



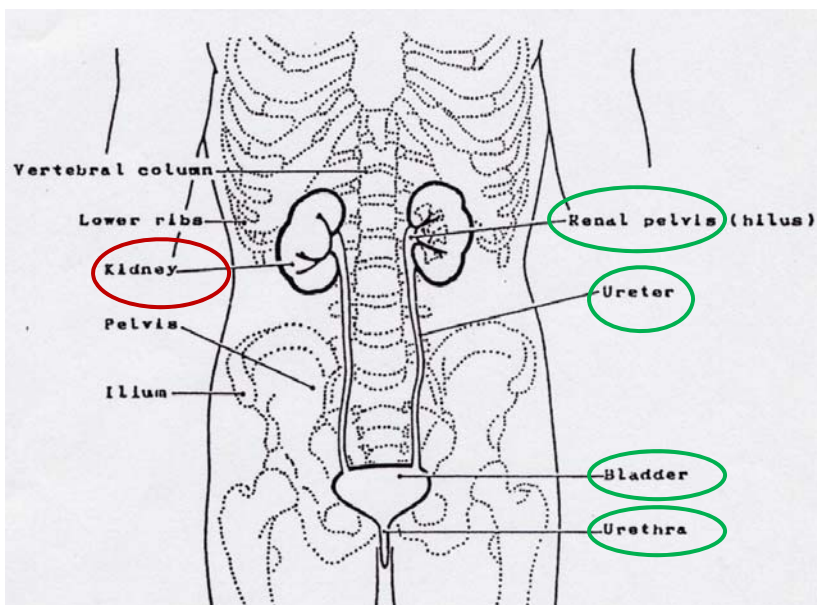
SHRI VIDEO TRAINING SERIES
2018 DX forward
Recorded 2/2020

URINARY TRACT INTRODUCTION

PRESENTED BY LORI SOMERS, RN
IOWA CANCER REGISTRY

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The Urinary Tract System



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Urinary Tract System:

Kidney

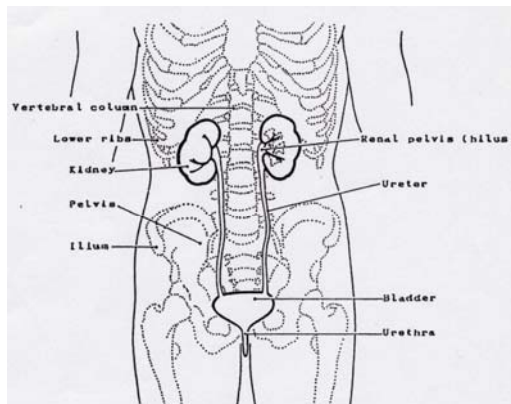
Kidney **parenchyma** (glandular part) C64.9

Kidney **Renal Pelvis** C65.9

Ureter C66.9

Bladder C67.9 (NOS)

Urethra C68.0



Bladder, Renal Pelvis, Ureter

- Definitions
 - **Upper** urinary tract:
 - kidney, renal pelvis and ureter
 - **Lower** urinary tract:
 - bladder, sphincter, urethra

Urinary tract (STR definition): structures lined by urothelium

Two different sections in STR manual:

one for **kidney**, one for **urinary**

Urinary Tract

Renal pelvis, ureter, bladder, urethra, prostatic urethra in males

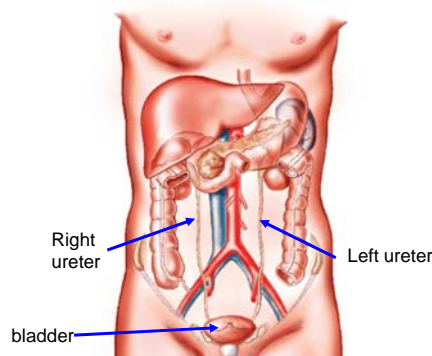
- Structures lined by transitional epithelium
- Tumor cells may shed and implant in structures lower in the tract causing multifocal tumors
- Transitional epithelium: preferred term is now **urothelial/transitional cells**
- Expandable (stretchable) epithelium with layered appearance- Bladder

Kidney parenchyma (body)- glandular

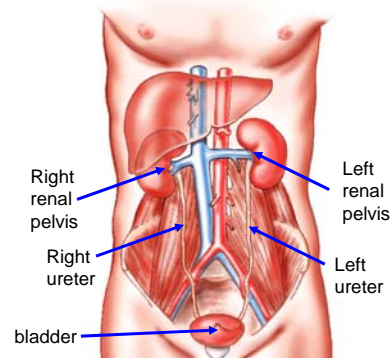
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Anatomy

