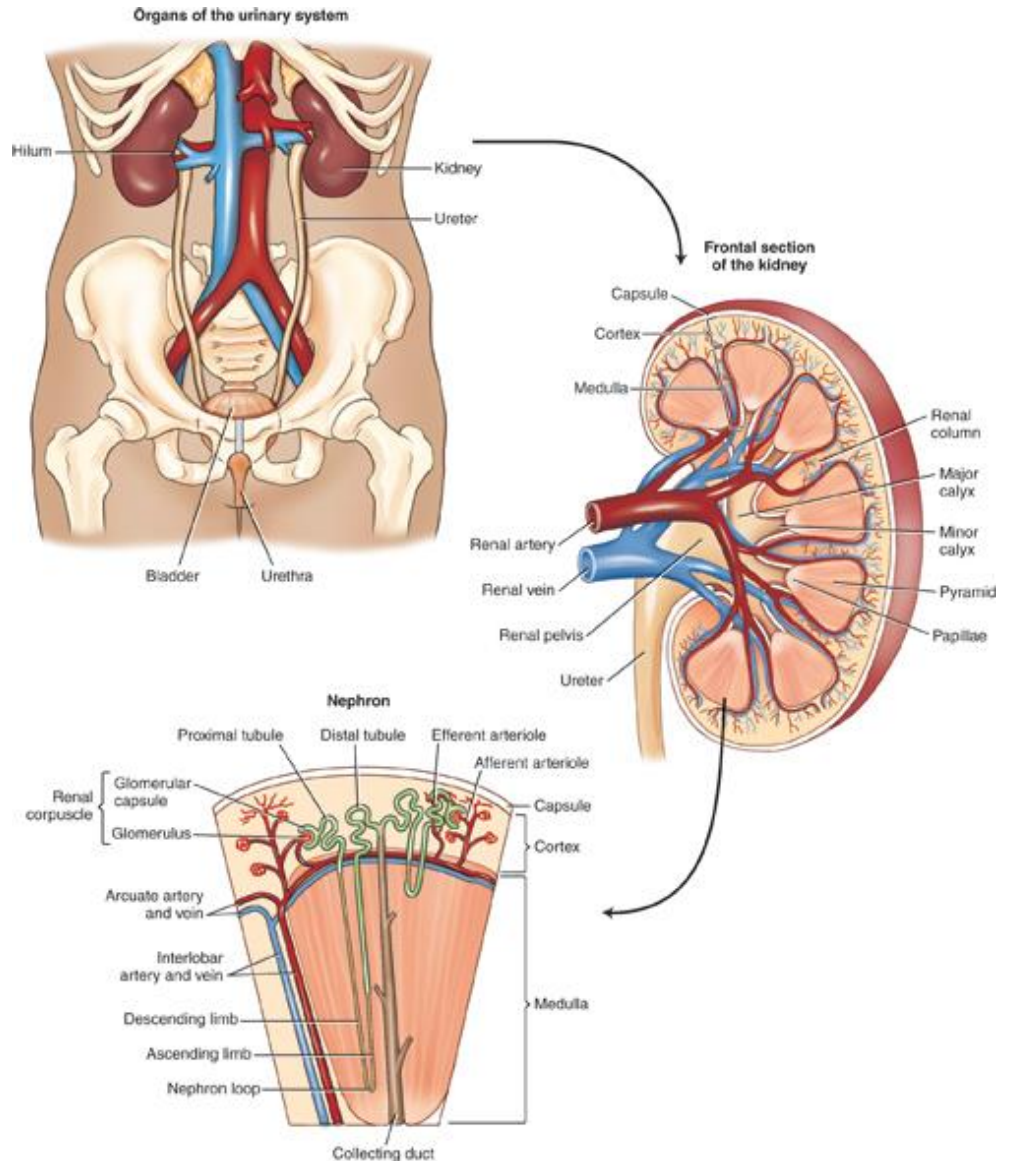


Chapter 6

Urinary System



Chapter 6

Objective 1: Pronounce organs and anatomic structures of the urinary system.

Pronounce Urinary System Organs and Anatomic Structures Review

Select the pronunciation of the anatomic structure defined.

ANSWER CHOICES

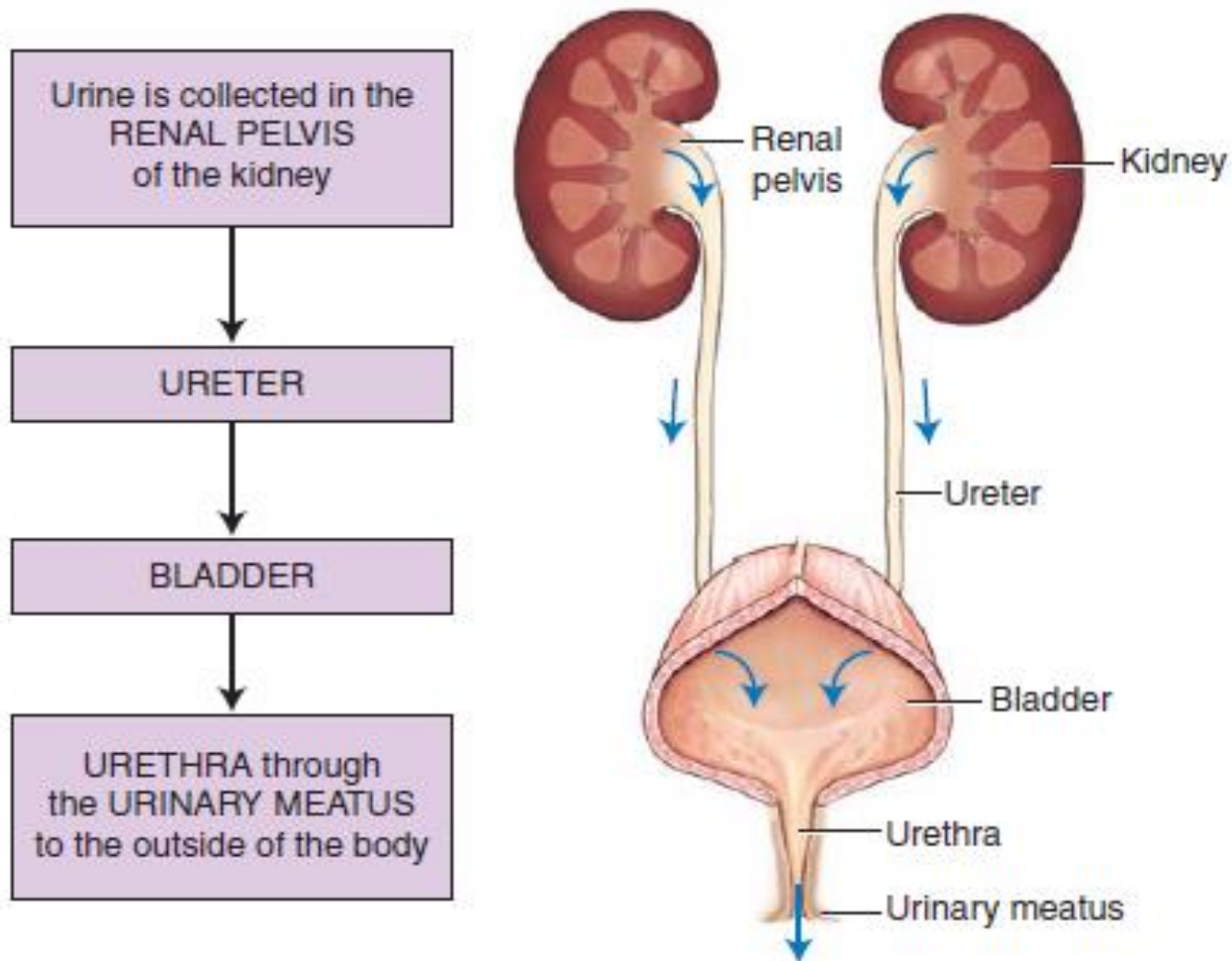
(KID-nēz) (glō-MER-ū-lus) (ū-RĒ-thra) (NEF-ron) (Ū-ri-nar-ē) (BLAD-er) (Ū-re-ters)

