandular or (adeno)carcinomas 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

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Multiple Primary and Histology Coding Rules

Kidney (C64.9) – Renal Parenchyma

- Terms & Definitions
- Multiple Primary Rules
- Histology Coding Rules

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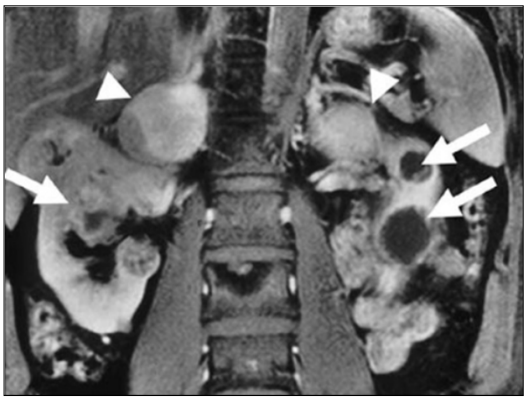
What does this CT show?



Source: http://www.mayo.edu/kidney_adrenal

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Kidney Equivalent Terms, Definitions, Tables and Illustrations
C649
(Excludes lymphoma and leukemia – M9590 – 9989 and Kaposi sarcoma M9140)

INTRODUCTION

Renal cell carcinoma (8312) is a group term for glandular (adeno) carcinomas of the kidney. Approximately 85% of all malignancies of the kidney are renal cell and specific renal cell types.

Transitional cell carcinoma rarely arises in the kidney parenchyma (C649). Transitional cell carcinoma found in the upper urinary system usually arises in the renal pelvis (C659). Only code transitional cell carcinoma to kidney in the rare instance when pathology confirms the tumor originated in the parenchyma of the kidney.

Equivalent or Equal Terms

- **Multifocal** and **multicentric**
- **Renal cell carcinoma (RCC)** and **hypernephroma (obsolete term)**
- **Tumor, mass, lesion,** and **neoplasm**

Definitions

Adenocarcinoma with mixed subtypes (8255): A mixture of two or more of the specific renal cell carcinoma types listed in Table 1.

Carcinoma of the collecting ducts of Bellini/collecting duct carcinoma (8319) is a malignant epithelial tumor. There is controversy about the relationship between medullary carcinoma and collecting duct carcinoma; some advocate that there is a relationship, others are not convinced. Genetic studies are ongoing. We will code medullary carcinoma originating in the kidney to 8510 so we can differentiate between the medullary and the collecting duct carcinoma.

Chromophobe RCC (8317) is a rare form of kidney cancer. Chromophobe is a renal carcinoma characterized by large pale cells with prominent membranes.

Clear cell RCC (8310) is the most common type of RCC. Clear cell is composed of clear or eosinophilic cytoplasm. Clear cell is architecturally diverse, with solid alveolar and acinar patterns the most common.

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Kidney Equivalent Terms, Definitions, Tables and Illustrations
C649
(Excludes lymphoma and leukemia – M9590 – 9989 and Kaposi sarcoma M9140)

Table 1 - Renal cell carcinoma and specific renal cell types

Table Instructions: Use this table to identify specific renal cell carcinoma types.
Note: Renal cell carcinoma, NOS (8312) is the non-specific term under which the specific renal cell carcinoma types are listed. This table is a **complete** listing of specific renal cell carcinoma types.

8312 or 8255

Column 1: Code	Column 2: Specific Renal Cell Carcinoma Types
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; malignant multilocular cystic nephroma

* *Note:* Chromophil and chromophobe are different histologies

Kidney Terms and Definitions

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Kidney Multiple Primary Rules - Flowchart
(C649)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Flowchart Key

* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.

MULTIPLE TUMORS	DECISION	NOTES
Multiple tumors may be a single primary or multiple primaries.		1. Tumors not described as metastases. 2. Includes combinations of in situ and invasive.
M3 Is the diagnosis Wilms tumor? YES	SINGLE Primary*	Wilms Includes Bilateral as 1 Primary
NO		
M4 Are there tumors in sites with ICD-O-3 **topography** codes that are **different** at the second (C**x**xx) and/or third character (Cx**x**x)? YES	MULTIPLE Primaries**	
NO		
M5 Are there tumors in **both** the **left and right kidney**? YES	MULTIPLE Primaries**	Renal Cell Histologies Do Not Include Bilateral
NO		
Next Page		

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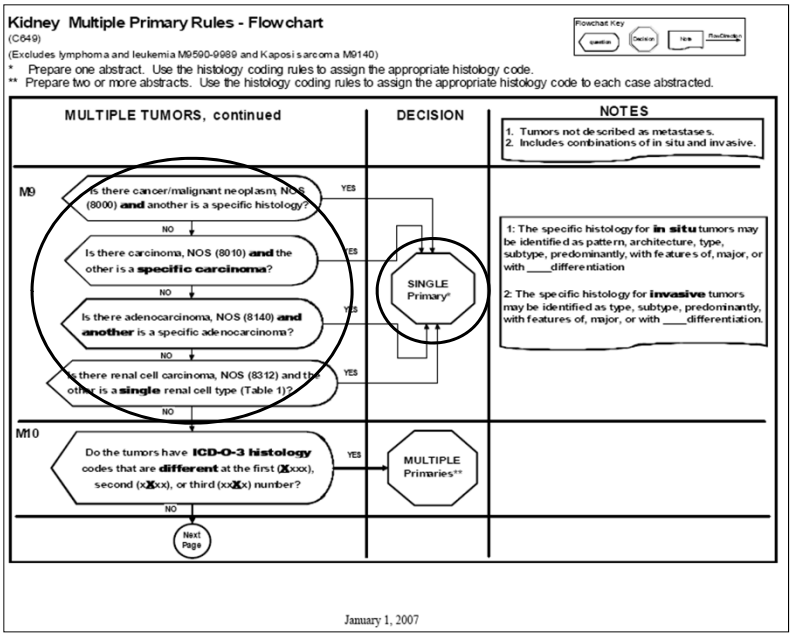
Kidney Multiple Primary Rules - Flowchart
(C649)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)
* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.
Flowchart Key
MULTIPLE TUMORS, continued
DECISION
NOTES
1. Tumors not described as metastases.
2. Includes combinations of in situ and invasive.
M9
Is there cancer/malignant neoplasm, NOS (8000) and another is a specific histology?
Is there carcinoma, NOS (8010) and the other is a specific carcinoma?
Is there adenocarcinoma, NOS (8140) and another is a specific adenocarcinoma?
Is there renal cell carcinoma, NOS (8312) and the other is a single renal cell type (Table 1)?
YES
NO
SINGLE Primary*
1: The specific histology for in situ tumors may be identified as pattern, architecture, type, subtype, predominantly, with features of, major, or with ____differentiation
2: The specific histology for invasive tumors may be identified as type, subtype, predominantly, with features of, major, or with ____differentiation.
M10
Do the tumors have ICD-O-3 histology codes that are different at the first (Xxxx), second (xXxx), or third (xxXx) number?
MULTIPLE Primaries**
Next Page
January 1, 2007

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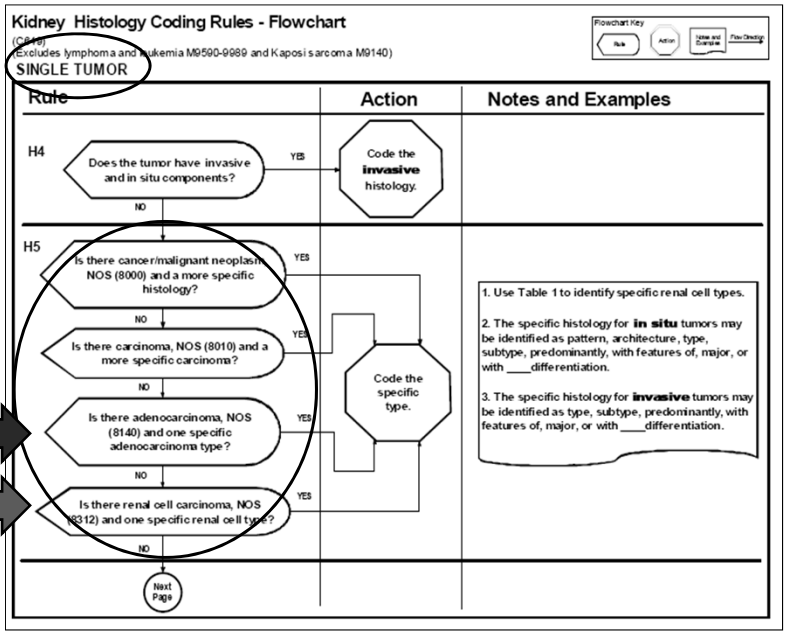
Kidney Histology Coding Rules - Flowchart
(C649)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)
Flowchart Key
SINGLE TUMOR
Rule
Action
Notes and Examples
H4
Does the tumor have invasive and in situ components?
Code the invasive histology.
H5
Is there cancer/malignant neoplasm, NOS (8000) and a more specific histology?
Is there carcinoma, NOS (8010) and a more specific carcinoma?
Is there adenocarcinoma, NOS (8140) and one specific adenocarcinoma type?
Is there renal cell carcinoma, NOS (8312) and one specific renal cell type?
Code the specific type.
YES
NO
1. Use Table 1 to identify specific renal cell types.
2. The specific histology for in situ tumors may be identified as pattern, architecture, type, subtype, predominantly, with features of, major, or with ____differentiation.
3. The specific histology for invasive tumors may be identified as type, subtype, predominantly, with features of, major, or with ____differentiation.
Next Page

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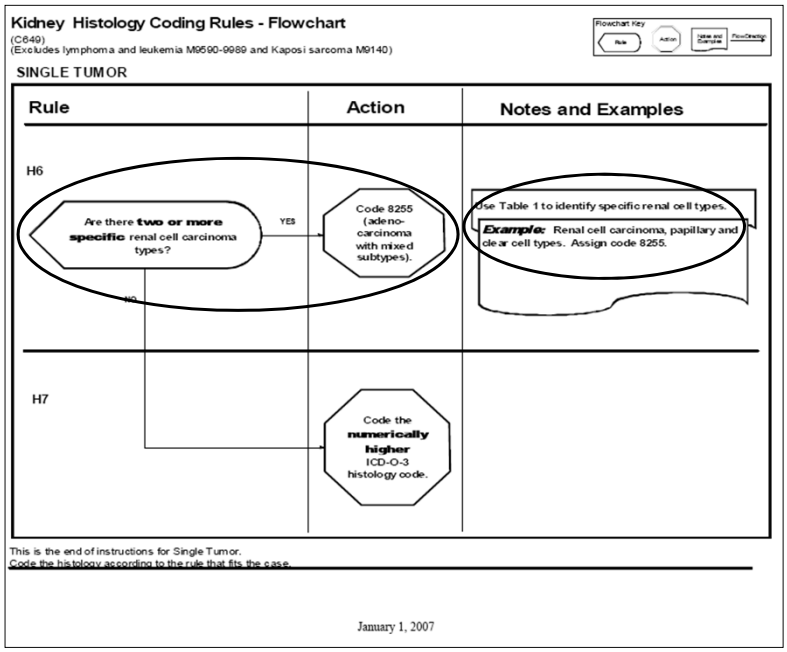

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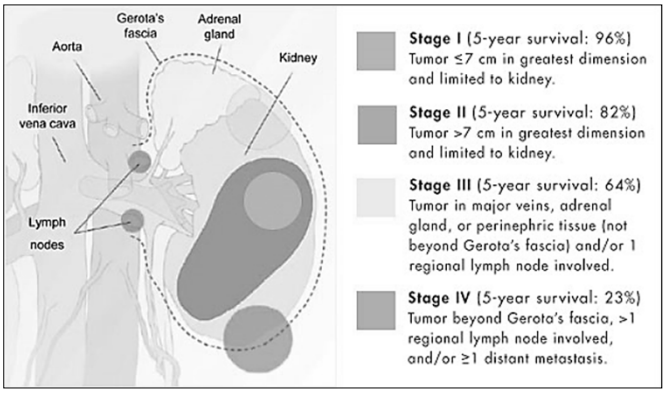
Staging Kidney Cancer



Source: http://www.aboutcancer.com

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Collaborative Stage Data Set - Revised 8/7/2013

KidneyParenchyma

Kidney (Renal Parenchyma)

C64.9

- DISCONTINUED SITE-SPECIFIC FACTORS: SSF5, SSF7
- C64.9 Kidney, NOS (Renal parenchyma)
- Note: Laterality must be coded for this site.