Bladder, Renal Pelvis, Ureters



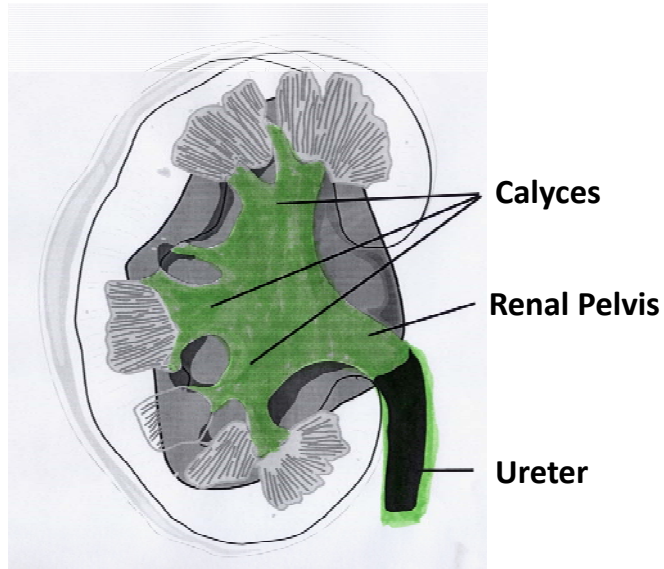
Organs from front



**Organs from front
with anterior organs
removed**

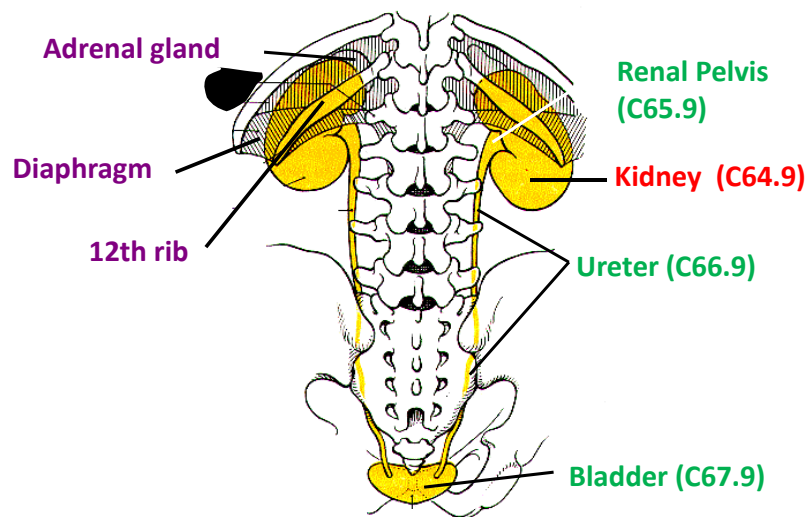
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Renal Pelvis and Ureter



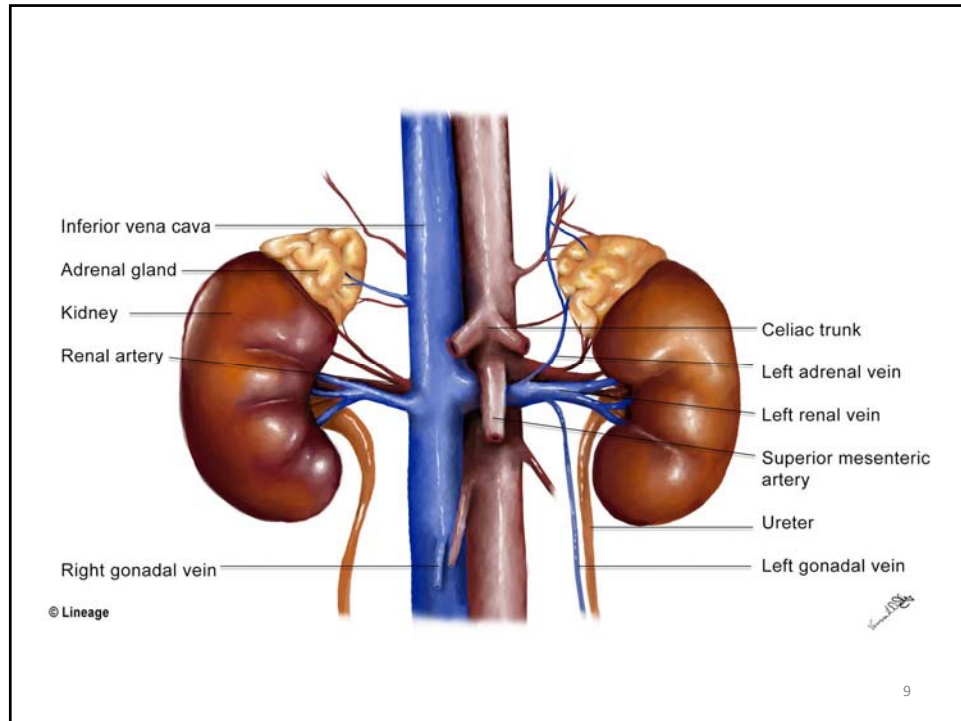
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Renal Pelvis, Ureters, Bladder