1. cluster of capillaries in kidney where urine begins to form
2. outside opening through which the urine passes
3. organs that remove waste products from the blood
4. reservoir within the kidney that collects the urine
5. carries urine from the kidneys to the urinary bladder
6. carries urine from the bladder to the urinary meatus

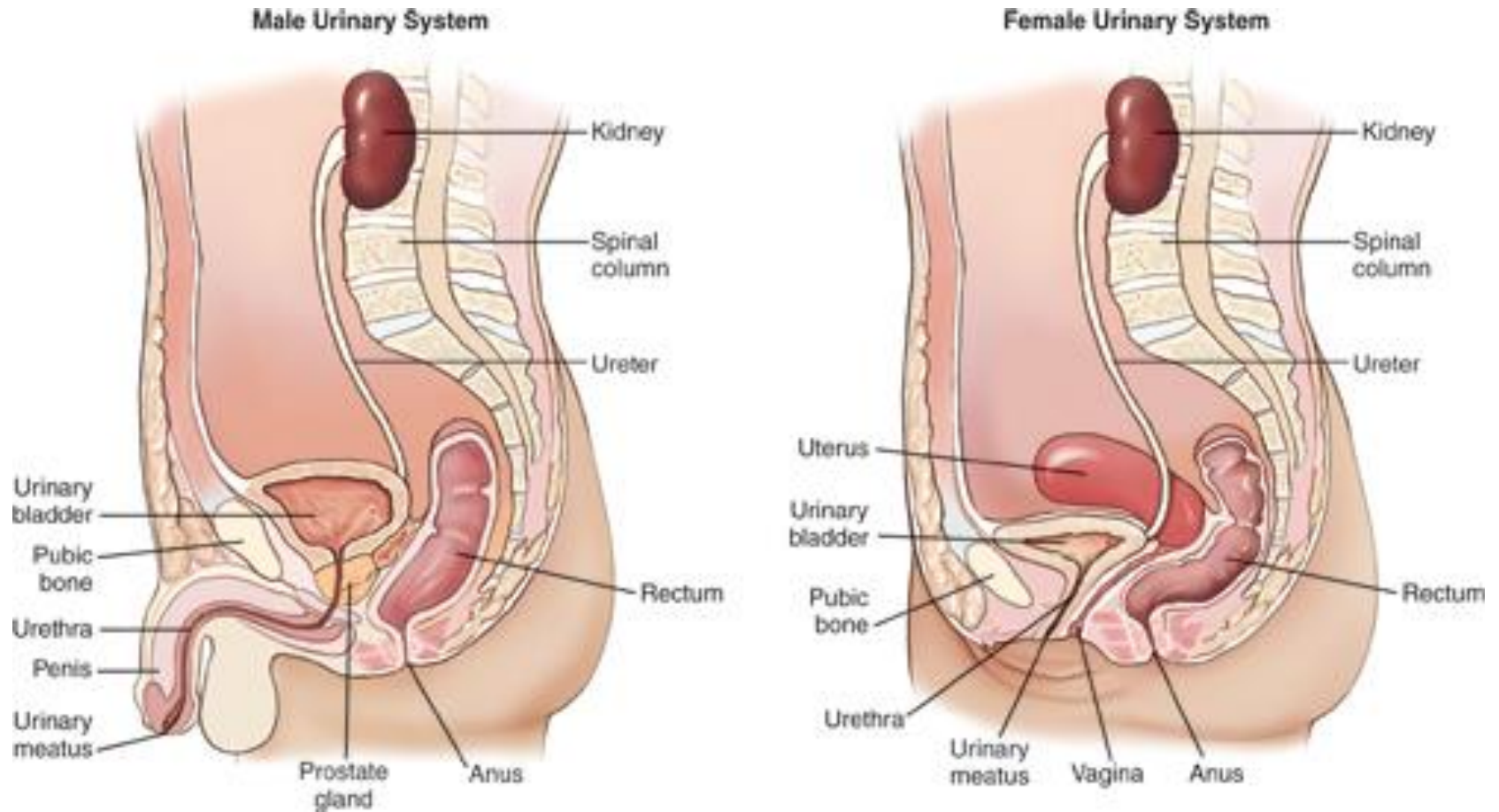
ANSWERS

1. (glō-MER-ū-lus)
2. (Ū-ri-nar-ē)
(mē-Ā-tus)
3. (KID-nēz)
4. (RĒ-nal) (PEL-vis)
5. (Ū-re-ters)
6. (ū-RĒ-thra)

Flow of Urine



Male and Female Urinary System



Gender Difference: Urinary System

Female urethra, about 1.5 inches long, lies anterior to the vagina.

Male urethra, about 8 inches long, extends downward through the prostate gland.

Which gender contracts bladder infections more easily?

Women do because of the structural difference.

Chapter 6

Objective 2: Define and spell word parts related to the urinary system.

Combining Forms for the Urinary System

Provide definitions for the following combining forms.