CS Tumor Size	CS Site-Specific Factor 7
CS Extension	Size of Metastasis in Lymph Nodes
CS Tumor Size/Ext Eval	CS Site-Specific Factor 8
CS Lymph Nodes	Extranodal Extension of Regional Lymph Nodes
CS Lymph Nodes Eval	CS Site-Specific Factor 9 = **988**
Regional Nodes Positive	CS Site-Specific Factor 10 = **988**
Regional Nodes Examined	CS Site-Specific Factor 11 = **988**
CS Mets at DX	CS Site-Specific Factor 12 = **988**
CS Mets Eval	CS Site-Specific Factor 13 = **988**
CS Site-Specific Factor 1	CS Site-Specific Factor 14 = **988**
Invasion Beyond Capsule	CS Site-Specific Factor 15 = **988**
CS Site-Specific Factor 2	CS Site-Specific Factor 16 = **988**
Vein Involvement	CS Site-Specific Factor 17 = **988**
CS Site-Specific Factor 3	CS Site-Specific Factor 18 = **988**
Ipsilateral Adrenal Gland Involvement	CS Site-Specific Factor 19 = **988**
CS Site-Specific Factor 4	CS Site-Specific Factor 20 = **988**
Sarcomatoid Features	CS Site-Specific Factor 21 = **988**
CS Site-Specific Factor 5	CS Site-Specific Factor 22 = **988**
Histologic Tumor Necrosis	CS Site-Specific Factor 23 = **988**
CS Site-Specific Factor 6	CS Site-Specific Factor 24 = **988**
Fuhrman Nuclear Grade	CS Site-Specific Factor 25 = **988**

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Collaborative Stage Data Set - Revised 08/07/2013 FINAL

KidneyParenchyma

CS Tumor Size

- Note 1: Code the tumor size as documented in the medical record.
- Note 2: The assignment of T1 and T2 categories for tumors limited to the kidney is based on tumor size. A physician's statement of the T category may be used to code CS Tumor Size and/or CS Extension if this is the only information in the medical record regarding one or both of these fields. However the two fields are coded independently: for example the record may document size but not extension, other than the physician's statement of the T category. Use codes 994, 996-998 as appropriate to code CS Tumor Size based on a statement of T when no other size information is available.

Code	Description
000	No mass/tumor found
001-988	001 - 988 millimeters (mm) (Exact size to nearest mm)
989	989 millimeters or larger
990	Microscopic focus or foci only and no size of focus given

Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
000	In situ, intraepithelial, noninvasive	TX	TX	IS	IS
100	Invasive cancer confined to kidney cortex and/or medulla	^	*	L	L
200	Invasion of renal capsule Renal pelvis or calyces invo Separate focus of tumor in r	^	*	L	L
300	Localized, NOS	^	*	L	L
310	Stated as T1a with no other	^	*	L	L
320	Stated as T1b with no other	^	*	L	L
330	Stated as T1 [NOS] with no other information on extension	^	*	L	L
340	Stated as T2a with no other information on extension	^	*	L	L
350	Stated as T2b with no other information on extension	^	*	L	L
360	Stated as T2 [NOS] with no other information on extension	^	*	L	L

Early Stage Kidney CA Based On Size Only - Until Tumor Extends Beyond Outer Capsule of Kidney

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CS Extension

610	Inferior vena cava (IVC) below diaphragm Stated as T3b with no other information on extension	T3b	T3b	RE	RE
620	IVC above diaphragm or invades wall of IVC Stated as T3c with no other information on extension	T3c	T3c	RE	RE
625	IVC, NOS Stated as T3 [NOS] with no other information on extension	T3NOS	T3NOS	RE	RE
630	Ipsilateral adrenal (suprarenal) gland (Noncontiguous ipsilateral adrenal gland involvement coded in CS Mets at DX)	T4	T3a	RE	RE
640	630 + (601 and/or 610) Ipsilateral adrenal gland plus blood vessels listed in code 601 and/or IVC below diaphragm	T4	T3b	RE	RE
645	630 + 620 Ipsilateral adrenal gland plus IVC above diaphragm or wall of IVC	T4	T3c	RE	RE
650	Extension beyond Gerota's fascia to: Ascending colon from right kidney Descending colon from left kidney Diaphragm Duodenum from right kidney Peritoneum Tail of pancreas Ureter, including implant(s), ipsilateral Beyond Gerota's fascia, NOS	T4	T4	RE	RE
660	Retroperitoneal soft tissue	T4	T4	RE	RE
665	660 + any of (460, 601, 610, 620, 625, 630, 640, 645, 650)	T4	T4	RE	RE

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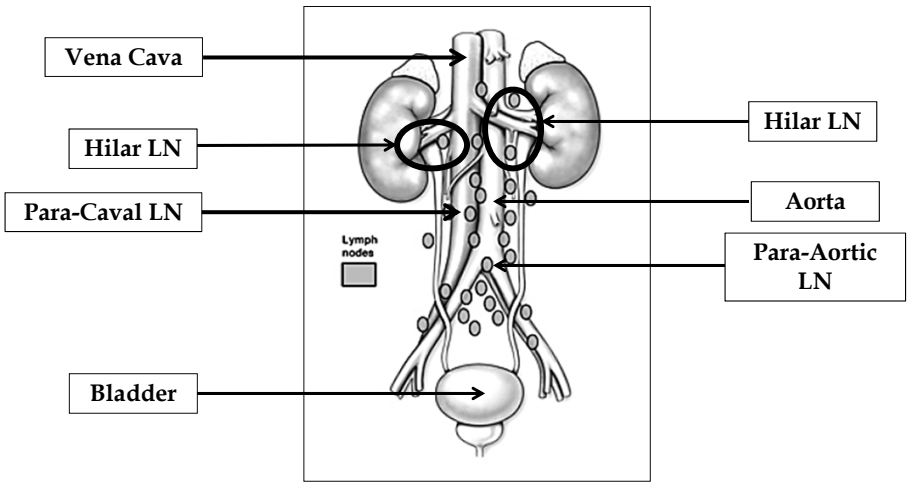
CS Lymph Nodes



Source: http://www.laparoboticsurgery.com

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CS Mets at Dx

Code	Description
00	No distant metastasis
10	Distant lymph node(s)
20	Extension to: Contralateral kidney Contralateral ureter Liver from left kidney Spleen from right kidney
40	Noncontiguous ipsilateral adrenal (suprarenal) gland metastasis (Contiguous involvement coded in CS Extension) Distant metastasis except distant lymph node(s) Carcinomatosis
50	OBSOLETE DATA CONVERTED V0203 See code 55 40 + 10 Distant metastasis plus distant lymph node(s)
55	(40 or 20) + 10 Distant metastasis or extension coded in 20 plus distant lymph node(s)
60	Distant metastasis, NOS Stated as M1 with no other information on distant metastasis
99	Unknown; distant metastasis not stated Distant metastasis cannot be assessed Not documented in patient record

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Site-Specific Factors

SSF1: Invasion Beyond Capsule

SSF2: Vein Involvement

SSF3: Ipsilateral Adrenal Gland Involvement

SSF4: Sarcomatoid Features

SSF5: Histologic Tumor Necrosis — Not Required

SSF6: Fuhrman Nuclear Grade

SSF7: Size of Metastasis in Lymph Nodes — Not Required

SSF8: Extranodal Extension

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AJCC TNM and SS2000

Primary Tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
T1	Tumor 7 cm or less in greatest dimension, limited to the kidney
T1a	Tumor 4 cm or less in greatest dimension, limited to the kidney
T1b	Tumor more than 4 cm but not more than 7 cm in greatest dimension, limited to the kidney
T2	Tumor more than 7 cm in greatest dimension, limited to the kidney
T2a	Tumor more than 7 cm but less than or equal to 10 cm in greatest dimension, limited to the kidney
T2b	Tumor more than 10 cm, limited to the kidney
T3	Tumor extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota's fascia
T3a	Tumor grossly extends into the renal vein or its segmental (muscle containing) branches, or tumor invades perirenal and/or renal sinus fat but not beyond Gerota's fascia
T3b	Tumor grossly extends into the vena cava below the diaphragm
T3c	Tumor grossly 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)

SUMMARY STAGE

0 In situ: Noninvasive; intraepithelial

1 Localized only

Invasive cancer confined to kidney cortex and/or medulla

Invasion of renal capsule
Renal pelvis or calyces involved
Separate focus of tumor in renal pelvis/calyx

Localized, NOS

2 Regional by direct extension only

Extension to:
- Adrenal (suprarenal) gland, ipsilateral
- Ascending colon **from right kidney**
- Blood vessel(s) (major):
  - Extrarenal portion of renal vein
  - Hilar blood vessel
  - Perirenal vein
  - Renal artery
  - Renal vein, NOS
  - Tumor thrombus in a renal vein, NOS
  - Vena cava
- Descending colon **from left kidney**
- Diaphragm
- Duodenum **from right kidney**
- Perirenal (perinephric) tissue/fat
- Peritoneum
- Psoas muscle***
- Renal (Gerota's) fascia
- Retroperitoneal soft tissue
- Tail of pancreas
- Ureter, including implant(s), ipsilateral

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Kidney Cancer Treatment

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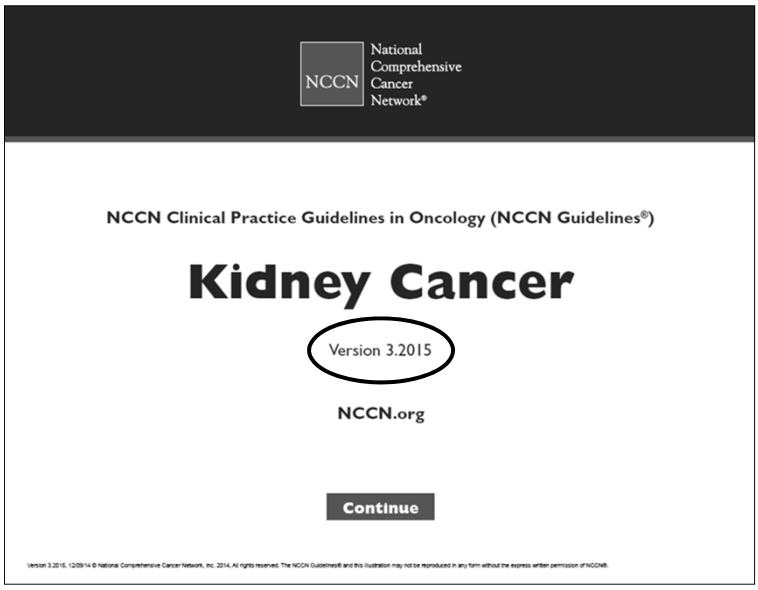

Source: http://NCCN.org

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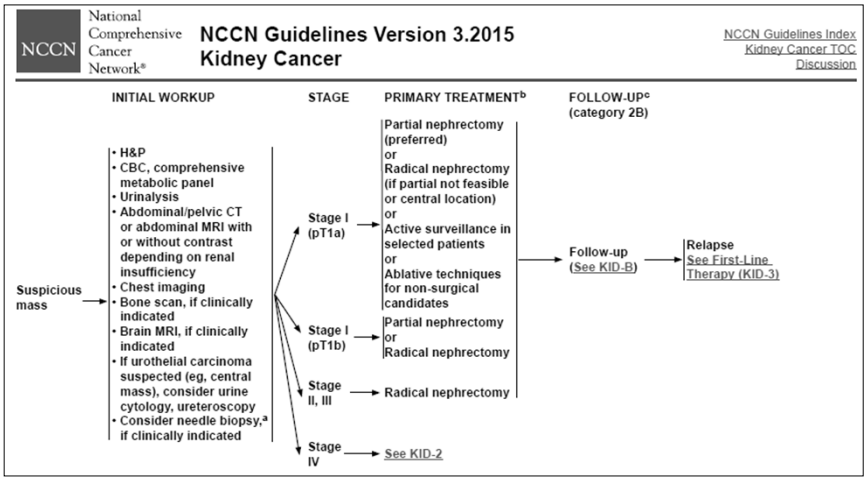
Kidney – Early Stage



Source: http://NCCN.org

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Ablation or Embolization

- "Ablation" is destruction of tumor by vaporization, chipping away (like chipping ice) or various other erosive processes.
- Tumor ablation is coded as surgery.
- Types of Ablation Include:
  - Cryo-Ablation – Uses Cold
  - Laser-Ablation – Uses Light
  - Microwave-Ablation – Uses Heat
  - RFA – Radiofrequency-Ablation – Uses Heat – electrocautery
  - PDT – photodynamic therapy is a type of laser ablation
  - High-Intensity Ultrasound – Uses Sound Waves to create heat

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Ablation or Embolization

- "Embolization" is a procedure performed to create an embolus, a blocked or hardened blood vessel, and is used to shut down blood flow and blood supply to the primary tumor or to metastasis.
- Embolization can include injection of a chemical like alcohol or a chemo agent to sclerose or harden key blood vessel(s) and may even trap chemo behind the embolus; or can be 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.
- 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
- Treatment Code Will Depend on Type of Embolization