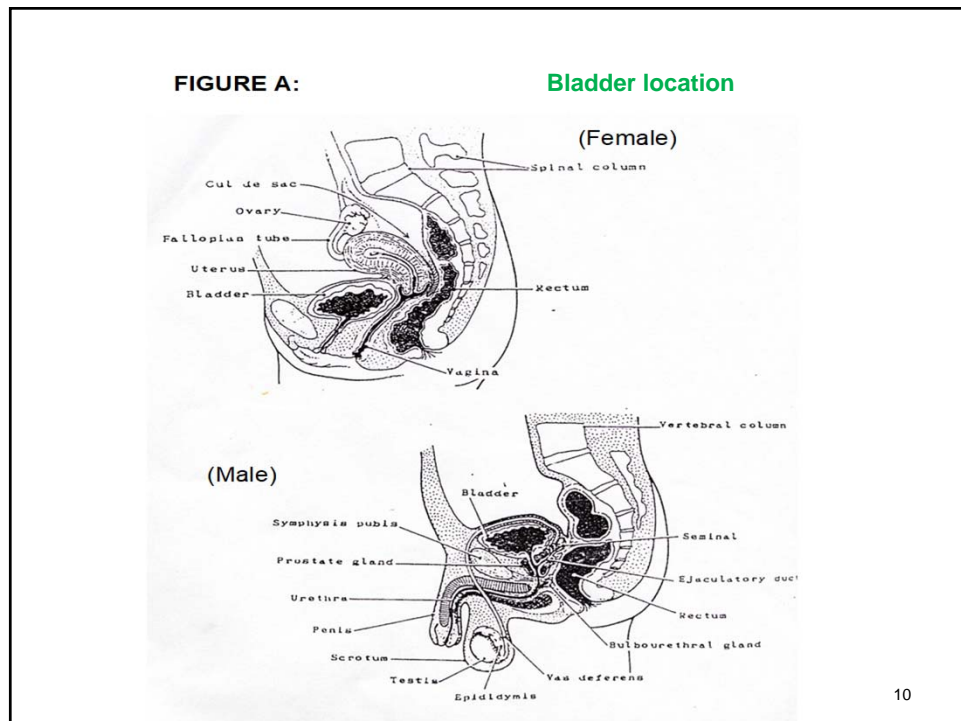


Source: Color Atlas and Textbook of Human Anatomy

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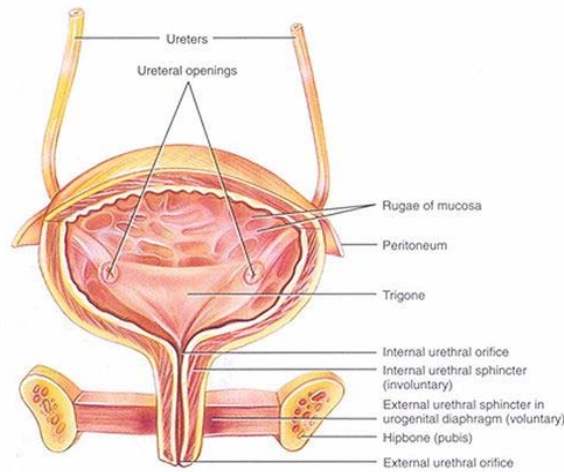
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Bladder and Ureters

Lower
Urinary Tract
FEMALE

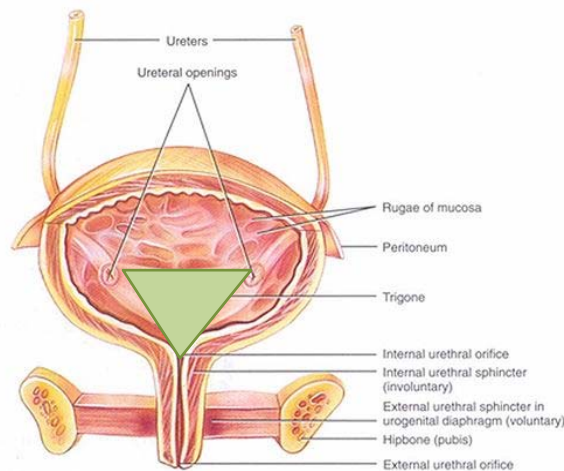


Source: www.jvi.org/volumes/volume6/issue7/images/shobab_bladder1.jpg.
Courtesy of Gerard J. Tortora (1999) Principles of Human Anatomy (eight edition) John Wiley & Sons Inc. , New York

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Bladder and Ureters

Lower
Urinary Tract
FEMALE

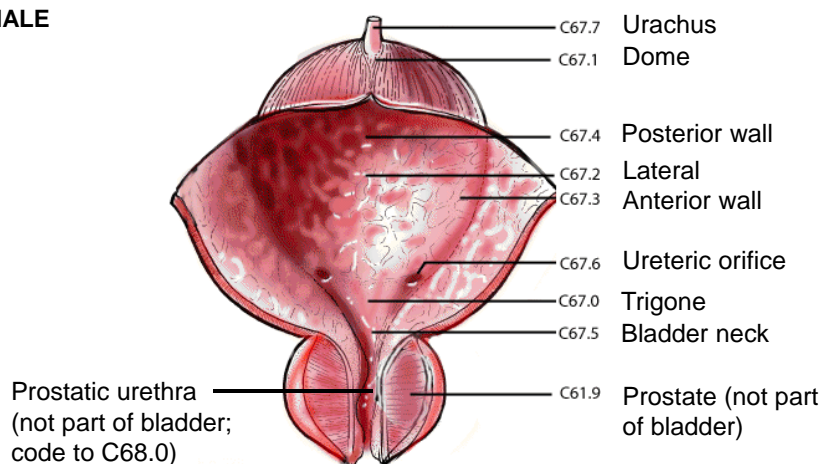


Source: www.jvi.org/volumes/volume6/issue7/images/shobab_bladder1.jpg.
Courtesy of Gerard J. Tortora (1999) Principles of Human Anatomy (eight edition) John Wiley & Sons Inc. , New York

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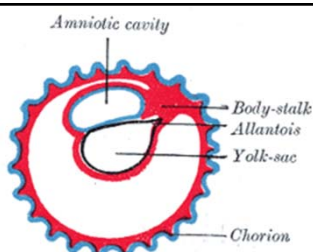
Bladder Anatomy with ICD-O-3 Codes

MALE



Source: UICC *TNM-interactive*, Wiley-Liss, 1998

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Bladder Trivia

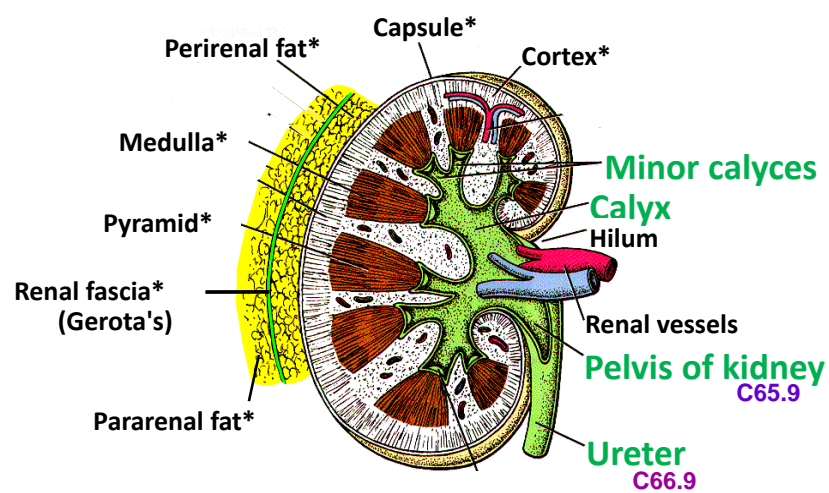
The **urachus** is an embryological canal connecting the urinary bladder of the fetus with the allantois, a structure that contributes to the formation of the umbilical cord. The lumen (inside) of the urachus is normally obliterated during embryonic development, transforming the urachus into a solid cord, a **functionless remnant**. The urachus lies in the space of Retzius, between the transversalis fascia anteriorly and the peritoneum posteriorly.