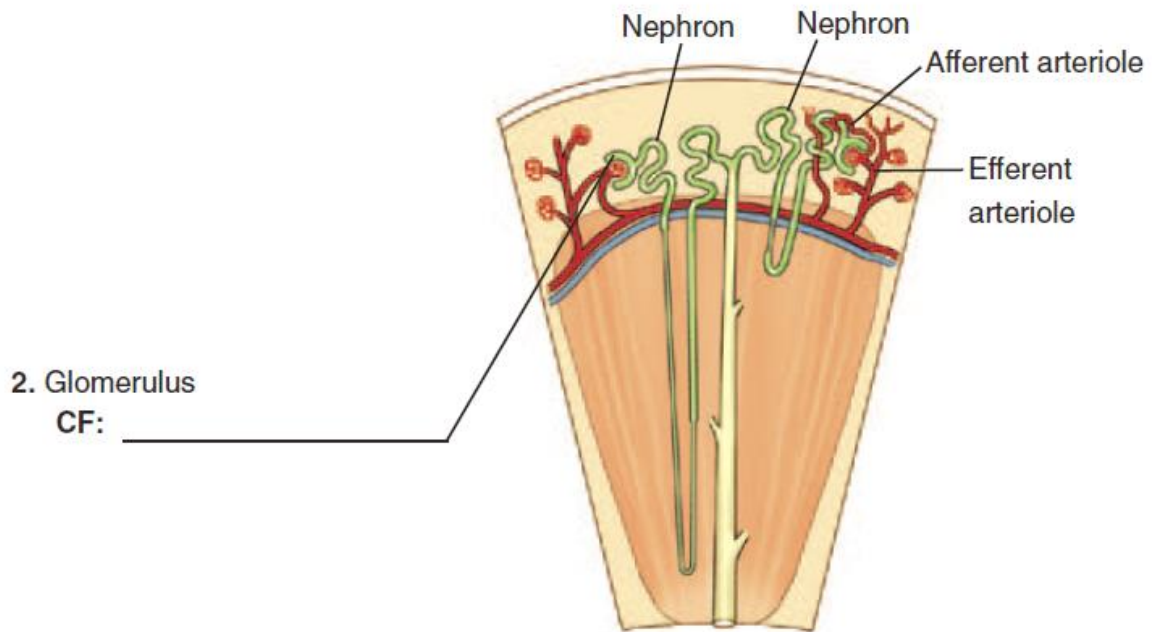
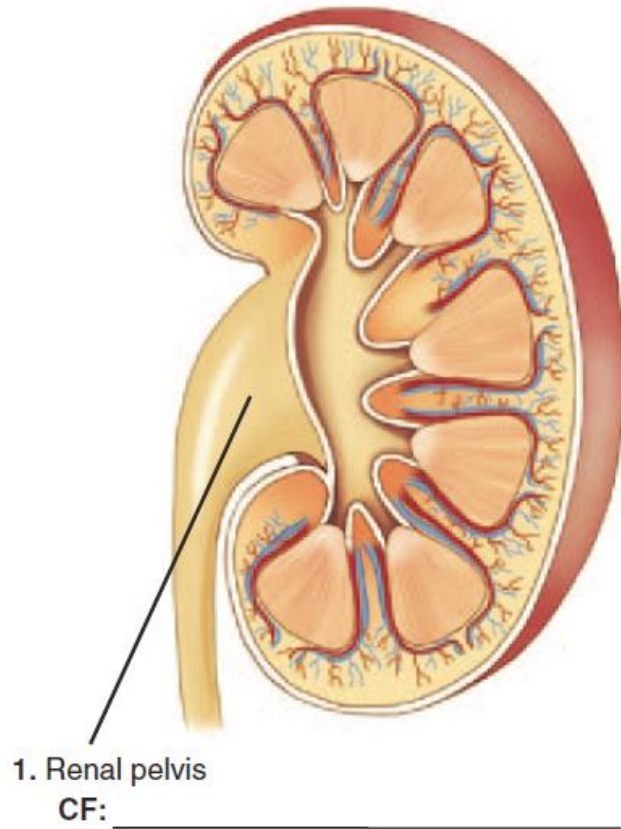
Combining Forms

1. cyst/o, vesic/o
2. glomerul/o
3. meat/o
4. nephr/o, ren/o
5. pyel/o
6. ureter/o
7. urethr/o

Definitions

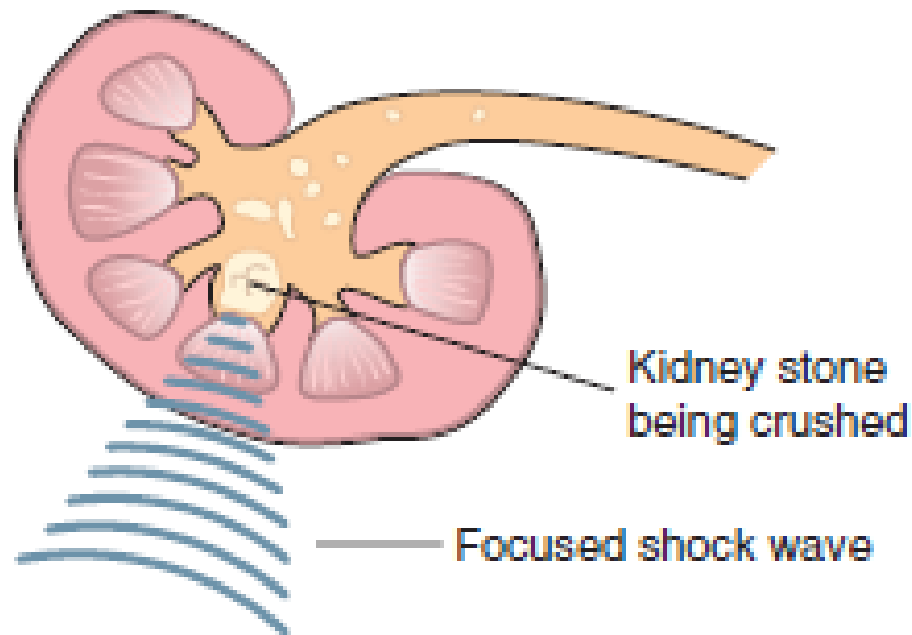
1. bladder, sac
2. glomerulus
3. meatus (opening)
4. kidney
5. renal pelvis
6. ureter
7. urethra

Review Question



SURGICAL CRUSHING

Which suffix denotes surgical crushing?



-tripsy

Three of Four Suffixes Beginning with -rrh

<u>Suffix</u>	<u>Meaning</u>	<u>Chapter</u>
-rrhea	flow, discharge	4
-rrhagia	rapid flow of blood, excessive bleeding	5
-rrhaphy	suturing, repairing	6