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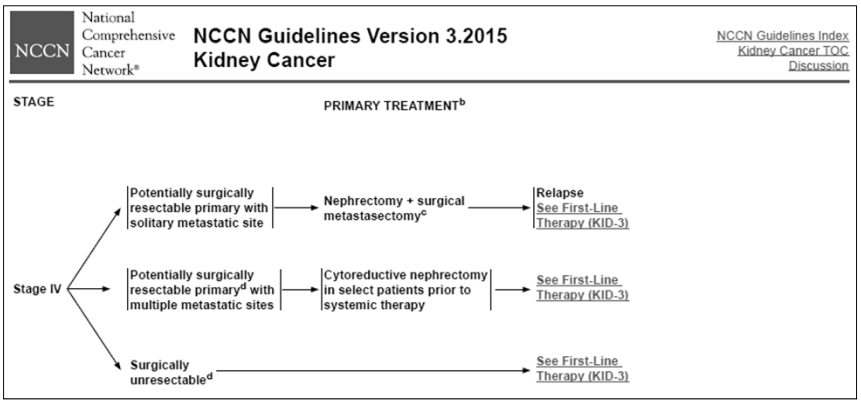
Kidney – Late Stage



Source: http://NCCN.org

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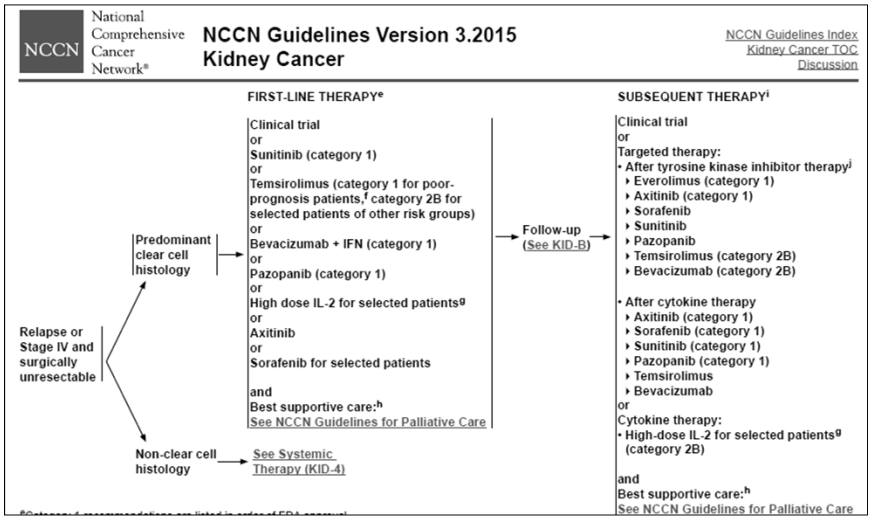
Kidney – Late Stage



Source: http://NCCN.org

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Kidney – What's New?

- Next Generation Gene Sequencing Technology can now identify specific tumor suppressor genes on the same or different chromosomes and track their interaction with other genes to classify kidney cancers beyond histologic characteristics.
- The VHL gene seems to be the initiating gene for most renal cell carcinomas, clear cell type. VHL mutation is only 1st mutation.
- Recent studies are showing how BAP1 and VHL genes interact to transform a normal kidney cell into a cancer cell…and that additional mutations occur later in PBRM1 and other genes.
- The first mutation in VHL (deletion) actually causes 4 additional tumor suppressor genes to mutate downstream – not just one. So clear cell RCC can now be subtyped into 4 subtypes of clear cell.

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UROTHELIAL NEOPLASMS

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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.

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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.

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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.

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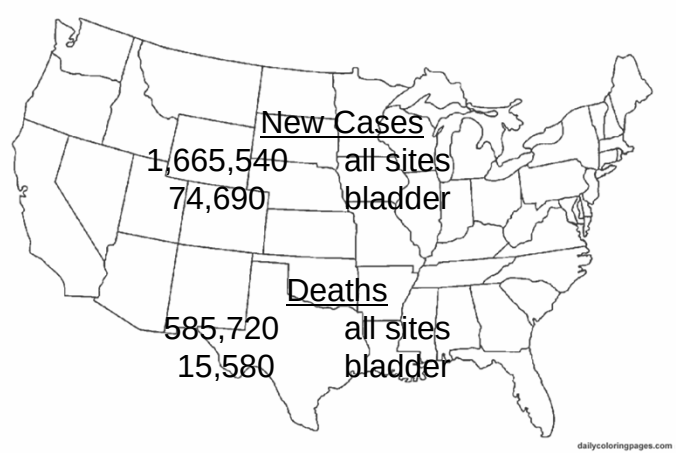
U.S. Incidence/Mortality



Source: American Cancer Society Cancer Facts and Figures 2014

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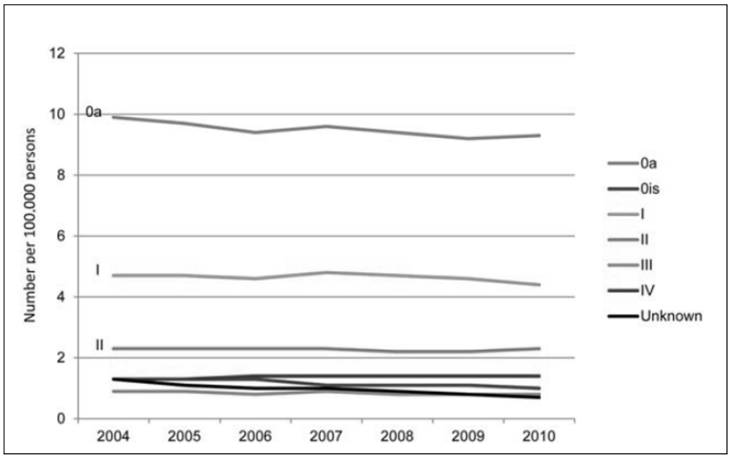
Age-Adjusted Rates by Stage



Source: Cancer, December 1, 2014 Bladder Cancer CS Variables

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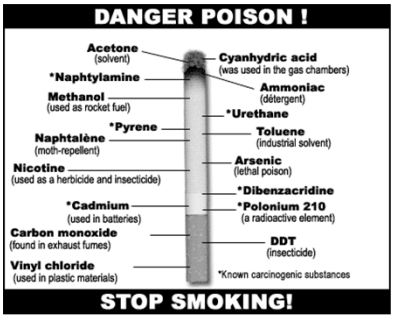
Risk Factors/Screening

Risk Factors

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

Screening

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



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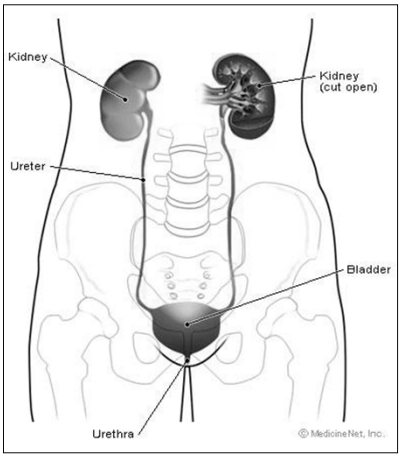
Anatomy



Source: http://www.medicinenet.com

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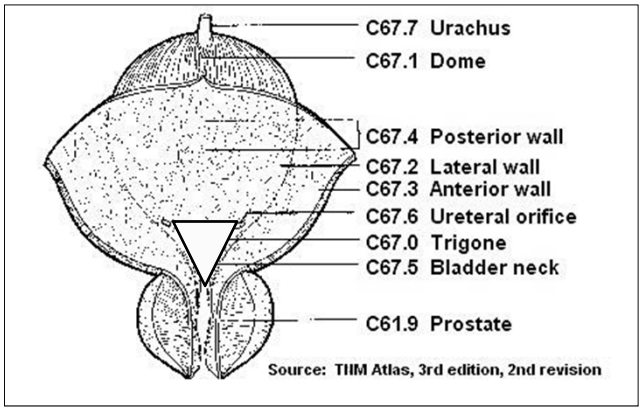
Anatomy



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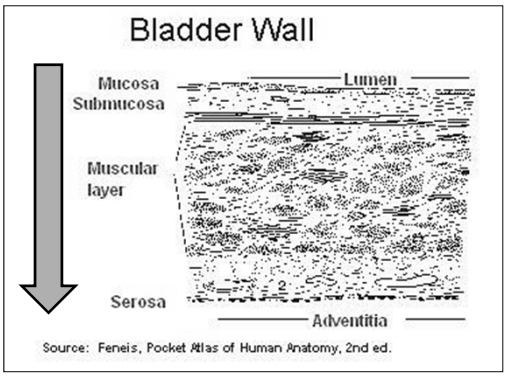
Anatomy



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Anatomy

- 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

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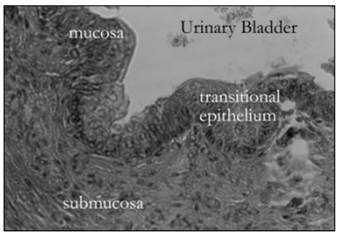
Histology

- ✓ Urothelial Carcinoma = Transitional Cell Carcinoma
- ✓ TCC Papillary or Flat is NOT a Histologic Sub Type
- ✓ Squamous Cell Carcinoma
- ✓ Adenocarcinoma
- ✓ Small Cell Carcinoma
- ✓ Small Cell Neuroendocrine



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

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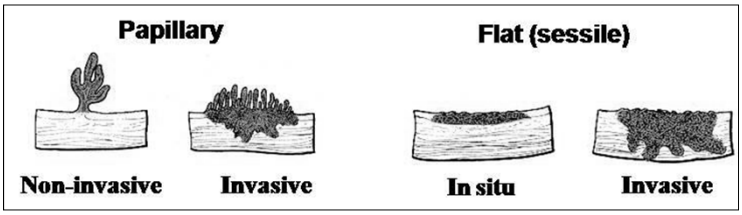
Histology



Source Multiple Primary & Histology Coding Rules - Table 1 – Urothelial Tumors

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Histology

Table 1 – Urothelial Tumors
Note: Excludes pure squamous carcinoma, glandular (adeno) carcinoma, or other bladder tumor histologies.

Urothelial/Transitional Cell Tumors	Code
With squamous differentiation	8120
With glandular differentiation	
With trophoblastic differentiation	
Nested	
Microcystic	
Transitional cell, NOS	
Papillary carcinoma	8130
Papillary transitional cell	
Micropapillary	8131
Lymphoepithelioma-like	8082
Plasmacytoid	
Sarcomatoid	8122
Giant cell	8031
Undifferentiated	8020

Source Multiple Primary & Histology Coding Rules - Table 1 – Urothelial Tumors

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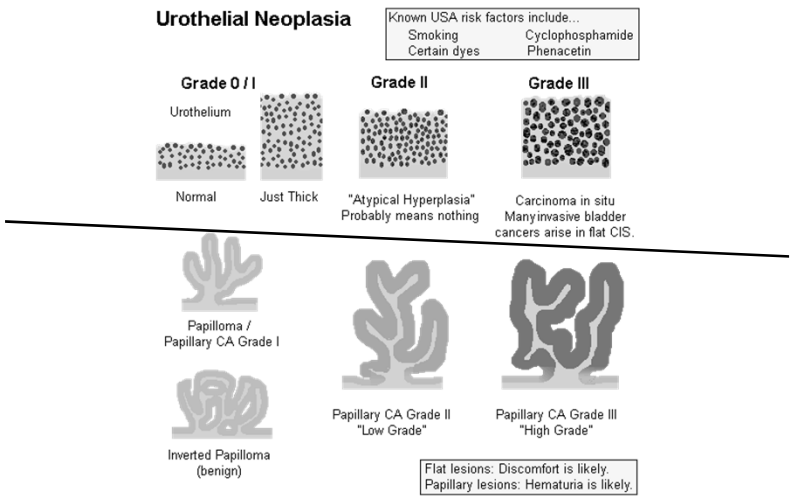
Tumor Grade



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

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Tumor Grade

Table 1. Principles of Pathology Management: Malignancy Grading of Bladder Carcinoma: Old and New Systems[a,b]

Modified Bergkvist 1987	WHO 1973	WHO/ISUP 1998 Consensus WHO, 2004
Papilloma grade 0	Papilloma	Papilloma
Papilloma with atypia grade 1	TCC grade 1	Papillary urothelial neoplasm of low malignant potential
Urothelial carcinoma grade 2A	TCC grade 1	Urothelial carcinoma, low-grade
Urothelial carcinoma grade 2B	TCC grade 2	Urothelial carcinoma, low-grade or high-grade
Urothelial carcinoma grade 3	TCC grade 3	Urothelial carcinoma, high-grade

PUNLMP

Source: nccn.org

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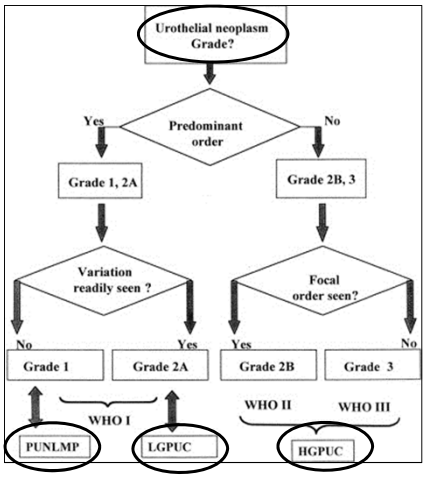
Tumor Grade



Source: http://sciencedirect.com

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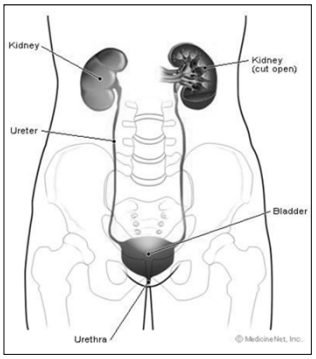
Urothelial MPH Rules

Includes:

- ✓ C65.9 - Renal Pelvis
- ✓ C66.9 - Ureter
- ✓ C67.0-C67.9 - Bladder
- ✓ C68.0-C68.9 - Urinary Other



Source: http://www.medicinenet.com

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Terms and Definitions

Renal Pelvis, Ureter, Bladder, and Other Urinary Equivalent Terms, Definitions, Tables and Illustrations
C659, C669, C670-C679, C680-C689
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Renal Pelvis, Ureter, Bladder, and Other Urinary
The renal pelvis, ureters, bladder and proximal portion of the urethra are lined by transitional epithelium, also known as urothelium. Tumors of the urothelium are more often multifocal compared to other sites. Two mechanisms have been proposed to explain this phenomenon: 1). a "field effect" and 2) tumor cell implantation.

