CHAPTER 9
URINARY SYSTEM

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MEDIA LIBRARY

Student DVD-ROM
- Twelve different interactive learning games
- Flash card generator
- Audio Glossary
- Professional Profile video—Registered dietician
- Body Rhythms
- Terminology Translator

Companion Website
- Multiple Choice, True/False, and Fill-in-the-Blank practice questions
- Labeling exercises
- Case study
- Additional Professional Profile information
- New York Times link for research into specific pathologies
- Web Destination activities
- Audio Glossary
- Link to VangoNotes
- Link to drug updates

IRDVD
- Animations
- 3D interactive animation of urinary system anatomy
- Blood flow into the glomerulus and production of filtrate
- Catheterization
- Drag-and-drop labeling activity for urinary system anatomy
- Videos
- Urinalysis
- Renal failure
- Kidney stones
- Peritoneal dialysis
- Digital library of all figures from text chapter, labeled and unlabeled
- Test bank with 200 objective questions per chapter plus two short answer questions
- 20 classroom response questions
- PowerPoint presentation for classroom or online utilization
OBJECTIVE 1
Identify and define the combining forms and suffixes introduced in this chapter.

Text pages: 280; PowerPoint slides: 6–9

LECTURE NOTES
Combining Forms
azot/o
bacteri/o
cyst/o
glomerul/o
glycos/o
keron/o
lith/o
meat/o
nephrt/o
noct/i
olig/o
pyel/o
ren/o
ur/o
ureter/o
urethr/o
urin/o

Meaning
nitrogenous waste
bacteria
bladder
glomerulus
sugar, glucose
ketones
stone
meatus
kidney
night
scanty
renal pelvis
kidney
urine
ureter; urinary tube
urethra
urine

Suffixes
-lith
-lithiasis
-prosis
-tripsy
-uria

Meaning
stone
condition of stones
drooping
surgical crushing
condition of the urine

TEACHING STRATEGIES
Medical Terminology Bee
• Create PowerPoint flash cards of new combining forms and suffixes presented in this chapter; have all students stand and then define word part; if student is correct, he or she remains standing; if student is wrong, he or she sits down; continue until only one student is standing.

LEARNING ACTIVITIES
Worksheet 9A
• New Combining Form and Suffix Handout

Text
• Practice Exercises

Student DVD-ROM
• Learning games
• Make flash cards

CW
• Practice questions

ASSESSMENTS
Quiz 9A—New Word Parts Quiz
Test Bank—Fill-in-the-Blank questions

OBJECTIVE 2
Correctly spell and pronounce medical terms and major anatomical structures relating to the urinary system.

LECTURE NOTES
Pronunciation for medical terms in this chapter can be found:
• In parentheses following key terms
• In the Audio Glossary on Student DVD-ROM
• In the Audio Glossary at Companion Website

TEACHING STRATEGIES
Emphasize to students:
• Importance of correctly spelling terms.
• How sounding out terms can assist in learning how to spell the terms.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension of spelling strategies.

LEARNING ACTIVITIES
Worksheet 9B
• Medical Term Analysis
OBJECTIVE 3
Locate and describe the major organs of the urinary system and their functions.

LECTURE NOTES

Kidneys
• Two kidneys located in lumbar region of back behind peritoneum; term for this location is retroperitoneal; main function is to filter and remove waste products from blood
  Internal structures include:
  • Cortex—outer shell-like portion
  • Medulla—inner area
  • Pyramids—triangular-shaped structures visible in medulla

TEACHING STRATEGIES

Visual Aids
• Use full-size anatomical charts and models to illustrate organs.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.
OBJECTIVE 4
Describe the nephron and the mechanisms of urine production.


LECTURE NOTES

Nephron
• Functional or working unit of kidney; each consists of renal corpuscle and renal tubule
  • Renal corpuscle—double-walled cuplike structure called glomerular or Bowman’s capsule; blood-filtering portion of nephron; capsule contains twisted group of capillaries called glomerulus
  • Renal tubule divided into four areas: (1) proximal convoluted tubule, (2) loop of Henle, (3) distal convoluted tubule, (4) collecting tubule

Urine Production
• Three stages of urine production:
  • Filtration—first stage is filtering of blood; occurs in renal corpuscle; process of removing water, sugar, amino acids, electrolytes, and

TEACHING STRATEGIES

Visual Aids
• Use full-size anatomical charts and models to illustrate how nephron structure relates to its functioning.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

IRDVD
• See PowerPoint presentation on the Instructor’s Resource DVD for an animation illustrating blood flow into the glomerulus and the production of filtrate.

Papilla—tip of each renal pyramid
Calyx—small open area that receives urine from each papilla
Renal pelvis—large open area that receives urine from each calyx and empties into ureter

Ureters
• Urine drains down ureter from kidney into urinary bladder; ureters are very narrow tubes extending from renal pelvis to urinary bladder

Urinary Bladder
• Elastic muscular sac lying in base of pelvis; receives urine directly from ureters; stores urine and excretes it through urethra

Urethra
• Tubular canal carries urine from bladder to outside of body; external opening is called urinary meatus
other materials from blood by moving fluid out of glomerulus and into Bowman’s capsule
- Reabsorption—process begins after filtration when filtrate passes through four sections of tubule; as filtrate moves along its twisted journey, most water and some desirable substances, such as glucose and amino acids, are reabsorbed into bloodstream
- Secretion—final stage occurs when special cells of collecting tubules secrete ammonia, uric acid, and other substances directly into tubule; urine formation is now finished and it is passed from collecting tubules to renal pelvis

### OBJECTIVE 5

Identify the characteristics of urine and a urinalysis.