Diagnostic Suffixes -gram, -graphy

-gram (s) the record,
radiographic image

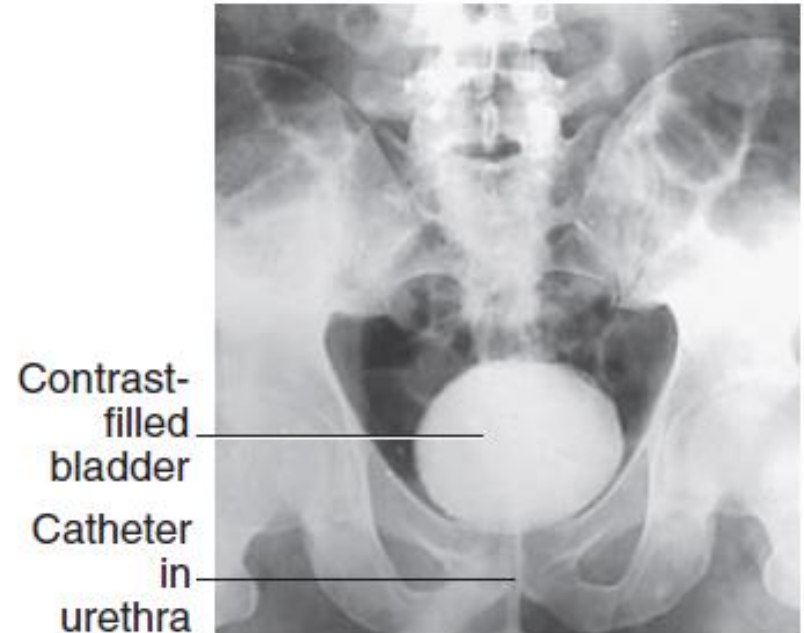
cystogram

radiographic image (x-ray) of the bladder

-graphy (s) process
of recording,
radiographic imaging

cystography

radiographic imaging
of the bladder



CYSTOGRAM

Review Question

olig/o is a:

- a) word root
- b) combining vowel
- c) combining form
- d) suffix

Chapter 6

Objective 3: Define, pronounce, and spell disease and disorder terms related to the urinary system.

Disease and Disorder Terms

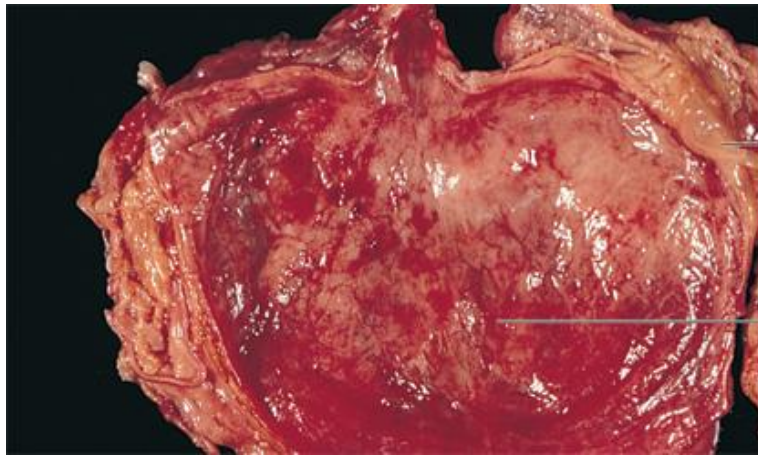
Built from Word Parts – Identify and Define the Suffix

- | | |
|-------------------------------|--------------------------|
| 1. azot emia | 1. in the blood |
| 2. cyst itis | 2. inflammation |
| 3. cysto cele | 3. protrusion |
| 4. cystolith | 4. “lith” is a word part |
| 5. glomerulonephr itis | 5. inflammation |
| 6. hydronephr osis | 6. abnormal condition |
| 7. nephr itis | 7. inflammation |
| 8. nephroblast oma | 8. tumor |
| 9. nephrolith iasis | 9. condition |

Helpful Information

- To correctly define the term **hematuria**, start at the beginning of the word.
 - **Hematuria** means blood in the urine.
 - **Azotemia**, also called *uremia*, is urea and other waste products in the blood
- To correctly define the term *uremia*, also start at the beginning of the word.
 - **Hematuria** is a symptom.
 - **Azotemia** (*uremia*) is a serious disorder.

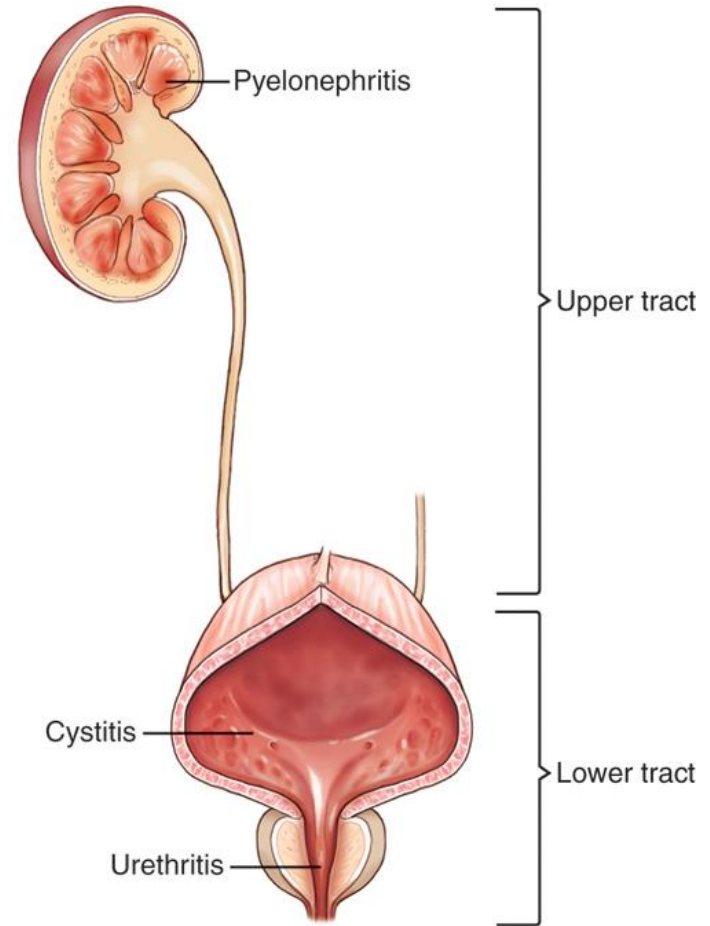
Urinary Tract Infection (UTI)



Acute Cystitis

Bladder wall

Interior of the bladder



Pyelonephritis

Upper tract

Cystitis

Lower tract

Urethritis

Upper and Lower Urinary Tract Infections

Review Question

Which term means “stones in the kidney”?

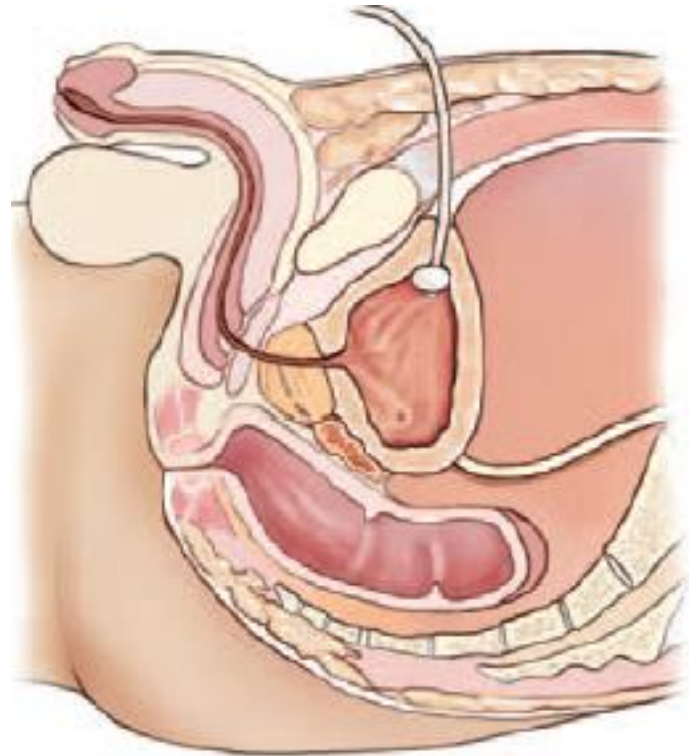
- a) renal hypertension
- b) hydronephrosis
- c) renal calculi
- d) nephromegaly

Chapter 6

Objective 4: Define, pronounce, and spell surgical terms related to the urinary system.