1. 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.
2. 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. Transitional cell tumors commonly spread in a head-to-toe direction, for example from the renal pelvis to the ureter.

Molecular evidence has been found to support both of these theories, but neither has been proven to be the case for all tumors. Similarly, the widespread presence of flat carcinoma in situ may be a result of direct spread of neoplastic cells within the epithelium, direct extension, or due to implantation or field effect. The rules regarding histology and number of primaries are an attempt to reconcile these observations so that incidence data are consistent and reproducible.

Bladder
In the United States, transitional cell carcinomas account for more than 90% of all bladder cancers. Squamous cell carcinomas make up 3-8%, and adenocarcinomas make up about 1-2%. Pure squamous cell carcinoma of the bladder has a poor prognosis. See histology coding rules H5 and H13 for coding instructions.

Equivalent or Equal Terms

- **Flat transitional cell, flat urothelial**
- **In situ transitional cell carcinoma, in situ urothelial carcinoma**
- **Tumor, mass, lesion, neoplasm**
- **Urothelial and transitional**
- **Urothelium and transitional epithelium**
- **Intramucosal and in situ**
- **Papillary transitional cell carcinoma, papillary urothelial carcinoa**

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Urinary Terms and Definitions

Renal Pelvis, Ureter, Bladder, and Other Urinary Equivalent Terms, Definitions, Tables and Illustrations
C659, C669, C670-C679, C680-C689
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Flat Tumor (bladder):Noninvasive flat TCC: A flat tumor is a non-papillary bladder tumor that lies flat against the bladder tissue. Flat tumors usually have a poor prognosis. Noninvasive flat TCC (also called carcinoma in situ, or CIS) grows in the layer of cells closest to the inside of the bladder and appears as flat lesions on the inside surface of the bladder. Flat, invasive TCC may invade the deeper layers of the bladder, particularly the muscle layer.

Note 1: Flat tumors may have foci or focus of invasion. This definition is for those flat tumors described as being carcinoma in situ, CIS, or non-invasive.
Note 2: Flat tumors could be called in situ or non-invasive. If the term "non-invasive' is used to describe flat carcinoma, be aware that for staging this would be an in situ carcinoma.

In situ: A tumor confined to epithelium (intraepithelial) with no penetration below the basement membrane

Intraluminal (Ureter): Within the lumen of a tubular or hollow structure. Urinary tumors may spread intraluminally to adjacent urinary organs.

Intramucosal: Within the mucosal surface.

Invasive: A tumor that penetrates beyond the basement membrane.

Most invasive: The tumor with the greatest continuous local/regional extension (see focal and foci/focus definitions).

Bladder
The walls of the **bladder** in order from least to greatest extension are:
- Mucosa
- Lamina propria (some pathologists equate this to submucosa)
- Muscularis mucosae (this layer not always present, may not be mentioned)
- Submucosa
- Muscular layer (muscularis propria, detrusor muscle)
- Serosa, adventitia

Renal pelvis and ureter
The walls of the **renal pelvis** and **ureter** from least to greatest extension are:
- Epithelium
- Subepithelial connective tissue, submucosa
- Muscularis mucosa
- Adventitia, periureteric fat, peripelvic fat

Multicentric, multifocal, and polycentric are often used as synonyms. The tumor has multiple centers. The foci are not contiguous.

Non-invasive tumor: A tumor confined to epithelium (intraepithelial) with no penetration below the basement membrane.

Revised November 1, 2007

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Renal Pelvis, Ureter, Bladder and Other Urinary Multiple Primary Rules - Flowchart
(C659, C669, C670-C679, C680-C689)
(Excludes lymphoma and leukemia M9590-9989 and Kaposi sarcoma M9140)

Flowchart Key: question, Decision, Note, Flow Direction

* Prepare one abstract. Use the histology coding rules to assign the appropriate histology code.
** Prepare two or more abstracts. Use the histology coding rules to assign the appropriate histology code to each case abstracted.

MULTIPLE TUMORS, continued	DECISION	NOTES
M6 Are there bladder tumors with any combination of the following histologies: • papillary carcinoma (8050) • transitional cell carcinoma (8120-8124) • papillary transitional cell carcinoma (8130-8131)? YES	SINGLE Primary*	1. Tumors not described as metastases. 2. Includes combinations of in situ and invasive.
NO		
M7 Are there tumors diagnosed more than three (3) years apart? YES	MULTIPLE Primaries**	
NO		
M8 Are there urothelial tumors (See Table 1) in two or more of the following sites: • Renal pelvis (C659)? • Ureter (C669)? • Bladder (C670-C679)? • Urethra/prostatic urethra (C680)? YES	SINGLE Primary*	
NO → Next Page		

Urinary MP

January 1, 2007

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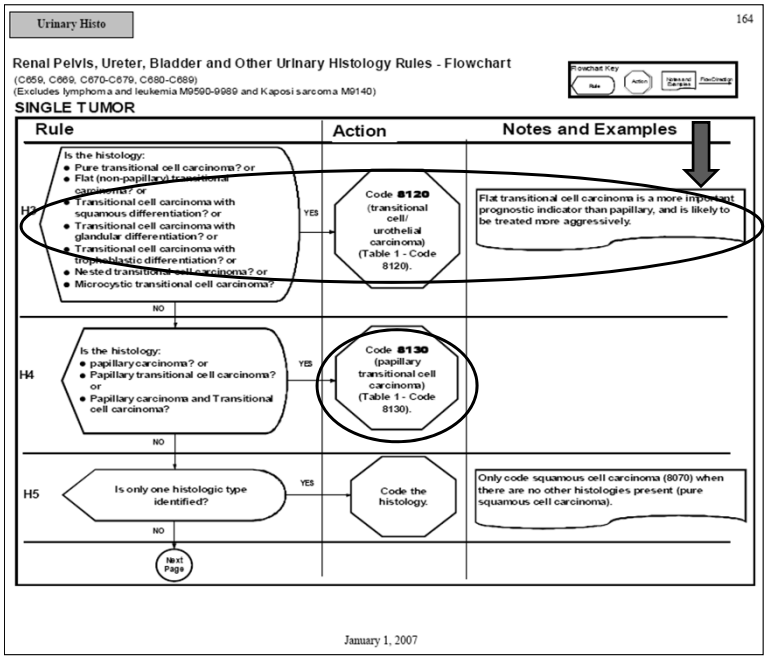

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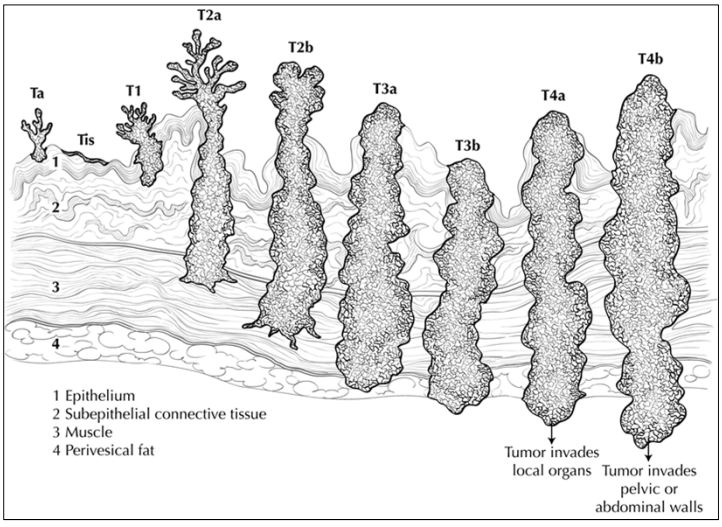
Bladder Cancer Staging



Compton, C.C., Byrd, D.R., et al., AJCC Cancer Staging Atlas, 2nd Edition. New York: Springer, 2012. ©AJCC

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Bladder Cancer Staging

National Comprehensive Cancer Network®

NCCN Guidelines Version 2.2014
Bladder Cancer

NCCN Guidelines Index
Bladder Cancer TOC
Discussion

APPROXIMATE PROBABILITY OF RECURRENCE AND PROGRESSION

Pathology	Approximate Probability of Recurrence in 5 years	Approximate Probability of Progression to Muscle Invasion
Ta, low grade	50%	Minimal
Ta, high grade	60%	Moderate
T1, low grade (rare)	50%	Moderate
T1, high grade	50%-70%	Moderate-High
Tis	50%-90%	High

Prognosis Depends on Level of Invasion (T) and Grade (G)

Source: http://NCCN.org

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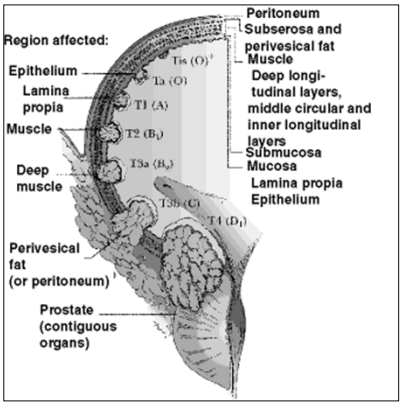
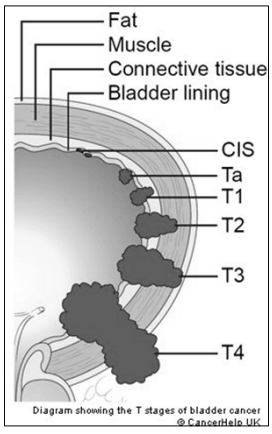
Bladder Cancer Staging



Source: http://onlinehealthcareservi ces.com



Source: http://cancerresearchuk.org

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Code	Description	TNM 7 Map	TNM 6 Map	SS77 Map	SS2000 Map
010	Papillary: Papillary transitional cell carcinoma, stated to be noninvasive Papillary non-infiltrating (See Note 2A) Stated as Ta with no other information on extension (See Notes 1 and 2)	Ta	Ta	IS	IS
030	Papillary: Papillary transitional cell carcinoma, with inferred description of noninvasion (See Note 2B)	Ta	Ta	IS	IS
060	Nonpapillary: Sessile (flat) (solid) carcinoma in situ Carcinoma in situ, NOS Transitional cell carcinoma in situ Stated as Tis with no other information on extension	Tis	Tis	IS	IS
100	Confined to mucosa, NOS (See Note 3)	Tis	Tis	L	L
215	Extension to distal ureter: Superficial muscle of bladder and/or distal ureter (See Note 7)	T2a	T2a	RE	RE
220	Muscle (muscularis propria) of bladder only: Deep muscle--outer half Stated as T2b with no other information on extension	T2b	T2b	L	L
230	Extension through full thickness of bladder wall BUT still contained within bladder wall (see Note 5)	T2b	T2b	L	L
235	Extension to distal ureter: Deep muscle or extension through wall of bladder and/or distal ureter (See Note 7)	T2b	T2b	RE	RE
240	Muscle (muscularis propria) invaded, NOS of bladder only Stated as T2 [NOS] with no other information on extension	T2NOS	T2NOS	L	L
245	Extension to distal ureter: Muscle (muscularis propria) invaded, NOS of bladder and/or distal ureter (See Note 7)	T2NOS	T2NOS	RE	RE
300	Localized, NOS	T1	T1	L	L

630	Prostatic stroma Prostate, NOS Ureter (excluding distal ureter) Urethra, including prostatic urethra (excluding subepithelial connective tissue, see code 160)	T4a	T4a	RE	RE
650	Parametrium Rectovesical/Denonvilliers' fascia Seminal vesicle Vas deferens	T4a	T4a	RE	RE
670	Uterus Vagina	T4a	T4a	RE	RE
673	Rectum, male	T4a	T4a	RE	D
677	Large intestine including rectum, female (excluding rectum, male) Small intestine	T4a	T4a	D	D
680	Stated as T4a with no other information on extension	T4a	T4a	RE	RE
700	Bladder is "fixed"	T4b	T4b	RE	RE
710	Pubic bone	T4b	T4b	RE	D
715	700 + 673	T4b	T4b	RE	D
720	(710 or 700) + 677	T4b	T4b	D	D
730	OBSOLETE DATA REVIEWED V0203 See codes 673, 710, 715, and 720 Rectum, male Pubic bone	T4b	T4b	RE	D
750	Abdominal wall Pelvic wall	T4b	T4b	D	D