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ANATOMY OF KIDNEY

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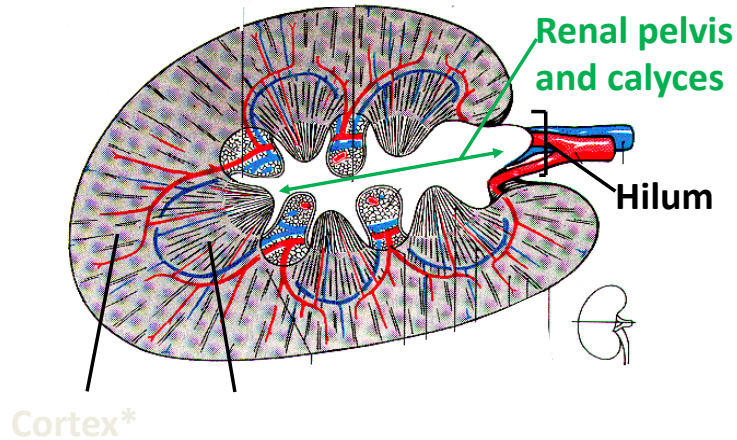
Upper Urinary Tract



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Cross Section at Hilum

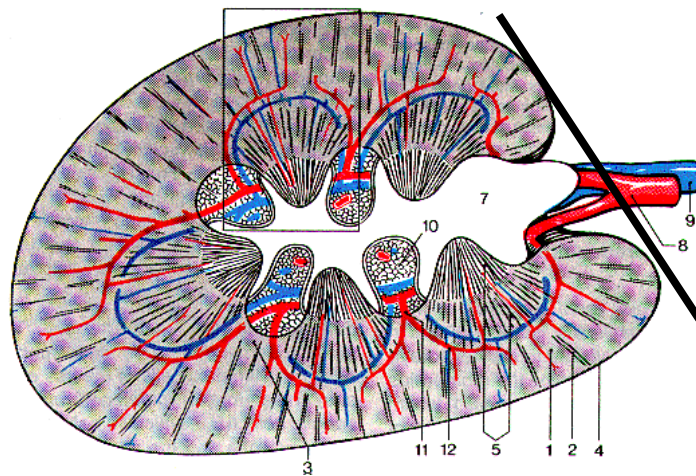
The medial (inner) side of each kidney presents a concave notch called the **hilum**, (or hilus) means "depression" and is the place where the vessels enter the organ.



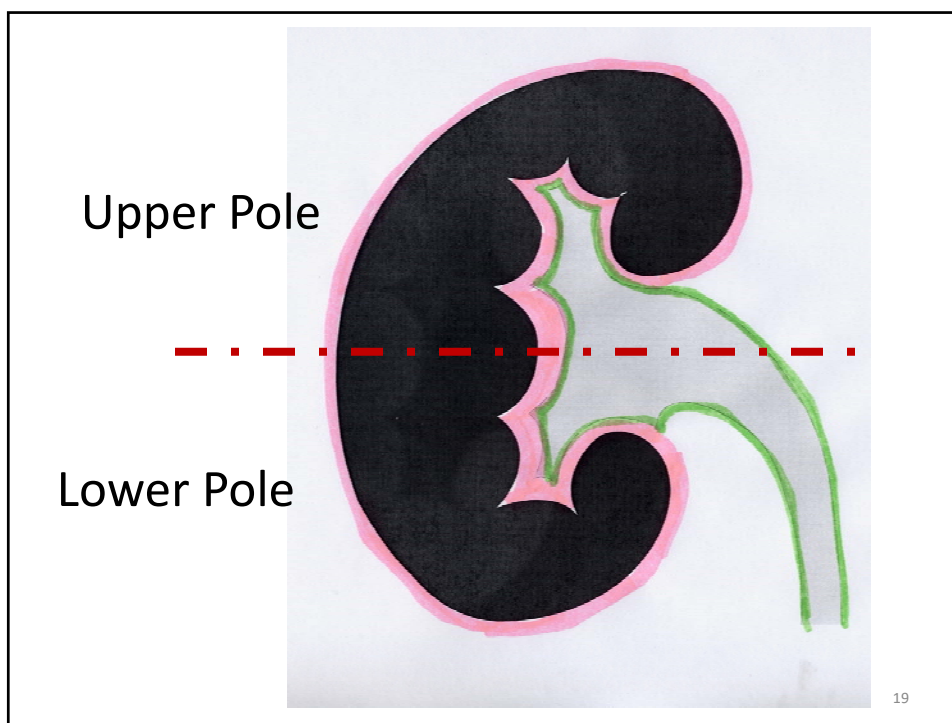
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Renal Sinus: space outside the kidney and renal pelvis, but within a line drawn from the medial edge of the upper pole to the medial edge of the lower pole.

While the pelvis falls within this region, the term refers to the fatty tissue only, not to the collecting system structures.



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Primary Site codes

Parts of Bladder

(Code primary site **C67.0 to C67.9**)

Trigone, Dome, Lateral wall, Anterior wall,
Posterior wall, Bladder neck, Ureteric orifice,
Urachus, bladder base, bladder floor

Parts of Renal Pelvis

(code primary site **as C65.9**)

- *Renal pelvis
- *Calyx, calyces
- *Renal sinus (renal hilum located w/in renal sinus)
- *Pelvicureteric junction

Ureter (code primary site **as C66.9**)

Urethra (code primary site **as C68.0**)

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Renal pelvis, Ureter, Bladder and other urinary

Priority for Coding Primary Site

The following list is in priority order.

1. Code overlapping lesion of urinary bladder **C678** when:
 - A. A single tumor of any histology overlaps subsites of the bladder
 - B. A single tumor or discontinuous tumors which are:
 - **Urothelial carcinoma in situ 8120/2 AND**
 - Involves only bladder and one or both ureters (no other urinary sites involved)

Note: Overlapping non-invasive tumors of the bladder and ureter almost always originate in the bladder. They extend/overlap into the ureter by spreading along the mucosa. It is important to code these primaries to bladder C678, NOT to overlapping lesion of urinary organs C688.
2. Code bladder NOS **C679** when there are **multiple non-contiguous tumors** within the **bladder AND** the subsite/origin is unknown/not documented.
3. Code overlapping lesion of urinary organs **C688** when a single tumor overlaps two urinary sites and the origin is unknown/not documented.