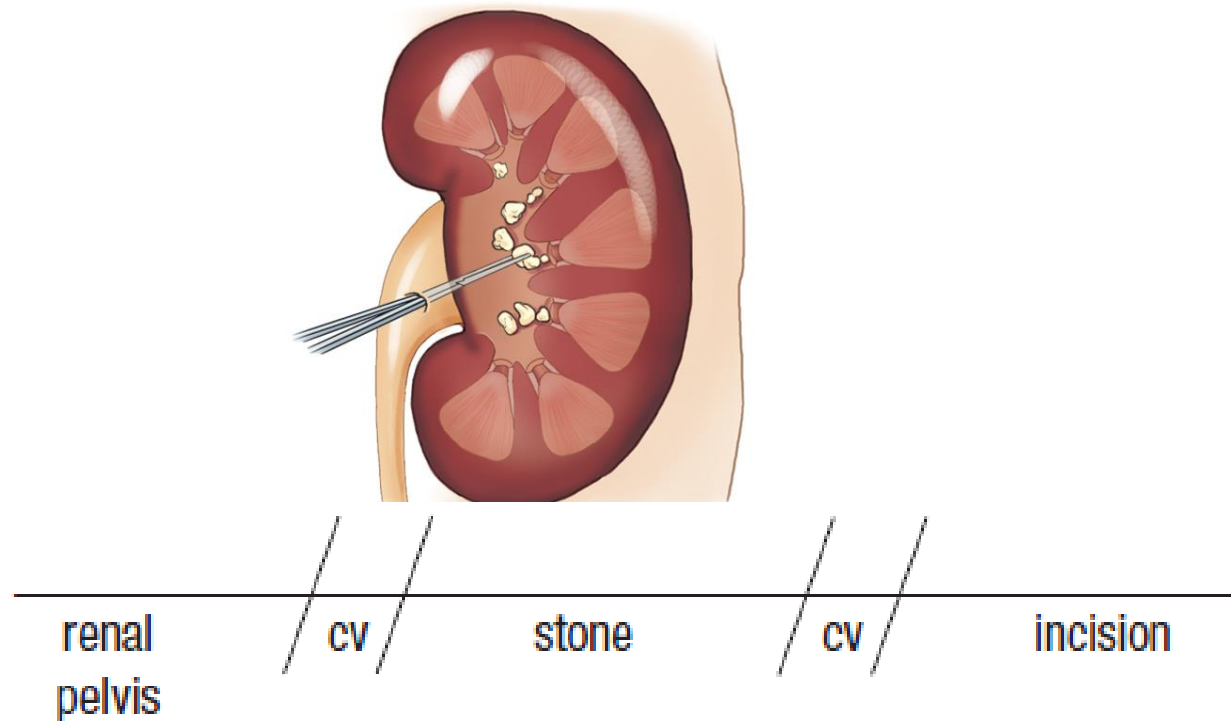
Surgical Terms Built from Word Parts

- cystectomy
- cystolithotomy
- cystorrhaphy
- **cystostomy**
- cystotomy, vesicotomy
- lithotripsy
- meatotomy
- nephrectomy
- nephrolithotomy



cyst	/ o /	stomy
bladder	cv	creation of an artificial opening

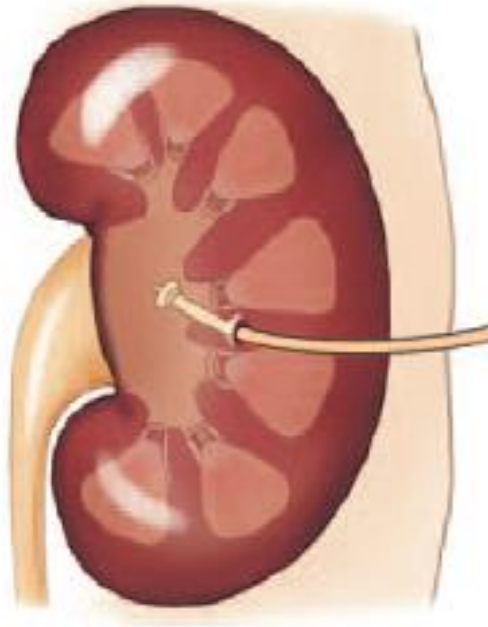
Review Question



The correct term to label the diagram is?

- a) pyelolithostomy
- b) pyelolithotomy

Fill in the blanks to label the diagram.

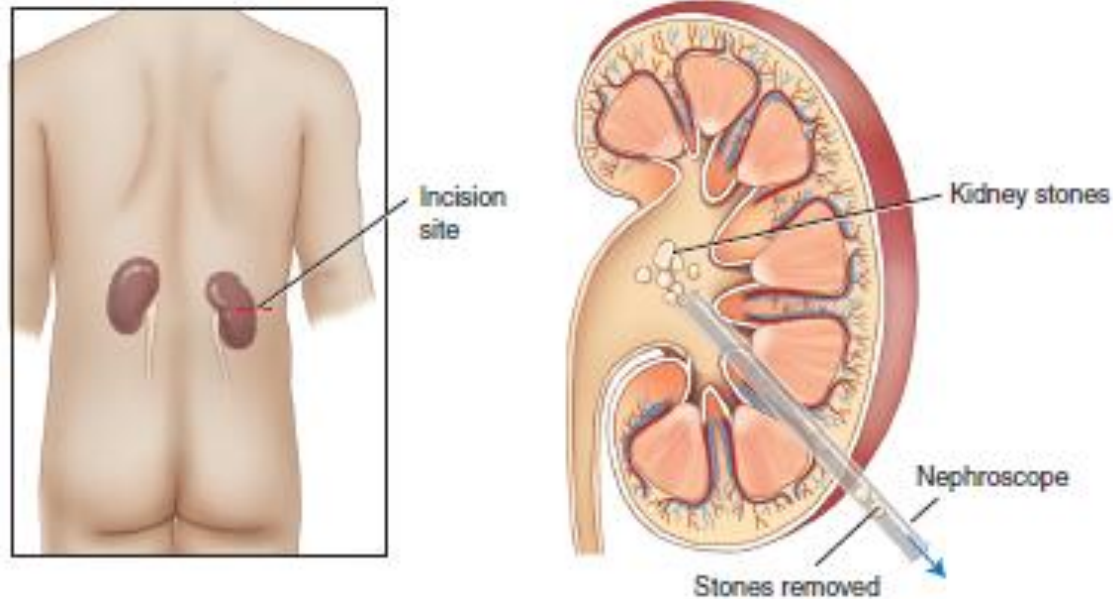


Percutaneous nephro stomy to

kidney cv creation of an artificial opening

allow introduction of a catheter for urinary drainage.