AJCC TNM and SS2000

American Joint Committee on Cancer (AJCC)
TNM Staging System for Urethral Carcinoma (7th ed., 2010)

Primary Tumor (T) (Male and Female)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Ta	Noninvasive papillary, polypoid, or verrucous carcinoma
Tis	Carcinoma in situ
T1	Tumor invades subepithelial connective tissue
T2	Tumor invades any of the following: corpus spongiosum, prostate, periurethral muscle
T3	Tumor invades any of the following: corpus cavernosum, beyond prostatic capsule, anterior vagina, bladder neck
T4	Tumor invades other adjacent organs

Regional Lymph Nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Metastasis in a single lymph node 2 cm or less in greatest dimension
N2	Metastasis in a single node more than 2 cm in greatest dimension, or in multiple nodes

Distant Metastasis (M)

M0	No distant metastasis
M1	Distant metastasis

ANATOMIC STAGE/PROGNOSTIC GROUPS			
Stage 0a	Ta	N0	M0
Stage 0is	Tis	N0	M0
	Tis pu	N0	M0
	Tis pd	N0	M0
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1	N1	M0
	T2	N1	M0
	T3	N0	M0
	T3	N1	M0
Stage IV	T4	N0	M0
	T4	N1	M0
	Any T	N2	M0
	Any T	Any N	M1

SUMMARY STAGE

0 In situ: Noninvasive; intraepithelial

Carcinoma in situ, NOS

Noninvasive papillary (transitional) cell carcinoma
Papillary non-infiltrating
Papillary transitional cell carcinoma, stated to be noninvasive
Papillary transitional cell carcinoma, with inferred description of noninvasion

Sessile (flat) (solid) carcinoma in situ
Transitional cell carcinoma in situ

Jewett-Strong-Marshall Stage 0
TNM/AJCC Ta

Jewett-Strong-Marshall CIS
TNM/AJCC Tis

1 Localized only

Invasive tumor confined to:
Mucosa, NOS
Muscle (muscularis)[##]:
Deep muscle—outer half
Extension through full thickness of bladder wall
Superficial muscle—inner half
NOS
Submucosa:
Lamina propria
Stroma
Subepithelial connective tissue
Tunica propria
Subserosa

Jewett-Strong-Marshall Stage A
TNM/AJCC T1, T2

Localized, NOS

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SITE-SPECIFIC FACTORS

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

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Urothelial Cancers Treatment

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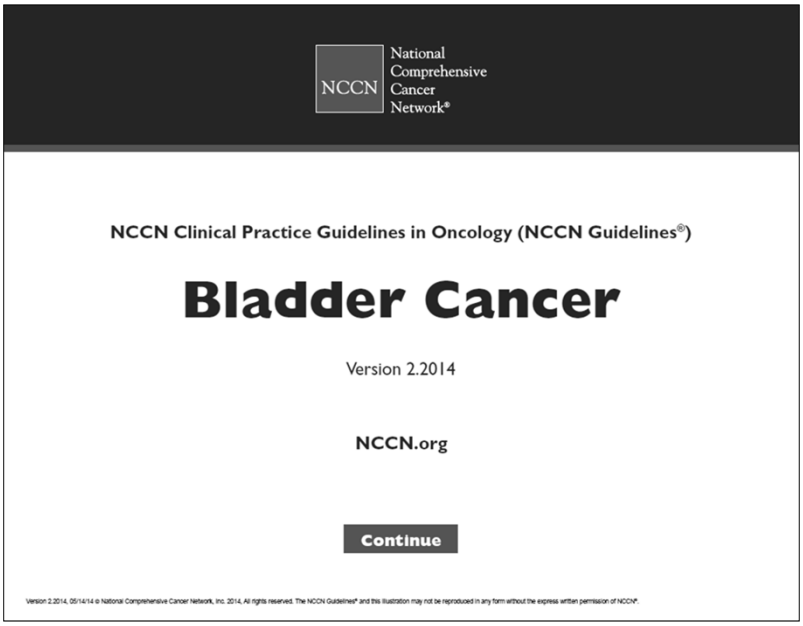

Source: http://NCCN.org

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PRINCIPLES OF SURGICAL MANAGEMENT

Transurethral Resection for Papillary Appearing Tumor (likely non-muscle invasive)
- Adequate resection with muscle in specimen
- Early repeat TURBT (within six weeks) if
  - Incomplete initial resection
  - No muscle in original specimen for high-grade disease
  - Large or multi-focal lesions
  - Any T1 lesion

Transurethral Resection for Suspected or Known Carcinoma In Situ
- Multiple selective and/or random biopsies
- Additional biopsy adjacent to papillary tumor
- Consider prostate urethral biopsy

Transurethral Resection for Sessile or Invasive Appearing Tumor (likely muscle invasive)
- Perform EUA
- Repeat TURBT if
  - No muscle in specimen for high-grade disease
  - Any T1 lesion
  - First resection does not allow adequate staging/attribution of risk for treatment selection
  - Incomplete resection and considering tri-modality bladder preservation therapy

Segmental (Partial) Cystectomy
- Reserved for solitary lesion in location amenable to segmental resection with adequate margins
- No carcinoma in situ as determined by random biopsies
- Bilateral pelvic lymphadenectomy should be performed and include at a minimum common, internal iliac, external iliac, and obturator nodes.

Radical Cystectomy
- Bilateral pelvic lymphadenectomy should be performed and include at a minimum common, internal iliac, external iliac, and obturator nodes.

Source: http://NCCN.org

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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 gross hematuria, persistent severe local symptoms, or systemic symptoms
- Maximum of 2 inductions without complete response
- Some data suggest benefit of maintenance therapy
- Dose reduction is encouraged if there are substantial local symptoms during maintenance therapy

APPROXIMATE PROBABILITY OF RECURRENCE AND PROGRESSION

Pathology	Approximate Probability of Recurrence in 5 years	Approximate Probability of Progression to Muscle Invasion
Ta, low grade	50%	Minimal
Ta, high grade	60%	Moderate
T1, low grade (rare)	50%	Moderate
T1, high grade	50%-70%	Moderate-High
Tis	50%-90%	High

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Chemotherapy Regimens

Table 2. Combination Chemotherapy Regimens

Regimen	Dosage	
Gemcitabine/ Cisplatin[77,87,105,106]	Gemcitabine*	1000 mg/m^2 on days 1, 8, 15 of a 28-day cycle or 1000 mg/m^2 on days 1, 8 of a 21-day cycle
	Cisplatin	70 mg/m^2 on day 2
Dose-Dense MVAC[78,79]	Methotrexate	30 mg/m^2 on day 1 or day 2 of a 14-day cycle
	Vinblastine	3 mg/m^2 on day 1 or day 2
	Doxorubicin	30 mg/m^2 on day 1 or day 2
	Cisplatin	70 mg/m^2 on day 1
CMV[46]	Methotrexate	30 mg/m^2 on days 1, 8 of a 21-day cycle
	Vinblastine	4 mg/m^2 on days 1, 8
	Cisplatin	100 mg/m^2 on day 2 before hydration
	Folinic acid	15 mg every 6 hours on days 2, 9 after hydration

*This dose should not be combined with radiation.

Source: http://NCCN.org

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What's New in Urothelial CA

- Greater focus on getting urologists to work with medical oncology to administer adjuvant chemo perioperatively for muscle-invasive and non-invasive urothelial cancers.
- Everolimus-based therapy, an mTOR inhibitor targeted therapy, has been recently proven very effective and tumors showing to be very sensitive to this targeted therapy when specific mTOR mutations, E2419K and E2014K, are present.
- Tumors (-) for ECCR1, a DNA repair protein that is negative in about 75% of patients, would benefit from chemotherapy (and in turn save the other 25% from getting chemo that would not work and would make the patient very sick and even harming patients that don't need the added chemo that will not work and delays cystectomy by 3 months).

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PROSTATE

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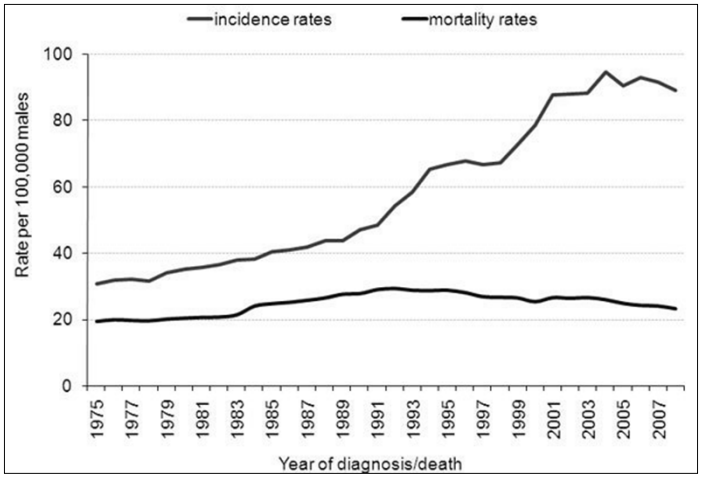
Incidence / Mortality



Prostate Cancer 1975-2008

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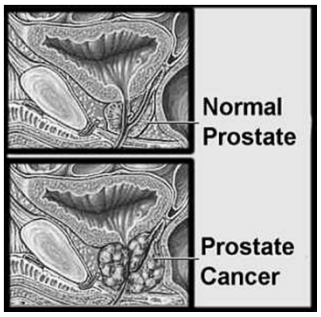
Risk Factors/Screening

- Most common cancer in men (27% of all cancers)
- 2nd leading cause of cancer death in U.S. men
- African-American men 2.5 x higher death rate others
- Estimated new cases: 233,000; deaths: 29,480
- Risk Factors:
  - Increasing Age
  - Race/Ethnicity
  - Family History
  - Genetics
  - Obesity / Diet
  - Trichomonas Vaginalis
- Screening
  - DRE + PSA (not PSA alone)



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Screening Recommendations

Grade	Definition	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.	Read the clinical considerations section of USPSTF Recommendation Statement. If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

Source: U.S. Preventive Services Task Force

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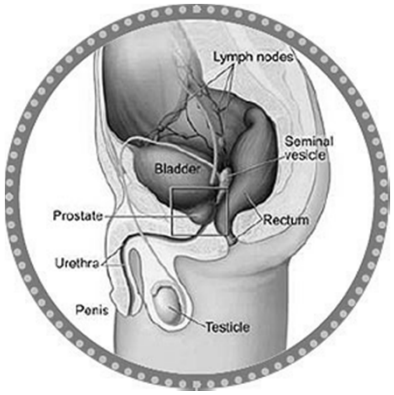
Anatomy



- 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 , U.S. National Cancer Institute

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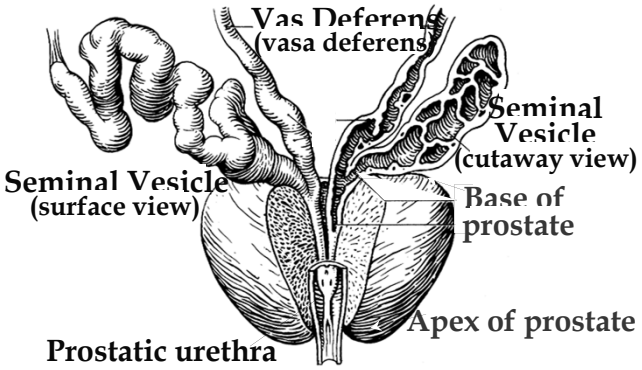
Anatomy



Source: SEER Training Website, www.training.seer.cancer.gov

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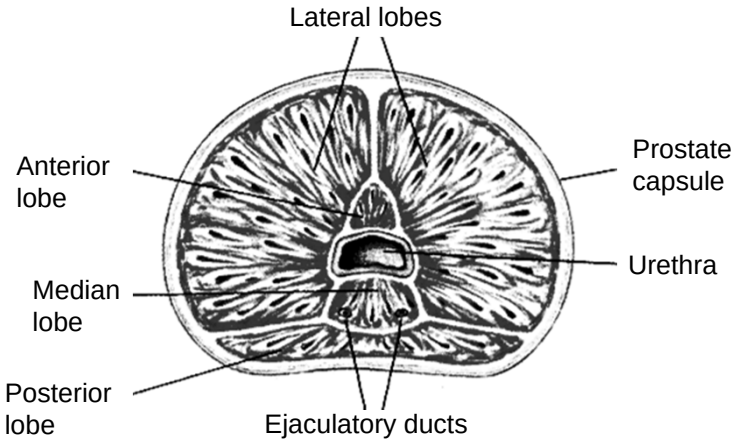
Anatomy