Note: See the following examples of contiguous urinary sites where overlapping tumor could occur:

 - Renal pelvis and ureter
 - Bladder and urethra
 - Bladder and ureter (for all histologies other than in situ urothelial cell)

Jump to [Multiple Primary Rules](#)

Jump to [Histology Coding Rules](#)

Urinary Solid Tumor Rules 2018

July 2019 Update

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Renal Pelvis, Ureter, Bladder, and Other Urinary Equivalent Terms and Definitions C659, C669, C670-C679, C680-C689 (Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)

4. Code Urinary System NOS **C689** when there are **multiple discontinuous tumors** in **multiple organs** within the urinary system.

Note: The physician subject matter experts (SME) discussed the issue of coding primary site for **multifocal/multicentric** urinary tract carcinoma. Although the SMEs understood and acknowledged the importance of coding a specific primary site, there is **no literature** or **criteria** for **determining** the organ of **origin** for multiple tumors involving multiple urinary sites.

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Urinary Tract Histologies

Bladder, Renal Pelvis and Ureter

- **Urothelial carcinoma (transitional cell carcinoma, “TCC”)**
 - 90% of all urinary tract cancers
 - Papillary urothelial carcinoma (papillary transitional cell carcinoma, “Pap TCC”)
- **Squamous cell carcinoma**
 - 10% of renal pelvis tumors, 5% of bladder tumors
- **Adenocarcinoma**
 - Very rare in renal pelvis, ureters
 - < 1% of urinary tract tumors
 - Most likely a primary in kidney parenchyma with extension into renal pelvis or ureter

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Renal Pelvis, Ureter, Bladder, and Other Urinary Equivalent Terms and Definitions
C659, C669, C670-C679, C680-C689
(Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)

Specific and NOS Histology Codes	Synonyms	Subtypes/Variants
Urothelial carcinoma 8120 <i>Note 1:</i> Previously called transitional cell carcinoma , a term that is no longer recommended. <i>Note 2:</i> Micropapillary 8131 is a subtype/variant of papillary urothelial carcinoma 8130 . It is an invasive /3 neoplasm with aggressive behavior.	Clear cell (glycogen-rich) urothelial carcinoma 8120/3 Infiltrating urothelial carcinoma 8120/3 Infiltrating urothelial carcinoma with divergent differentiation 8120/3 Infiltrating urothelial carcinoma with endodermal sinus lines 8120/3 Infiltrating urothelial carcinoma with glandular differentiation 8120/3 Infiltrating urothelial carcinoma with squamous differentiation 8120/3 Infiltrating urothelial carcinoma with trophoblastic differentiation 8120/3 Lipid-rich urothelial carcinoma 8120/3 Microcystic urothelial carcinoma 8120/3 Nested urothelial carcinoma 8120/3 Plasmacytoid urothelial carcinoma 8120/3 Urothelial carcinoma in situ 8120/2	Giant cell urothelial carcinoma 8031/3 Lymphoepithelioma-like urothelial carcinoma 8082/3 Papillary urothelial (transitional cell) carcinoma in situ 8130/2 invasive 8130/3 Micropapillary urothelial carcinoma 8131/3 Poorly differentiated carcinoma 8020/3 Sarcomatoid urothelial carcinoma 8122/3

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Definitions

Papillary vs. Non-papillary urothelial (Flat Carcinoma)

Gross descriptions of tumor architecture or structure; not specific histologies

– Both apply to transitional cell/urothelial carcinoma

Papillary tumor

Warty growth projecting from the wall

On a stalk

- **Non-invasive** papillary urothelial ca (in situ)
- **Invasive** papillary urothelial ca



Non-invasive



Invasive

Non-papillary urothelial: (Flat tumor)

Originates within mucosa

Does not project from the wall

- **Non-invasive** CIS
- **Invasive** urothelial ca



In situ



Invasive

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Renal Pelvis, Ureter, Bladder, and Other Urinary Equivalent Terms and Definitions
C659, C669, C670-C679, C680-C689
(Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)

Table 3: Non-Reportable Urinary Tumors

Column 1 contains the terms and codes (if applicable) for the non-reportable histology.

Column 2 contains synonyms of the histology term in column 1. Synonyms have the same code as the term in Column 1.

Histology Term and Code	Synonyms
Benign perivascular epithelioid cell tumor 8714/0	Benign PEComa
Granular cell tumor 9580/0	
Hemangioma 9120/0	
Inflammatory myofibroblastic tumor 8825/1	
Inverted urothelial papilloma 8121/0	
Leiomyoma 8890/0	
Melanosis No code	
Neurofibroma 9540/0	
Nevus 8720/0	
Papillary urothelial neoplasm of low-malignant potential 8130/1	
Paraganglioma 8693/1	Extra-adrenal pheochromocytoma
Solitary fibrous tumor 8815/1	
Squamous cell papilloma 8052/0	Keratotic papilloma
Urothelial dysplasia No code	
Urothelial papilloma 8120/0	
Villous adenoma 8261/0	

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Grade Table 19

Grade 19

Grade ID 19-Clinical Grade Instructions

Schema ID#	Schema ID Name	AJCC ID	AJCC Chapter
00610	Kidney Renal Pelvis	61.1	Renal Pelvis and Ureter: Urothelial Carcinomas
00610	Kidney Renal Pelvis	61.2	Renal Pelvis and Ureter: Squamous Cell Carcinoma and Adenocarcinoma
00620	Bladder	62.1	Urinary Bladder: Urothelial Carcinomas
00620	Bladder	62.2	Urinary Bladder: Squamous Cell Carcinoma and Adenocarcinoma
00631	Urethra	63.1	Urothelial Male Penile Urethra and Female Urethra
00631	Urethra	63.2	Squamous Male Penile Urethra and Female Urethra
00633	Urethra-Prostatic	63.3	Prostatic Urethra: Urothelial Carcinomas
00633	Urethra-Prostatic	63.4	Prostatic Urethra: Squamous Cell Carcinoma and Adenocarcinoma