Percutaneous Nephrolithotomy



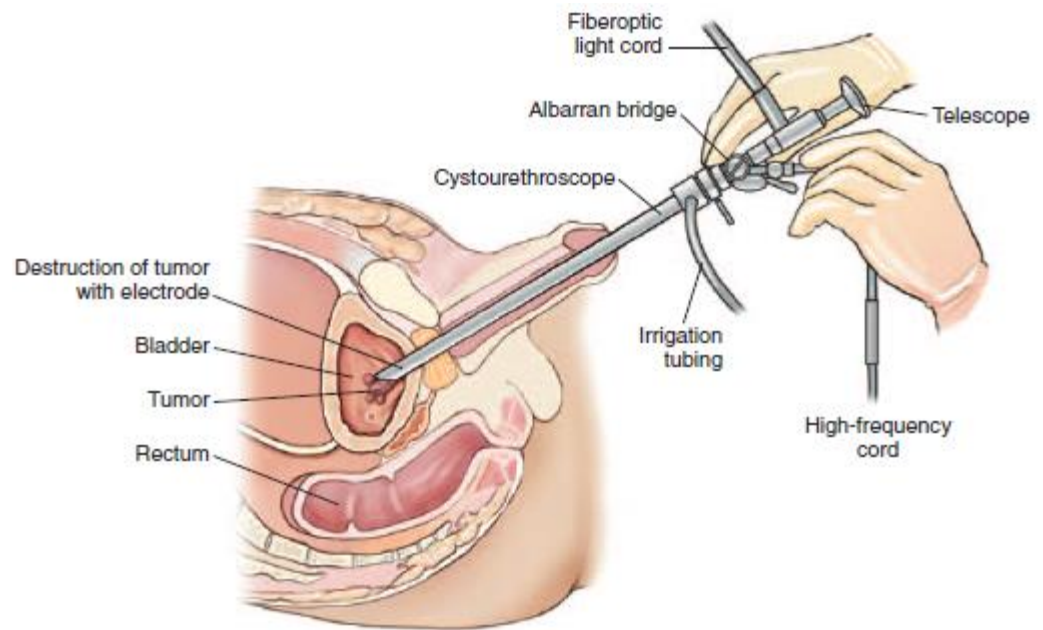
per- (P) through; cutane/o (CF) skin; -ous (S) pertaining to
per/cutane/ous - *pertaining to through the skin*

nephr/o (CF) kidney; lith/o (CF) stone; -tomy (S) cut into, incision
nephr/o/lith/o/tomy - *incision into the renal pelvis to remove stone(s)*

Surgical Terms

Not Built from Word Parts

- extracorporeal shock wave lithotripsy (ESWL)
- fulguration
- renal transplant

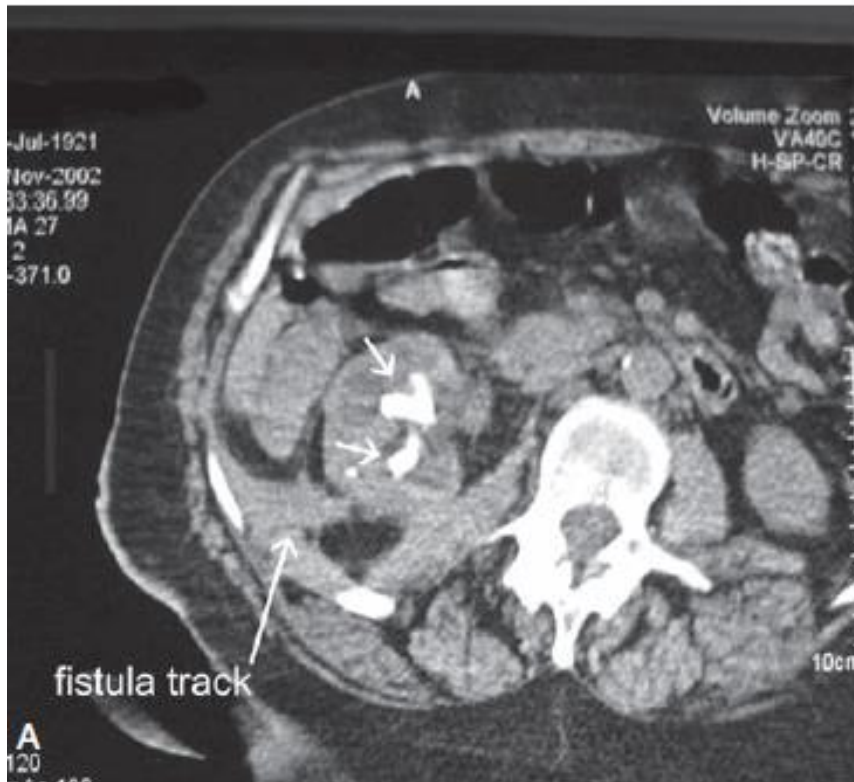


bladder fulguration

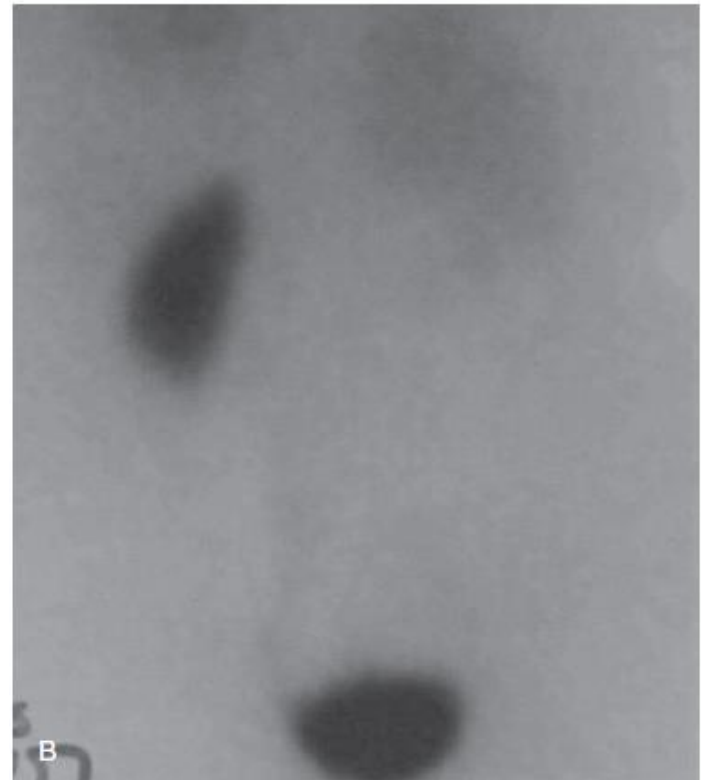
Chapter 6

Objective 5: Define, pronounce, and spell diagnostic terms related to the urinary system.