Source: SEER Training Website, www.training.seer.cancer.gov

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Histology

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

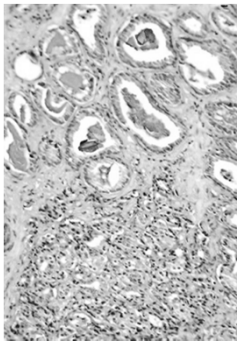

Image source: National Cancer Institute

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Multiple Primary and Histology Coding Rules

Prostate (C61.9)
- Terms & Definitions
- Multiple Primary Rule
- Histology Coding Rule

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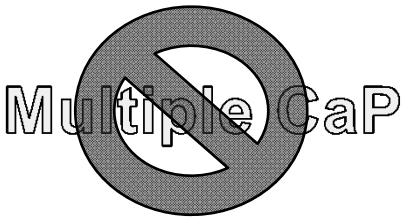
Prostate – MPH Rules

- **<u>Only</u> <u>ONE</u>** Prostate Cancer DX **<u>per patient lifetime</u>**
- Acinar Carcinoma, Code to 8140 (Adenocarcinoma)



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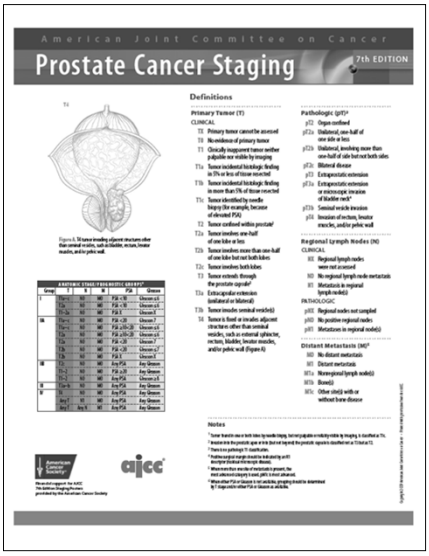
Prostate Cancer Staging



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Clinical / Pathologic

CLINICAL EXTENSION

- CS Ext – Clinical Stage
- Prior to Prostatectomy
- Clinical Only !!!!!!!!!!!
  - Bx for Elevated PSA
  - Clinically Inapparent
  - Clinically Apparent
- Used to Develop a Treatment Plan

PATHOLOGIC EXTENSION

- SSF3 – Pathologic Stage
- Do not just copy CS Ext
- PROSTATECTOMY !!!!!
- Pathologic Evaluation
  - Surgical Findings
  - Prostatectomy Specimen
- Code 970 when No Prostatectomy Done

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Clinical: Why Important?

- Clinical T1a and T1b
  - Incidentally detected during a TURP
- Clinical T1c and T2
  - PSA test positive – detects earlier stage
- Clinical T3
  - DRE detects palpable disease sufficient to indicate the tumor has penetrated thru the prostate capsule

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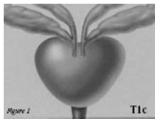
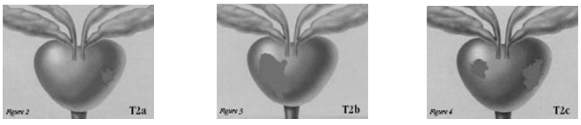
Clinical Stage Illustrations

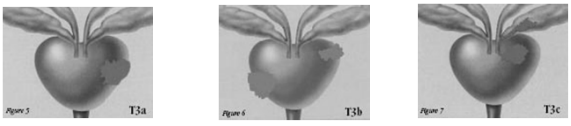
T1c



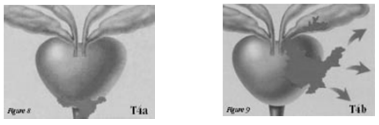
T2 (a,b,c)



T3 (a,b,c)



T4 (a,b)



Material provided by Prostate Cancer Research Institute (PCRI)

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Clinical: Why Important?

- Clinical 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 muscle or a tumor that is fixed to the pelvis.

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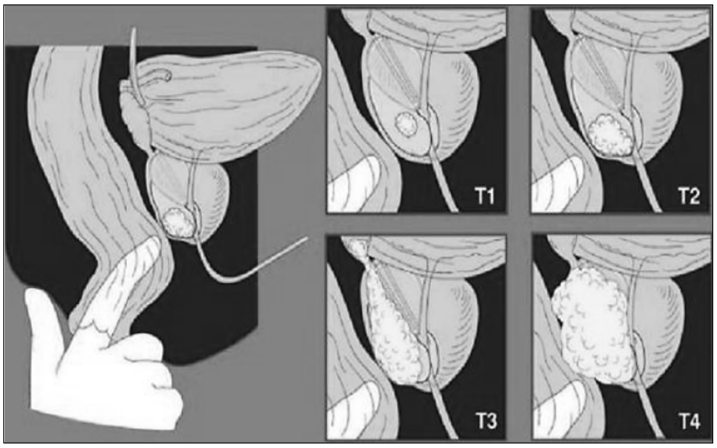
Digital Rectal Exam – DRE



Material provided by Prostate Cancer Research Institute (PCRI)

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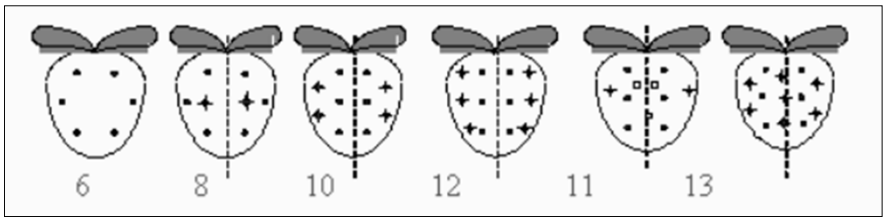
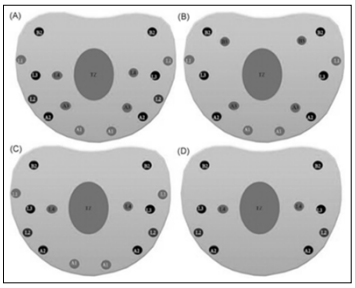
Patterns for Needle Biopsy





Material provided by Prostate Cancer Research Institute (PCRI)

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Pathologic Stage Criteria

Prostate

CS Site-Specific Factor 3
CS Extension - Pathologic Extension

- Note 1: Include information from prostatectomy and autopsy in this field and not in CS Extension - Clinical Extension. Only use histologic information from prostatectomy, including simple prostatectomy with negative margins, and autopsy in this field. Information from biopsy of extraprostatic sites is coded in CS Extension - Clinical Extension; information from needle core biopsy of prostate is coded in CS Site-Specific Factor 14.
- Note 2: Code 970 if there is no prostatectomy performed within the first course of treatment.
- Note 3: Limit information in this field to first course of treatment in the absence of disease progression.
- Note 4: AJCC considers "in situ carcinoma of prostate gland" an impossible diagnosis. Any case so coded is mapped to TX for AJCC stage and in situ Summary Stage.
- Note 5: When prostate cancer is an incidental finding during a prostatectomy for other reasons (for example, a cystoprostatectomy for bladder cancer), use the appropriate code for the extent of disease found (for example, involvement in one lobe, both lobes, or more).
- Note 6: When the apical margin, distal urethral margin, bladder base margin, or bladder neck margin is involved and there is no extracapsular extension, use code 400.
- Note 7: Involvement of the prostatic urethra does not alter the extension code.
- Note 8: "Frozen pelvis" is a clinical term which means tumor extends to pelvic sidewall(s). In the absence of a more detailed statement of involvement, assign this to code 600.
- Note 9: For information regarding stage calculations, refer to CS Extension - Clinical Extension Note 6 and the special calculation extra tables.

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NOT A PROSTECTOMY

00 None; **no surgery** of primary site; **autopsy** ONLY

18 Local tumor destruction or excision, NOS

19 Transurethral resection (TURP), NOS
Unknown whether a specimen was sent to pathology for surgical events coded 18 or 19

10 **Local** tumor **destruction**, NOS
- 14 Cryoprostatectomy (**Cryoablation**)
- 15 Laser ablation
- 16 Hyperthermia
- 17 Other method of local tumor destruction

No specimen sent to **pathology** from surgical events 10-17
[***NOTE:*** Code Transurethral Microwave Thermotherapy (TUMT) as 16
Code High Intensity Focused Ultrasonography (HIFU) as 17
Code Transurethral Needle Ablation (TUNA) as 17]

20 **Local** tumor excision, NOS
- 21 Transurethral resection (**TURP**), NOS
- 22 TURP cancer is incidental finding during surgery for benign disease
- 23 TURP patient has suspected/known cancer

Any combination of 20-23WITH
- 24 Cryosurgery
- 25 Laser
- 26 Hyperthermia

[***NOTE:*** Codes 24 to 26 above combine 20 Local tumor excision, NOS, 21 TURP, NOS, 22 TURP incidental or 23 TURP suspected/known cancer with 24 Cryosurgery, 25 Laser or 26 Hyperthermia]
Specimen sent to **pathology from** surgical events 20-26

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NOT A PROSTECTOMY

80 Prostatectomy, NOS
Specimen sent to pathology from surgical events 20–80.

90 Surgery, NOS

99 Unknown if surgery performed; death certificate ONLY

When **NO PROSTECTOMY**
SSF 3 **MUST** = 970

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Prostatectomy Procedures

30	**Subtotal, segmental, or simple prostatectomy**, which may leave all or part of the capsule intact
50	**Radical** prostatectomy, NOS; **total** prostatectomy, NOS **Excised prostate, prostatic capsule, ejaculatory ducts, seminal vesicle(s) and may include a narrow cuff of bladder neck.**
70	**Prostatectomy WITH resection in continuity with other organs; pelvic exenteration** **Surgeries coded 70 are any prostatectomy WITH resection in continuity with any other organs. 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 "en bloc" means that all of the tissues were removed during the same procedure, but not necessarily in a single specimen] *Da Vinci* prostatectomy would be coded as any other prostatectomy depending on the extent of the procedure codes 50 -80 per FORDS.

When **PROSTECTOMY IS DONE**
SSF 3 **MUST NOT** = 970

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Pathologic Extension – SSF 3

021	OBSOLETE DATA CONVERTED V0200 See code 210 Involves one half of one lobe or less	ERROR	ERROR	ERROR	ERROR
022	OBSOLETE DATA CONVERTED V0200 See code 220 Involves more than one half of one lobe, but not both lobes	ERROR	ERROR	ERROR	ERROR
023	OBSOLETE DATA CONVERTED V0200 See code 230 Involves both lobes	ERROR	ERROR	ERROR	ERROR
030	OBSOLETE DATA CONVERTED V0200 See code 300 Localized, NOS Confined to prostate, NOS Intracapsular involvement only Stage B, NOS	ERROR	ERROR	ERROR	ERROR
031	OBSOLETE DATA REVIEWED AND CHANGED V0102 Into prostatic apex/arising in prostatic apex, NOS (See Site-Specific Factor 4)	ERROR	ERROR	ERROR	ERROR
032	OBSOLETE DATA CONVERTED V0200 See code 320 Invasion into (but not beyond) prostatic capsule	ERROR	ERROR	ERROR	ERROR
033	OBSOLETE DATA REVIEWED AND CHANGED V0102 Arising in prostatic apex (See Site-Specific Factor 4)	ERROR	ERROR	ERROR	ERROR

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Pathologic Extension – SSF 3

415	Extension to periprostatic tissue: Extracapsular extension (beyond prostatic capsule), NOS Through capsule, NOS	T3a	T3a	RE	RE
420	Unilateral extracapsular extension	T3a	T3a	RE	RE
430	Bilateral extracapsular extension	T3a	T3a	RE	RE
480	Extracapsular extension and specific margins involved (see Note 6)	T3a	T3a	RE	RE
482	Microscopic bladder neck involvement	T3a	T4	RE	RE
483	Stated as pT3a with no other information on pathologic extension	T3a	T3a	RE	RE
485	Extension to seminal vesicle(s) Stated as pT3b with no other information on pathologic extension	T3b	T3b	RE	RE
490	485 + 482 Extension to seminal vesicle(s) plus microscopic bladder neck involvement	T3b	T4	RE	RE
495	Stated as pT3 [NOS] with no other information on pathologic extension	T3NOS	T3NOS	RE	RE
500	Extension to or fixation to adjacent structures other than seminal vesicles: Bladder, NOS Fixation, NOS Rectovesical (Denonvillier's) fascia Rectum; external sphincter	T4	T4	RE	RE
510	Extraprostatic urethra (membranous urethra)	T4	T4	RE	RE
520	Levator muscle Skeletal muscle, NOS Ureter	T4	T4	D	RE
600	Extension to or fixation to pelvic wall or pelvic bone "Frozen pelvis", NOS (see Note 8)	T4	T4	D	D

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AJCC TNM and SS2000

Table 1.
TNM Staging System For Prostate Cancer
Primary Tumor (T)
Clinical

TX		Primary tumor cannot be assessed
T0		No evidence of primary tumor
T1		Clinically inapparent tumor neither palpable nor visible by imaging
	T1a	Tumor incidental histologic 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 (e.g., because of elevated PSA)
T2		Tumor confined within prostate*
	T2a	Tumor involves one-half of one lobe or less
	T2b	Tumor involves more than one-half of one lobe but not both lobes
	T2c	Tumor involves both lobes
T3		Tumor extends through the prostatic capsule**
	T3a	Extracapsular extension (unilateral or bilateral)
	T3b	Tumor invades the seminal vesicle(s)
T4		Tumor is fixed or invades adjacent structures other than seminal vesicles: bladder, levator muscles, and/or pelvic wall.