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Grade

Use these codes for
adenoca and squamous
cell carcinoma: 1, 2, 3, 9

Use these codes for
urothelial cancers, L, H, 9

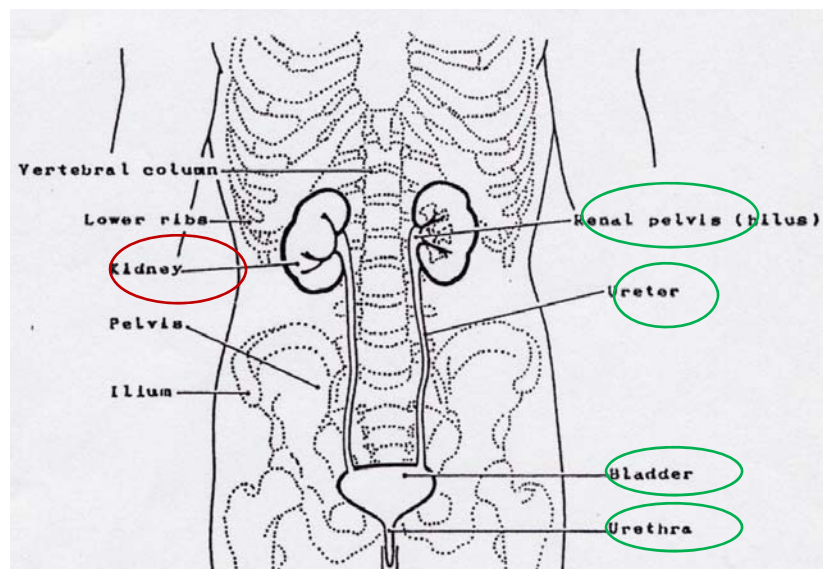
Code	Grade Description
1	G1: Well Diff
2	G2: Mod Diff
3	G3: Poorly Diff, undiff, anaplastic
L	LG: Low-grade
H	HG: High-grade
9	Grade cannot be assessed (GX); unknown

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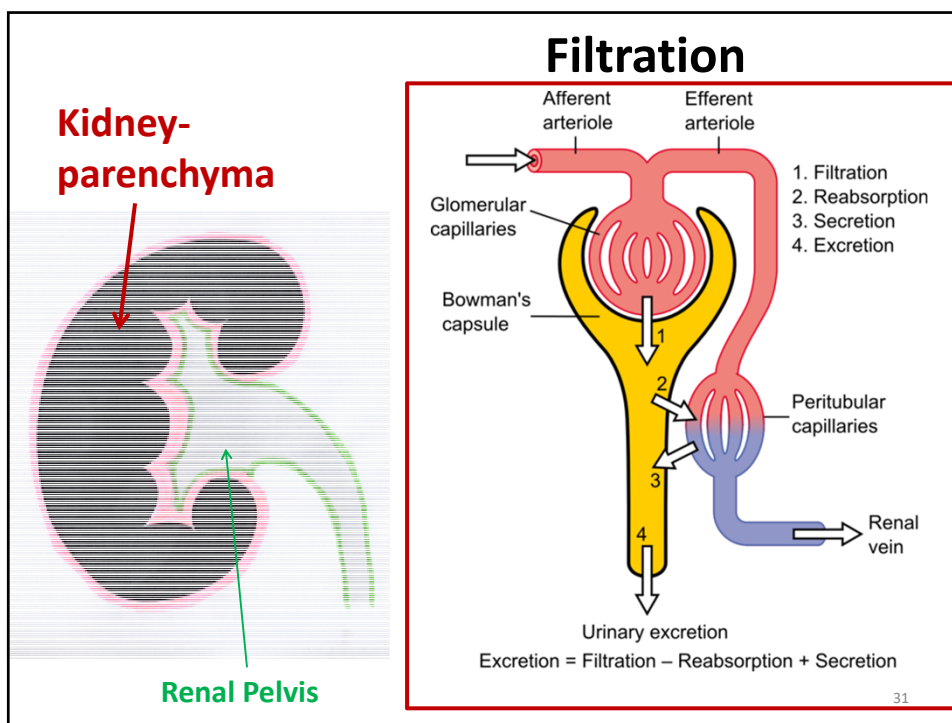
KIDNEY

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KIDNEY- parenchyma



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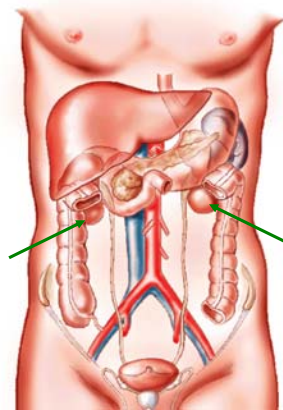


Kidney Parenchyma

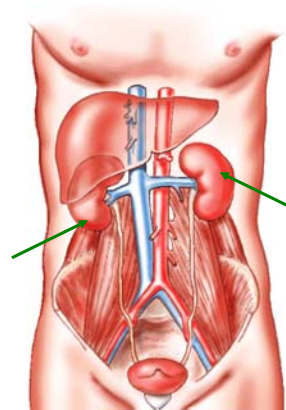
- Bilateral organs
- Bean shaped
- 4" long, 2" wide, 1.5" thick
- Weight: up to 10 ounces
- 3% of all adult cancers
- 85% are **Renal cell carcinoma (adenocarcinoma) or subtype/variants of RCC**
 - ccRCC 8310 most common s/v