Diagnostic Terms Built from Word Parts - Diagnostic Imaging (1 of 2)



CT scan of the kidney
(transverse view)

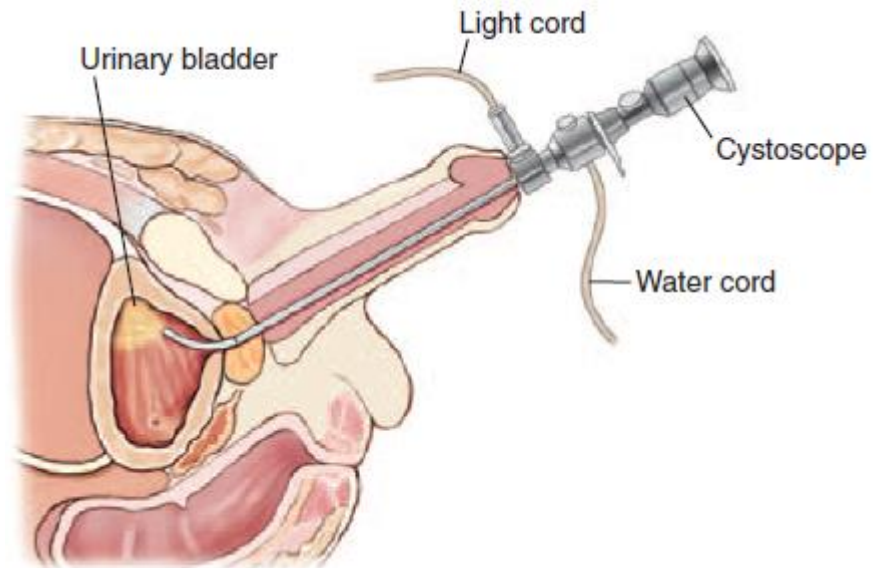


Renogram

Diagnostic Terms Built from Word Parts (2 of 2)

Endoscopy

- cystoscopy
- nephroscopy
- ureteroscopy
- cystoscope



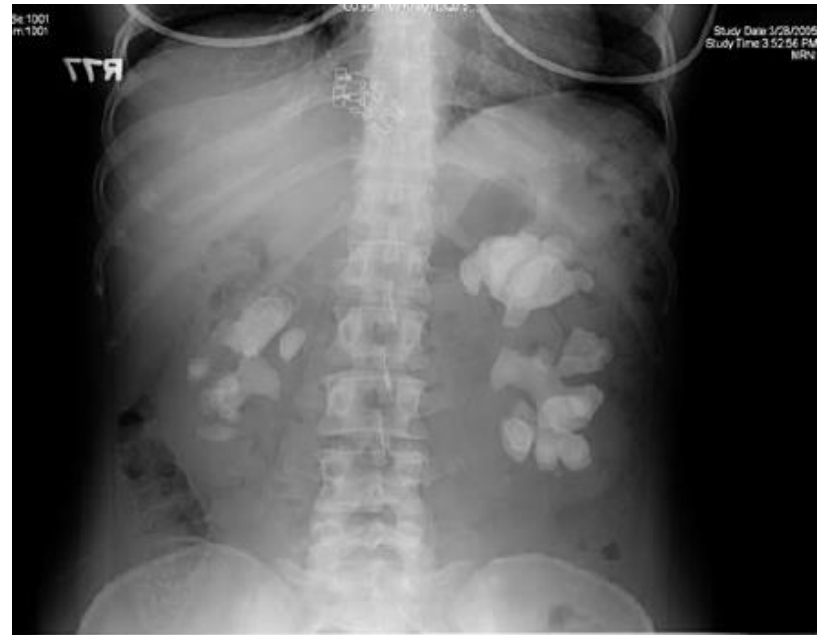
Diagnostic Terms Not Built from Word Parts

- **Diagnostic Imaging**

- KUB
(kidney, ureter, and bladder)

- **Laboratory**

- blood urea nitrogen (BUN)
- creatinine
- specific gravity (SG)
- urinalysis (UA)



Review Question

Which of the following may be used to diagnose a stone in the tube leading from the kidney to the bladder?

- a) cystoscopy
- b) nephroscopy
- c) ureteroscopy
- d) renogram

Chapter 6

Objective 6: Define, pronounce, and spell complementary terms related to the urinary system.

-uria (urine, urination)

Describes the urine or urination

- albumin
- absence
- difficult or painful
- sugar (glucose)
- blood
- night
- pus

Build a term

- albuminuria
- anuria
- dysuria
- glycosuria
- hematuria
- nocturia
- polyuria

Electrolytes

Electrolytes are minerals in the body, such as sodium and potassium, that carry an electric charge. Electrolyte balance is necessary for the body to function normally and is maintained by the kidneys.

An electrolyte panel measures the blood levels of these important **electrolytes**:

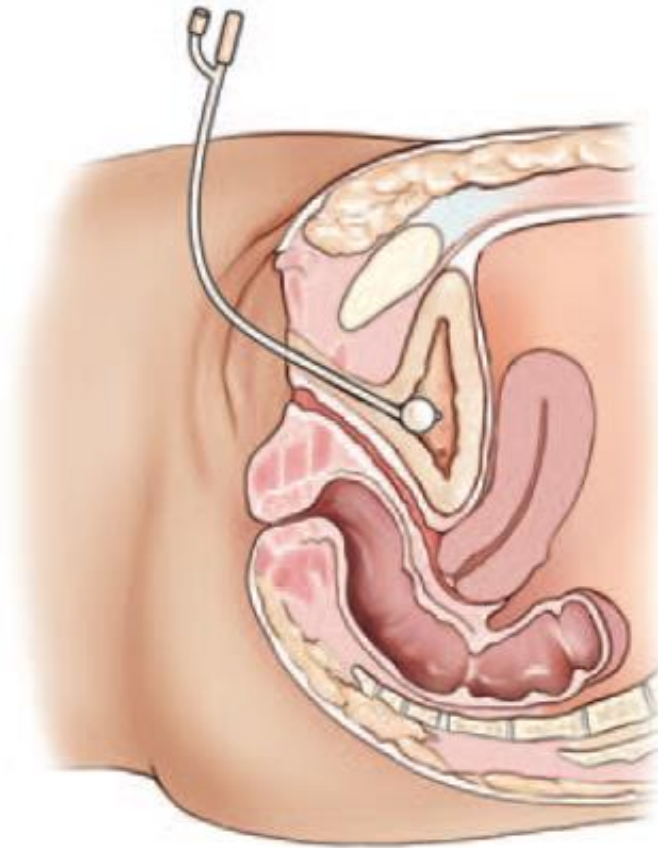
Carbon Dioxide (Bicarbonate) (HCO_3^-)