*Note: Tumor found in one or both lobes by needle biopsy, but not palpable or reliably visible by imaging, is classified as T1c.

**Note: Invasion into the prostatic apex or into (but not beyond) the prostatic capsule is not classified as T3, but as T2.

Pathologic(pT)*

pT2		Organ confined
	pT2a	Unilateral, involving one-half of one side or less
	pT2b	Unilateral, involving more than one-half of one side but not both sides
	pT2c	Bilateral disease
pT3		Extraprostatic extension
	pT3a	Extraprostatic extension or microscopic invasion of the bladder neck**
	pT3b	Seminal vesicle invasion
pT4		Invasion of bladder, rectum

*Note: There is no pathologic T1 classification.
**Note: Positive surgical margin should be indicated by an R1 descriptor (residual microscopic disease).

Regional Lymph Nodes (N)
Clinical

NX	Regional lymph nodes were not assessed
N0	No regional lymph node metastasis
N1	Metastasis in regional lymph node(s)

Pathologic

PNX	Regional nodes not sampled
pN0	No positive regional nodes
pN1	Metastases in regional nodes(s)

Distant Metastasis (M)*

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

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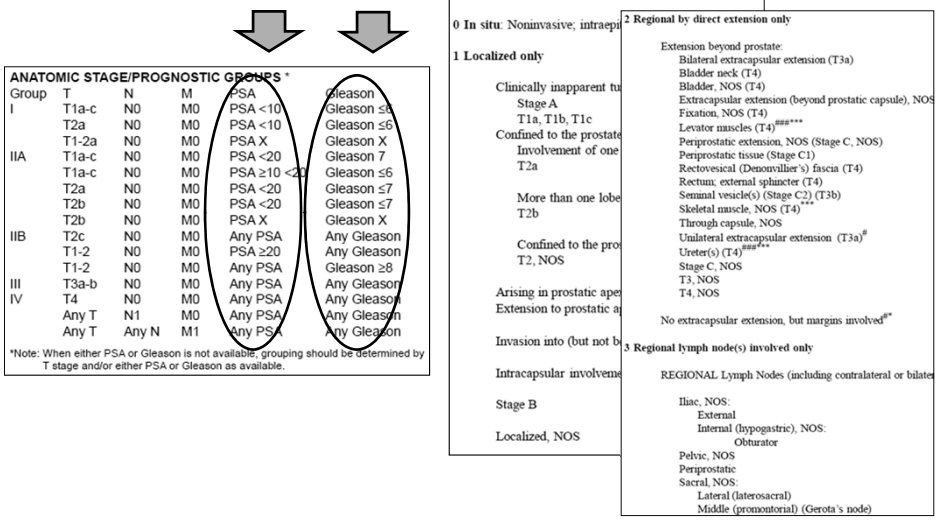
AJCC TNM and SS2000



ANATOMIC STAGE/PROGNOSTIC GROUPS *

Group	T	N	M	PSA	Gleason
I	T1a-c	N0	M0	PSA <10	Gleason ≤6
	T2a	N0	M0	PSA <10	Gleason ≤6
	T1-2a	N0	M0	PSA X	Gleason X
IIA	T1a-c	N0	M0	PSA <20	Gleason 7
	T1a-c	N0	M0	PSA ≥10 <20	Gleason ≤6
	T2a	N0	M0	PSA <20	Gleason ≤7
	T2b	N0	M0	PSA <20	Gleason ≤7
	T2b	N0	M0	PSA X	Gleason X
IIB	T2c	N0	M0	Any PSA	Any Gleason
	T1-2	N0	M0	PSA ≥20	Any Gleason
	T1-2	N0	M0	Any PSA	Gleason ≥8
III	T3a-b	N0	M0	Any PSA	Any Gleason
IV	T4	N0	M0	Any PSA	Any Gleason
	Any T	N1	M0	Any PSA	Any Gleason
	Any T	Any N	M1	Any PSA	Any Gleason

*Note: When either PSA or Gleason is not available, grouping should be determined by T stage and/or either PSA or Gleason as available.

SUMMARY STAGE

0 In situ: Noninvasive; intraepi

1 Localized only

Clinically inapparent tu
Stage A
T1a, T1b, T1c
Confined to the prostate
Involvement of one
T2a

More than one lobe
T2b

Confined to the pro
T2, NOS

Arising in prostatic ape
Extension to prostatic a

Invasion into (but not b

Intracapsular involveme

Stage B

Localized, NOS

2 Regional by direct extension only

Extension beyond prostate:
Bilateral extracapsular extension (T3a)
Bladder neck (T4)
Bladder, NOS (T4)
Extracapsular extension (beyond prostatic capsule), NOS
Fixation, NOS (T4)
Levator muscles (T4)###***
Periprostatic extension, NOS (Stage C, NOS)
Periprostatic tissue (Stage C1)
Rectovesical (Denonvillier's) fascia (T4)
Rectum; external sphincter (T4)
Seminal vesicle(s) (Stage C2) (T3b)
Skeletal muscle, NOS (T4)***
Through capsule, NOS
Unilateral extracapsular extension (T3a)#
Ureter(s) (T4)###**
Stage C, NOS
T3, NOS
T4, NOS

No extracapsular extension, but margins involved#*

3 Regional lymph node(s) involved only

REGIONAL Lymph Nodes (including contralateral or bilate

Iliac, NOS:
External
Internal (hypogastric), NOS:
Obturator
Pelvic, NOS
Periprostatic
Sacral, NOS:
Lateral (laterosacral)
Middle (promontorial) (Gerota's node)

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Site Specific Factors

SSF #	SSF Name	FCDS Required	CoC Required
SSF1	PSA Lab Value	YES	YES
SSF2	PSA Interpretation	-	YES
SSF3	CS Extension – Pathologic Ext	YES	YES
SSF7	Gleason Pattern – biopsy/TURP	-	YES
SSF8	Gleason Score – biopsy/TURP	YES	YES
SSF9	Gleason Pattern – prostatecomy/autopsy	-	YES
SSF10	Gleason Score – prostatectomy/autopsy	YES	YES
SSF11	Gleason Tertiary – prostatectomy/autopsy	-	YES
SSF12	Number of Cores Positive	-	YES
SSF13	Number of Cores Examined	-	YES

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PSA Lab Value – SSF 1

Code	Description
000	OBSOLETE DATA CONVERTED V0200 See code 998 Test not done (test was not ordered and was not performed)
001	0.1 or less nanograms/milliliter (ng/ml) (Exact value to nearest tenth of ng/ml)
002-979	0.2 - 97.9 ng/ml (Exact value to nearest tenth of ng/ml)
980	98.0 ng/ml or greater
981-987	OBSOLETE DATA CONVERTED V0200 See code 980 98.1 - 98.7 ng/ml
988	Not applicable: Information not collected for this case (If this item is required by your standard setter, use of code 988 will result in an edit error.) (Cases with code 988 in CSv1 converted to code 980)
989	OBSOLETE DATA CONVERTED V0200 See code 980 98.9 ng/ml
990	OBSOLETE DATA CONVERTED V0200 Data converted to code 980 99.0 or greater ng/ml
997	Test ordered, results not in chart
998	Test not done (test not ordered and not performed)
999	Unknown or no information Not documented in patient record

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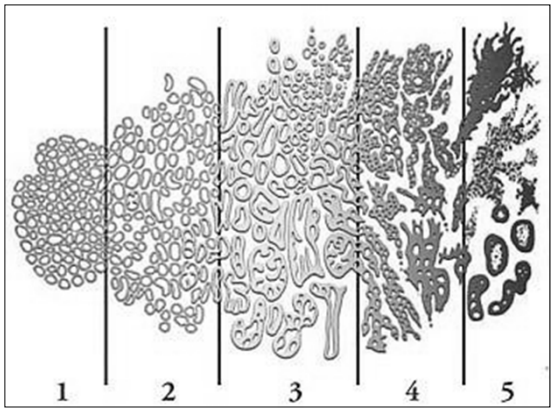
Gleason Pattern and Score



http://www.stjohnprovidence.org

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Gleason to Grade Conversion

Gleason Score	Differentiation	Grade
Gleason 2-6	Well Differentiated	1
Gleason 7	Moderately Differentiated	2
Gleason 8-10	Poorly Differentiated	3

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Prostate Cancer Treatment

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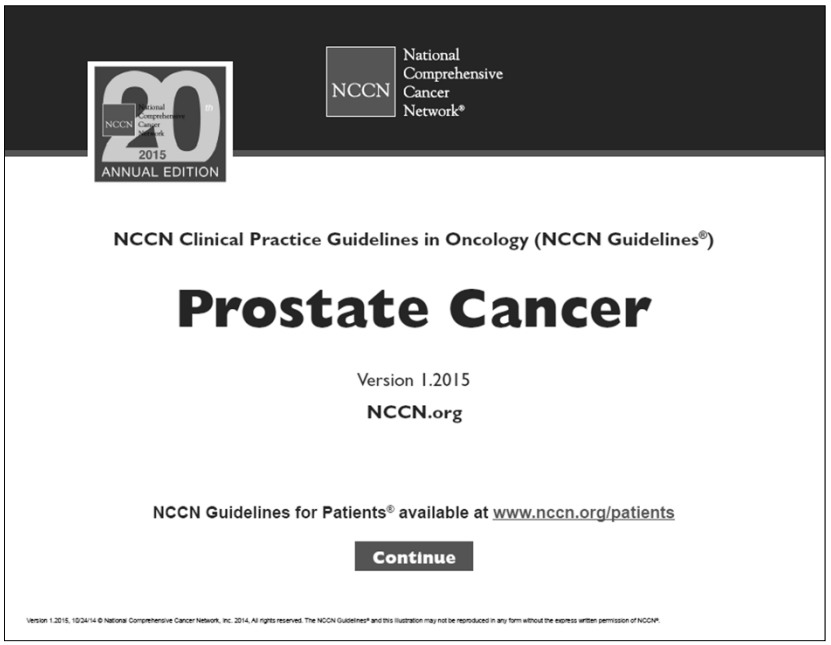

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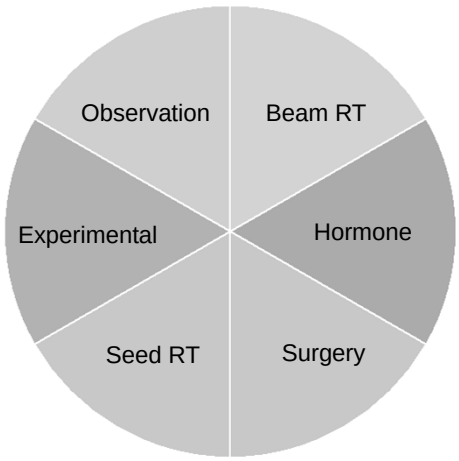
Treatment Options



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Active Surveillance

NCCN Guidelines Version 1.2015
Prostate Cancer

NCCN Guidelines Index
Prostate Table of Contents
Discussion

PRINCIPLES OF ACTIVE SURVEILLANCE AND OBSERVATION

- The NCCN Prostate Cancer Panel and the NCCN Prostate Cancer Early Detection Panel (See NCCN Guidelines for Prostate Cancer Early Detection) remain concerned about over-diagnosis and over-treatment of prostate cancer. The panel recommends that patients and their physicians (ie, urologist, radiation oncologist, medical oncologist, primary care physician) consider active surveillance based on careful consideration of the patient's prostate cancer risk profile, age, and health.
- The 2014 NCCN Guidelines for Prostate Cancer distinguish between active surveillance and observation. Both involve no more often than every-6-month monitoring but active surveillance may involve surveillance prostate biopsies. Evidence of progression will prompt conversion to potentially curative treatment in active surveillance patients, whereas monitoring continues until symptoms develop or are eminent (ie, PSA >100 ng/mL) in observation patients, who will then begin palliative ADT.
- Active surveillance is preferred for men with very-low-risk prostate cancer and life expectancy ≤20 y. Observation is preferred for men with low-risk prostate cancer with life expectancy <10 y. See Risk Group Criteria (PROS-2).
- Active surveillance involves actively monitoring the course of disease with the expectation to intervene with curative intent if the cancer progresses.
- Cancer progression may have occurred if:
  - Gleason grade 4 or 5 cancer is found upon repeat prostate biopsy
  - Prostate cancer is found in a greater number of prostate biopsies or occupies a greater extent of prostate biopsy.
- Observation involves monitoring the course of disease with the expectation to deliver palliative therapy for the development of symptoms or change in exam or PSA levels that suggest symptoms are imminent.
- Patients with clinically localized prostate cancers who are candidates for definitive treatment and choose active surveillance should have regular follow-up. Follow-up should be more rigorous in younger men than in older men. Follow-up should include:
  - PSA no more often than every 6 mo unless clinically indicated
  - DRE no more often than every 12 mo unless clinically indicated
  - Needle biopsy of the prostate should be repeated within 6 mo of diagnosis if initial biopsy was <10 cores or assessment discordant (eg, palpable tumor contralateral to side of positive biopsy)
  - A repeat prostate biopsy should be considered if prostate exam changes or PSA increases, but neither parameter is very reliable for detecting prostate cancer progression.
  - A repeat prostate biopsy should be considered as often as annually to assess for disease progression, because PSA kinetics may not be as reliable as monitoring parameters to determine progression of disease.
  - Repeat prostate biopsies are not indicated when life expectancy is less than 10 y or appropriate when men are on observation.
  - PSADT appears unreliable for identification of progressive disease that remains curable. Although multi-parametric MRI is not recommended for routine use, it may be considered if PSA rises and systematic prostate biopsy is negative to exclude the presence of an anterior cancer.