Kidneys—Anterior View



Kidneys from front

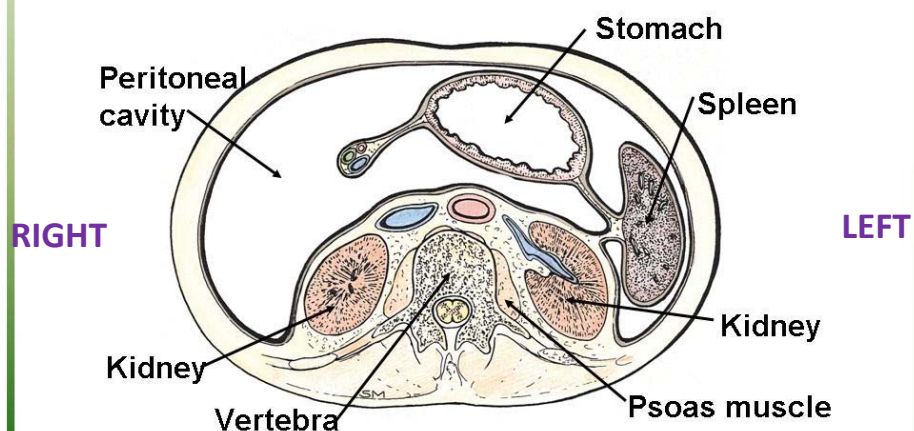


Kidneys from front
with anterior organs
removed

Source: Medi-clip: Grant's Atlas, Thorax and Abdomen

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Cross-section of Abdomen Showing Kidneys in Retro-peritoneum



Source: Medi-clip: Grant's Atlas, Thorax and Abdomen

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Anatomy Definitions

Parenchyma

- Solid part of kidney where process of waste excretion takes place

Cortex

- outer layer of parenchyma consisting of connective tissue

Medulla

- Area of kidney where filtration and concentration of wastes takes place

Capsule

- Dense fibrous covering of kidney

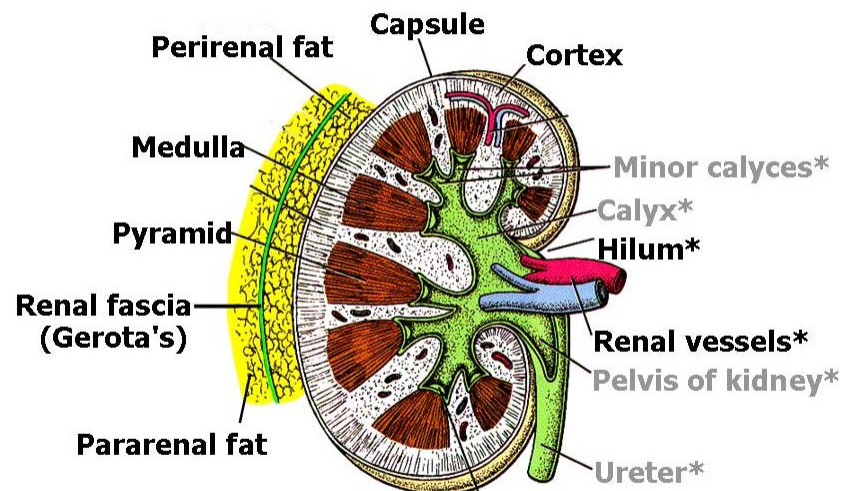
Gerota's fascia

- Layer of connective tissue between kidneys and psoas muscles

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C64.9

Kidney Anatomy



* not part of kidney parenchyma

Source: Snell, Clinical Anatomy for Medical Students

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Kidney Equivalent Terms and Definitions C649 (Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)		
NOS/Specific Histology Term and Code	Synonyms	Subtypes/Variants
Nephroblastoma 8960	Wilms tumor	
Neuroendocrine tumor (NET) 8041	Carcinoid [OBS] Small cell neuroendocrine tumor/carcinoma	Large cell neuroendocrine carcinoma/tumor 8013 Well-differentiated neuroendocrine tumor 8240
Renal cell carcinoma NOS 8312 <i>Note 1:</i> WHO, IARC, and CAP agree that sarcomatoid carcinoma is a pattern of differentiation, not a specific subtype, of renal cell carcinoma. <i>Note 2:</i> Sarcomatoid is listed in the CAP Kidney protocol under the header "features."	RCC Sarcomatoid carcinoma Sarcomatoid renal cell carcinoma Succinate dehydrogenase-deficient renal cell carcinoma (SDHD) Unclassified renal cell carcinoma	Acquired cystic disease-associated renal cell carcinoma/tubulocystic renal cell carcinoma 8316* Chromophobe renal cell carcinoma (ChRCC) 8317 Clear cell papillary renal cell carcinoma 8323/3 <i>Note:</i> The 2016 WHO 4 th Edition Classification of Tumors of the Urinary System and Male Genital Organs has reclassified this histology as a /1 because it is low nuclear grade and is now thought to be a neoplasia. This change was not implemented in the 2018 ICD-O update. Clear cell renal cell carcinoma (ccRCC) 8310 Collecting duct carcinoma 8319 Hereditary leiomyomatosis and renal cell carcinoma-associated renal cell carcinoma 8311* MiT family translocation renal cell carcinomas 8311* <i>Note:</i> Hereditary leiomyomatosis and renal cell carcinoma-associated renal cell carcinoma and MiT family translocation renal cell carcinomas 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 8510* <i>Note:</i> This is a new term (previously called renal spindle cell carcinoma).

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Kidney Equivalent Terms and Definitions C649 (Excludes lymphoma and leukemia M9590 – M9992 and Kaposi sarcoma M9140)		
NOS/Specific Histology Term and Code	Synonyms	Subtypes/Variants
Sarcoma 8800/3 <i>Note:</i> Rhabdomyosarcoma is a NOS with the following subtype/variants: Alveolar rhabdomyosarcoma 8920 Embryonal rhabdomyosarcoma 8910 Pleomorphic rhabdomyosarcoma 8901 Spindle cell/sclerosing rhabdomyosarcoma 8912		Angiosarcoma 9120/3 Clear cell sarcoma/bone-metastasizing renal tumor of childhood 8964/3 Leiomyosarcoma/renal vein leiomyosarcoma 8890/3 Osteosarcoma 9180/3 Primitive/peripheral neuroectodermal tumor (pNET)/Ewing sarcoma 9364/3 Rhabdomyosarcoma 8900/3 Alveolar rhabdomyosarcoma 8920/3 Embryonal rhabdomyosarcoma 8910/3 Pleomorphic rhabdomyosarcoma 8901/3 Spindle cell/sclerosing rhabdomyosarcoma 8912/3 Synovial sarcoma 9040/3

* These new codes were approved by the IARC/WHO Committee for ICD-O.