Chloride (Cl^-)

Potassium (K^+)

Sodium (Na^+)

Review Question



urin / **ary** catheterization
urine / pertaining to

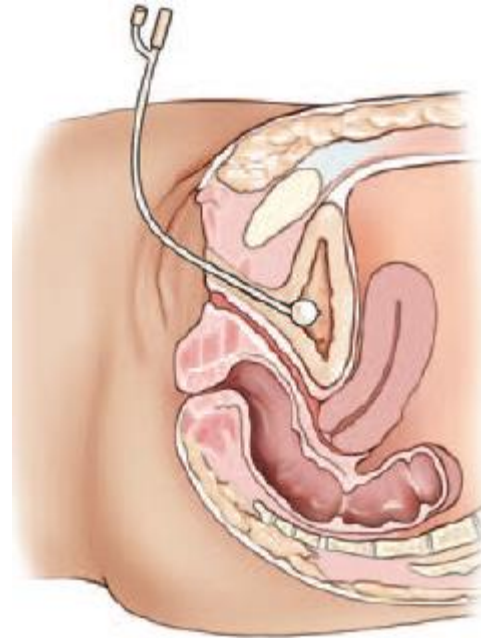
Chapter 6

Objective 7: Interpret the meaning of abbreviations related to the urinary system.

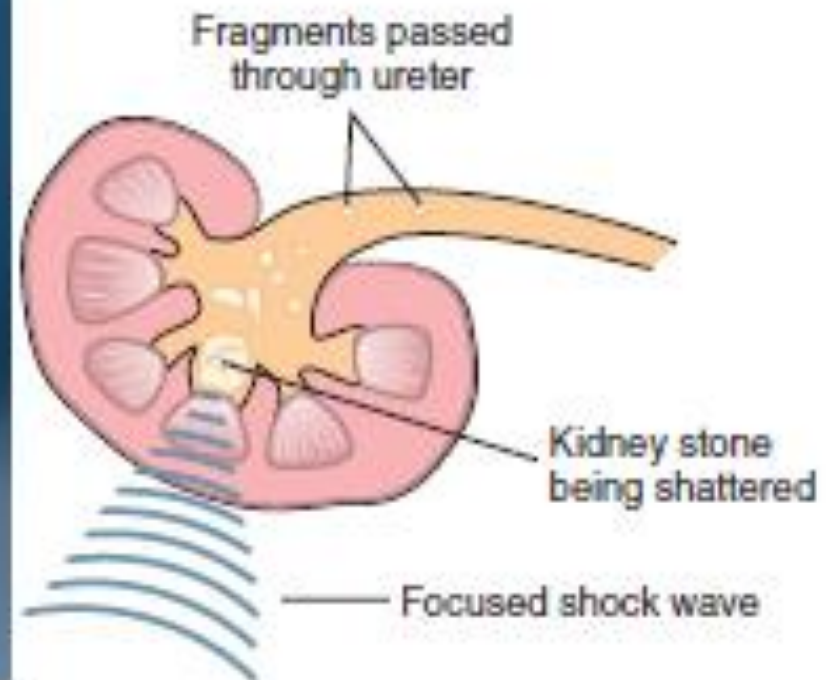
Review Question

Which of the following may be used to withdraw or instill fluids?

- a) ESWL
- b) VCUG
- c) cath
- d) SC



What is the abbreviation for this procedure?



ESWL

Chapter 6

Objective 8: Apply medical language in clinical contexts.

Pronounce Medical Terms in Use

A 76-year-old woman consulted with her primary care physician because of **hematuria** (*hēm-a-TŪ-rē-a*) and **dysuria** (*dis-Ū-rē-a*). She was referred to a **urologist** (*Ū-ROL-o-jist*). **Urinalysis** (*Ū-rin-AL-is-is*) disclosed 1+ albumin and mild **pyuria** (*pī-Ū-rē-a*) in addition to the hematuria. A spiral CT scan was obtained. Mild **nephrolithiasis** (*nefrō-lith-Ī-a-sis*) was observed but no **hydronephrosis** (*hī-drō-ne-FRŌ-sis*). Finally a **cystoscopy** (*sis-TOS-ko-pē*) was performed, which showed mild **cystitis** (*sis-TĪ-tis*). A **urinary tract infection** (*Ū-rin-ār-ē*) (*trakt*) (*in-FEK-shun*) was diagnosed and the patient responded favorably to antibiotics. The urologist did not advise **lithotripsy** (*LITH-ō-trip-sē*) for the **renal calculi** (*RĒ-nal*) (*KAL-kū-lī*).

Comprehend Medical Terms in Use

(1 of 2)

Test your comprehension of terms in the previous medical document by circling the correct answer.

1. Symptoms that prompted the patient to seek treatment from the urologist were:
 - a. scanty urine and painful urination
 - b. painful urination and bloody urine
 - c. pus and blood in the urine
 - d. sugar and blood in the urine

Comprehend Medical Terms in Use

(2 of 2)

2. The CT image revealed _____ in the kidney.
- a. stones
 - b. blood
 - c. water
 - d. tumors
3. Which of the following was rejected as treatment for kidney stones?
- a. urinalysis
 - b. urogram
 - c. cystoscopy
 - d. lithotripsy

GROSS vs. MICROSCOPIC

Preoperative diagnosis: Urinary tract obstruction

Postoperative diagnosis: Ureterolithiasis

Surgery Performed: Ureteroscopy with calculus extraction

The patient, a 31-year-old previously healthy male, presented with complaints of left flank pain, oliguria, nausea, and chills. The patient denied gross hematuria. CT urogram revealed presence of a left proximal ureteral stone.

Procedure: The patient was placed in the dorsal lithotomy position. The area was draped and prepared in the standard manner. Thirty mL of topical anesthesia (1% Lidocaine) was administered, and a penile clamp was applied to ensure retention. The ureteroscope was inserted, with access to the middle third of the ureter gained by passing a guidewire under fluoroscopic control. The guidewire was advanced beyond the stone, and the calculus was delivered through the ureter, engaged in a retrieval basket, and removed. The patient tolerated the procedure well and left the operating room in good condition.

Electronically signed: Martina Blancartt, MD 05/21/20XX 15:37

Hematuria, or blood in the urine, is diagnostically assessed with the eye and more precisely with a microscope. **Gross** refers to that which can be seen with the naked eye. **Microscopic** examination of urine will reveal the number of red blood cells (RBCs) in the sample. Fewer than three RBCs per high power field (RBC/HPF) are considered normal.