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Active Surveillance

PRINCIPLES OF ACTIVE SURVEILLANCE AND OBSERVATION

- Advantages of active surveillance:
  - Avoidance of possible side effects of definitive therapy that may be unnecessary
  - Quality of life/normal activities potentially less affected
  - Risk of unnecessary treatment of small, indolent cancers reduced
- Advantages of observation:
  - Avoidance of possible side effects of unnecessary definitive therapy and early initiation and/or continuous ADT
- Disadvantages of active surveillance:
  - Chance of missed opportunity for cure
  - Risk of progression and/or metastases
  - Subsequent treatment may be more complex with increased side effects
  - Nerve sparing may be more difficult, which may reduce chance of potency preservation after surgery
  - Increased anxiety
  - Requires frequent medical exams and periodic biopsies, which are not without complications
  - Uncertain long-term natural history of prostate cancer
- Disadvantages of observation:
  - Risk of urinary retention or pathologic fracture without prior symptoms or concerning PSA level

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Surgery

NCCN National Comprehensive Cancer Network®

NCCN Guidelines Version 1.2015
Prostate Cancer

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Discussion

PRINCIPLES OF SURGERY

Pelvic Lymph Node Dissection:
- An extended PLND will discover metastases approximately twice as often as a limited PLND. Extended PLND provides more complete staging and may cure some men with microscopic metastases; therefore, an extended PLND is preferred when PLND is performed.
- An extended PLND includes removal of all node-bearing tissue from an area bound by the external iliac vein anteriorly, the pelvic sidewall laterally, the bladder wall medially, the floor of the pelvis posteriorly, Cooper's ligament distally, and the internal iliac artery proximally.
- A PLND can be excluded in patients with <2% predicated probability of nodal metastases by nomograms, although some patients with lymph node metastases will be missed.
- PLND can be performed using an open, laparoscopic, or robotic technique.

Radical Prostatectomy:
- RP is an appropriate therapy for any patient with clinically localized prostate cancer that can be completely excised surgically, who has a life expectancy of ≥10 years, and has no serious comorbid conditions that would contraindicate an elective operation.
- High-volume surgeons in high-volume centers generally provide better outcomes.
- Laparoscopic and robot-assisted RP are used commonly. In experienced hands, the results of these approaches appear comparable to open surgical approaches.
- Blood loss can be substantial with RP, but can be reduced by careful control of the dorsal vein complex and periprostatic vessels.
- Urinary incontinence can be reduced by preservation of urethral length beyond the apex of the prostate and avoiding damage to the distal sphincter mechanism. Bladder neck preservation may decrease the risk of incontinence. Anastomotic strictures increase the risk of long-term incontinence.
- Recovery of erectile function is directly related to age at RP, preoperative erectile function, and the degree of preservation of the cavernous nerves. Replacement of resected nerves with nerve grafts has not been shown to be beneficial. Early restoration of erections may improve late recovery.
- Salvage RP is an option for highly selected patients with local recurrence after EBRT, brachytherapy, or cryotherapy in the absence of metastases, but the morbidity (ie, incontinence, loss of erection, anastomotic stricture) is high and the operation should be performed by surgeons who are experienced with salvage RP.

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Radiation Therapy

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PRINCIPLES OF RADIATION THERAPY

Primary External Beam Radiation Therapy
- Highly conformal RT techniques should be used to treat prostate cancer.
- Doses of 75.6 to 79.2 Gy in conventional fractions to the prostate (± seminal vesicles for part of the therapy) are appropriate for patients with low-risk cancers. For patients with intermediate- or high-risk disease, doses up to 81.0 Gy provide improved PSA-assessed disease control.
- Moderately hypofractionated image-guided IMRT regimens (2.4–4 Gy per fraction over 4–6 weeks) have been tested in randomized trials reporting similar efficacy and toxicity to conventionally fractionated IMRT. They can be considered as an alternative to conventionally fractionated regimens when clinically indicated.
- Extremely hypofractionated image-guided IMRT/SBRT regimens (6.5 Gy per fraction or greater) are an emerging treatment modality with single institutional and pooled reports of similar efficacy and toxicity to conventionally fractionated regimens. They can be considered as a cautious alternative to conventionally fractionated regimens at clinics with appropriate technology, physics, and clinical expertise.
- Patients with high-risk cancers are candidates for pelvic lymph node irradiation and the addition of neoadjuvant/concomitant/adjuvant ADT for a total of 2 to 3 y (category 1).
- Patients with intermediate-risk cancer may be considered for pelvic lymph node irradiation and 4- to 6-mo neoadjuvant/concomitant/adjuvant ADT.
- Patients with low-risk cancer should not receive pelvic lymph node irradiation or ADT.
- The accuracy of treatment should be improved by attention to daily prostate localization, with techniques of IGRT using CT, ultrasound, implanted fiducials, electromagnetic targeting/tracking, or an endorectal balloon to improve oncologic cure rates and reduce side effects.

Primary/Salvage Brachytherapy
- Low-dose rate (LDR) brachytherapy as monotherapy is indicated for patients with low-risk cancers and selected patients with low-volume immediate-risk cancers. Intermediate-risk cancers may be treated by combining LDR brachytherapy with EBRT (40–50 Gy) ± 4 to 6 mo neoadjuvant/concomitant/adjuvant ADT. Patients with high-risk cancers may be treated with a combination of EBRT (40–50 Gy) and LDR brachytherapy ± 2 to 3 y neoadjuvant/concomitant/adjuvant ADT.
- Patients with a very large prostate or very small prostate, symptoms of bladder outlet obstruction (high IPSS), or a previous transurethral resection of the prostate are more difficult to implant and may suffer increased risk of side effects. Neoadjuvant ADT may be used to shrink the prostate to an acceptable size; however, increased toxicity would be expected from ADT and prostate size may not decline.
- Post-implant dosimetry must be performed to document the quality of the implant.
- The recommended prescribed doses for LDR monotherapy are 145 Gy for Iodine-125 and 125 Gy for Palladium-103. The corresponding boost doses after 40 to 50 Gy EBRT are 110 Gy and 90 to 100 Gy, respectively.
- High-dose rate (HDR) brachytherapy can be used alone or in combination with EBRT (40–50 Gy) instead of LDR. Commonly used boost regimens include 9.5 to 11.5 Gy x 2 fractions, 5.5 to 7.5 Gy x 3 fractions, and 4.0 to 6.0 Gy x 4 fractions. A commonly used regimen for HDR treatment alone includes 13.5 Gy x 2 fractions.
- Permanent LDR or temporary HDR brachytherapy can be used as treatment for a local recurrence following EBRT or primary brachytherapy. Radiation dose depends on the original primary external beam dose and ranges from 100 to 110 Gy for LDR and 9 to 12 Gy x 2 fractions for HDR.

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Androgen Deprivation

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PRINCIPLES OF ANDROGEN DEPRIVATION THERAPY

ADT for Clinically Localized Disease

- Neoadjuvant ADT for RP is strongly discouraged outside of a clinical trial.
- ADT should not be used as monotherapy in clinically localized prostate cancer.
- Giving ADT before, during, and/or after radiation prolongs survival in selected radiation-managed patients.
- Studies of short-term (4–6 mo) and long-term (2–3 y) neoadjuvant ADT all have used complete androgen blockade. Whether the addition of an antiandrogen is necessary requires further study.
- In the largest randomized trial to date using the antiandrogen bicalutamide alone at high dose (150 mg), there were indications of a delay in recurrence of disease but no improvement in survival. Longer follow-up is needed.
- In one randomized trial, immediate and continuous use of ADT in men with positive nodes following RP resulted in significantly improved overall survival compared to men who received delayed ADT. Therefore, such patients should be considered for immediate ADT.
- Many of the side effects of continuous ADT are cumulative over time on ADT.

ADT for Biochemical Failure Without Metastases

- The timing of ADT for patients whose only evidence of cancer is a rising PSA is influenced by PSA velocity, patient anxiety, the short- and long-term side effects of ADT, and the underlying comorbidities of the patient.
- Most patients will have a good 15-year prognosis, but their prognosis is best approximated by the absolute level of PSA, the rate of change in the PSA level (PSADT), and the initial stage, grade, and PSA level at the time of definitive therapy.
- Earlier ADT may be better than delayed ADT, although the definitions of early and late (what level of PSA) are controversial. Since the benefit of early ADT is not clear, treatment should be individualized until definitive studies are done. Patients with a shorter PSADT (or a rapid PSA velocity) and an otherwise long life expectancy should be encouraged to consider ADT earlier.
- Some patients are candidates for salvage after biochemical failure, which may include radiation after failed operation or RP or cryosurgery after failed radiation.
- Men with prolonged PSADTs (>12 mo) and who are older are candidates for observation.
- Men who choose ADT should consider intermittent ADT. A phase 3 trial that compared intermittent to continuous ADT showed that intermittent ADT was not inferior to continuous ADT with respect to survival, and quality of life was better for the intermittent ADT arm. The 7% increase in prostate cancer deaths in the intermittent ADT arm was balanced by more non-prostate cancer deaths in the continuous ADT arm. An unplanned subset analysis showed that men with Gleason sum 8–10 prostate cancer in the continuous arm had a median overall survival that was 14 mo longer (8 y) than those in the intermittent arm (6.8 y).

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What's New in Prostate CA

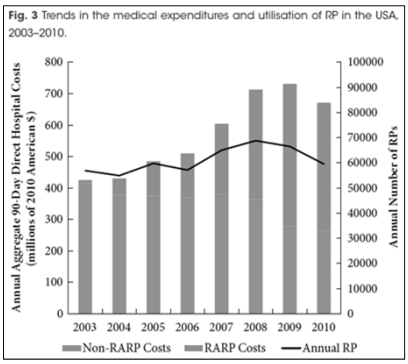
- Next-Generation Gene Sequencing - Estrogen Receptors play role in signaling pathways signaling cancer cells to grow. How? Estrogen Receptors hijack the androgen-signaling pathway which causes androgen deprivation therapies to fail. NEAT1 is over-expressed in both early stage prostate and in androgen-resistant tumors and may be a biomarker and/or prognostic marker in urine.

- Chronic Inflammation Increases Prostate Cancer Risk as part of a SWOG trial that examined inflammation levels among participants based on prevalence of immune cells in the men's prostate tissue samples. Nearly 90% had signs of high inflammation – nearly twice that of others.

Weill Cornell Medical College, NY and *Cancer Epidemiology, Biomarkers & Prevention April 2014* 108

What's New in Prostate CA

Widespread adoption of robot-assisted prostatectomy effects treatment and costs with a huge increase in robot-assisted radical prostatectomies in just 5 years; growing from less than 1% to more than 40% annually. Men are more likely to be offered RARP in urban hospitals and from high-volume surgeons with up to a 40% increase in surgical expenditures over traditional prostatectomy.



BJU International` (2014; doi:10.1111/bju.12850)

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What's New in Prostate CA

- Over Detection of Recurrence after Primary Treatment for Prostate Cancer based on rising PSA poses concerns. PSA recurrence can occur years before clinical metastasis and untreated PSA-R would not progress to clinical metastasis within patient's lifetime – 30% over-detection.
- Key Prostate Site-Specific Factor Data found to be internally inconsistent with high levels of invalid or incorrect codes and up to 50% unknown, missing, or otherwise not coded values.
  - Pathologic Stage
  - PSA Lab Value at Dx
  - Gleason Primary and Secondary Pattern on Core Bx or TURP
  - Count of Number of Cores Positive/Examined

AACR Clinical Cancer Research (2014; doi:10.1158/1078-0432.CCR-13-336 and *Cancer* Dec 1, 2014

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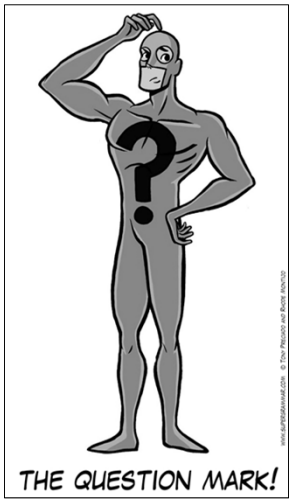
Questions



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