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GRADE Table 18

Code	Grade Description
1	G1: Nucleoli absent or inconspicuous and basophilic at 400x magnification
2	G2: Nucleoli conspicuous and eosinophilic at 400x magnification, visible but not prominent at 100x magnification
3	G3: Nucleoli conspicuous and eosinophilic at 100x magnification
4	G4: Marked nuclear pleomorphism and/or multinucleate giant cells and/or rhabdoid and/or sarcomatoid differentiation
A	Well differentiated
B	Moderately differentiated
C	Poorly differentiated
D	Undifferentiated, anaplastic
9	Grade cannot be assessed (GX); Unknown

ABCD options allow use of generic grade table, pg 32 in Grade manual.

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GU Primary Site Quiz



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1. On 11/27/2019 L nephroureterectomy with cystoprostatectomy and bilat pelvic lymph node dissection. There is urothelial carcinoma in situ in discontinuous tumors involving both the L ureter and urinary bladder. The renal parenchyma is neg. L pelvic LN excision showed 00/10 positive nodes.

Based on the priority order for coding primary site:

- a. C678 single or discontinuous tumors based on Rule 1B
- b. C679 multiple tumors within bladder based on rule 2B.
- c. C688 overlapping lesion of urinary organs based on rule 3.
- d. C689 Urinary system NOS when there are tumors in multiple organs, Rule 4.

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2. On 1/24/2019 A cystoscopy noted a tumor on the L lateral-posterior wall. TURBT confirmed tumor on lateral-posterior wall. Path report showed invasive urothelial carcinoma.

- a. C679 Bladder NOS
- b. C678 Bladder, overlapping lesion
- c. C672 Bladder, lateral Wall
- d. None of the above

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3. On 5/5/2019 Cystoscopy showed a lesion on the R trigone of bladder. On 5/10/2019 a TURBT showed the large 3.0 cm lesion overlapping the R trigone and R lateral wall of the bladder. Pathology: invasive urothelial carcinoma.

- a. C670 Bladder trigone
- b. C672 Bladder, lateral wall
- c. C678 Bladder, overlapping lesion
- d. C679 Bladder, NOS

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4. On 9/3/2019 a cystoscopy noted a 2.4 lesion on dome of the bladder. Path showed invasive urothelial carcinoma.

- a. C670 Bladder, trigone
- b. C671 Bladder dome
- c. C678 Bladder, overlapping lesion
- d. C679 Bladder, NOS

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5. On 12/25/2019, a patient comes for a nephrectomy for a L kidney mass. Path shows a large cell neuroendocrine carcinoma of the L kidney that extends into the adipose tissue. There were 4/8 pos LNs.

- a. C689 Urinary system NOS
- b. C649 Kidney
- c. C659 Renal pelvis
- d. None of the above

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6. On 4/21/2019 TURB: Bladder neg except for papillary urothelial carcinoma on R hemitrigone.

- a. C670 Bladder, trigone
- b. C678 Bladder, overlapping lesion
- c. C679 Bladder NOS
- d. None of the above

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7. On 3/17/2019 TURBT: A 2.5 cm papillary mass on the R lateral wall.

- a. C670 Bladder, trigone
- b. C672 Bladder, lateral wall
- c. C673 Bladder, anterior wall
- d. C678 Bladder, Overlapping lesion

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8. On 5/5/2019 Cysto, TURB: Papillary lesion over the L orifice, resected.

- a. C672 Bladder, lateral wall
- b. C673 Bladder, anterior wall
- c. C676 Bladder, ureteric orifice
- d. C678 Bladder, overlapping lesion

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9. On 4/21/2019 TURBT. Findings: Immediately upon entering the bladder, noted large bladder tumor encompassing the entire bladder neck. It was extending to R trigone & involving a significant amount of the anterior wall of the bladder. Resection carried down circumferentially around the bladder neck. The R ureteral orifice was never identified & was involved by tumor. Total tumor surface area was likely 8-9 cm.

- a. C673 Bladder, anterior wall
- b. C675 Bladder, neck
- c. C676 Bladder, ureteral orifice
- d. C678 Bladder, overlapping lesion

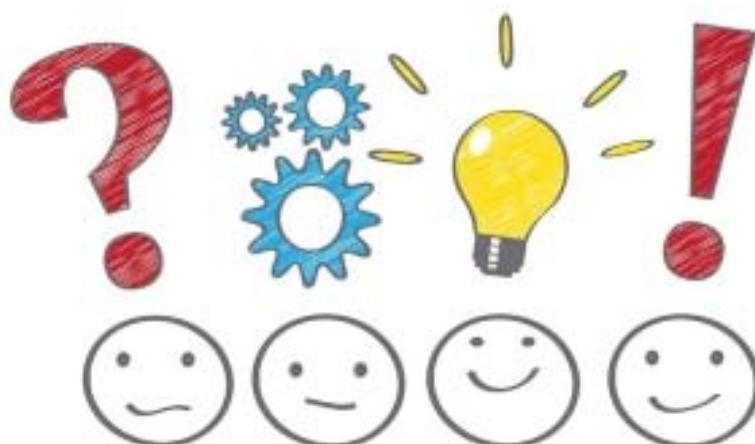
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10. On 07/3/2019 A. Bladder, dome and Left wall bx's: High-grade papillary urothelial carcinoma, non invasive. Muscularis propria: not present. LVI not identified. B. Right bladder wall bx's: High grade papillary urothelial carcinoma, non invasive. Muscularis propria: not present.

- a. C671 Bladder, dome
- b. C672 Bladder, lateral wall
- c. C678 Bladder overlapping lesion
- d. C679 Bladder, NOS

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Questions?
lori-somers@uiowa.edu



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