Text pages: 286–287; PowerPoint slides: 40–43

#### LECTURE NOTES

**Normal Urinalysis Findings**

- **Color**
  - Straw colored, pale yellow, to deep gold
- **Odor**
  - Aromatic
- **Appearance**
  - Clear
- **Specific gravity**
  - 1.010–1.030
- **pH**
  - 5.0–8.0
- **Protein**
  - Negative to trace
- **Glucose**
  - None
- **Ketones**
  - None
- **Blood**
  - Negative

#### Implications of Abnormal Urinalysis

- **Color**—varies depending on patient’s fluid intake and output or medication; brown or black color indicates serious disease process
- **Odor**—fetid or foul may indicate infection; fruity odor may be found in diabetes mellitus, dehydration, or starvation; other odors may be due to medication or foods
- **Appearance**—cloudiness may mean presence of infection
- **Specific gravity**—concentrated urine has higher specific gravity; dilute urine, such as with diabetes insipidus, acute tubular necrosis, or salt-restricted diets, has lower specific gravity
- **pH**—value below 7.0 (acidic) is common in urinary tract infections, metabolic or respiratory acidosis, diets high in fruits or vegetables, or administration of some drugs; higher than 7.0 (basic or alkaline) is common in metabolic or respiratory alkalosis, fever, high-protein diets, and when taking ascorbic acid
- **Protein**—may indicate glomerulonephritis or preeclampsia in pregnant woman

#### TEACHING STRATEGIES

- Review actual urinalysis report.

#### IRDVD

- See PowerPoint presentation on the Instructor’s Resource DVD for video on the topics of Urinalysis and Specimen Collection.

#### Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

#### LEARNING ACTIVITIES

**Worksheet 9C**

- Chapter Review

**Text**

- Practice Exercises

**Student DVD-ROM**

- Various questions in learning games

**CW**

- Practice questions

#### ASSESSMENTS

**Test Bank**—questions
• Glucose—small amounts may be present as result of eating high-carbohydrate meal, stress, pregnancy, and when taking some medications, such as aspirin or corticosteroids; higher levels may indicate poorly controlled diabetes, Cushing's syndrome, or infection
• Ketones—presence may indicate poorly controlled diabetes, dehydration, starvation, or ingestion of large amounts of aspirin
• Blood—may indicate some anemias; presence of certain medications (such as blood thinners); arsenic poisoning; reactions to transfusion, trauma, burns, and convulsions

OBJECTIVE 6
Build and define urinary system medical terms from word parts.
Text pages: 288–290; PowerPoint slides: 44–56

LECTURE NOTES

<table>
<thead>
<tr>
<th>Combining Form</th>
<th>Medical Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>cys/o</td>
<td>cystalgia</td>
<td>bladder pain</td>
</tr>
<tr>
<td></td>
<td>cystectomy</td>
<td>excision of bladder</td>
</tr>
<tr>
<td></td>
<td>cystogram</td>
<td>record of bladder</td>
</tr>
<tr>
<td></td>
<td>cystic</td>
<td>pertaining to bladder</td>
</tr>
<tr>
<td></td>
<td>cystitis</td>
<td>bladder inflammation</td>
</tr>
<tr>
<td></td>
<td>cystolith</td>
<td>bladder stone</td>
</tr>
<tr>
<td></td>
<td>cystostomy</td>
<td>create new opening into bladder</td>
</tr>
<tr>
<td></td>
<td>cystotomy</td>
<td>incision into bladder</td>
</tr>
<tr>
<td></td>
<td>cystopty</td>
<td>surgical fixation of bladder</td>
</tr>
<tr>
<td></td>
<td>cystoplasty</td>
<td>surgical repair of bladder</td>
</tr>
<tr>
<td></td>
<td>cystorrhagia</td>
<td>rapid bleeding from bladder</td>
</tr>
<tr>
<td></td>
<td>cystoscope</td>
<td>instrument used to visually examine bladder</td>
</tr>
<tr>
<td>lth/o</td>
<td>lithotripsy</td>
<td>surgical crushing of a stone</td>
</tr>
<tr>
<td></td>
<td>lithotomy</td>
<td>incision to remove a stone</td>
</tr>
<tr>
<td>nephr/o</td>
<td>nephrectomy</td>
<td>excision of a kidney</td>
</tr>
<tr>
<td></td>
<td>nephrogram</td>
<td>X-ray of kidney</td>
</tr>
<tr>
<td></td>
<td>nephritis</td>
<td>kidney inflammation</td>
</tr>
<tr>
<td></td>
<td>nephrolith</td>
<td>kidney stone</td>
</tr>
<tr>
<td></td>
<td>nephrologist</td>
<td>specialist in kidney</td>
</tr>
<tr>
<td></td>
<td>nephromalacia</td>
<td>softening of kidney</td>
</tr>
<tr>
<td></td>
<td>nephromegaly</td>
<td>enlarged kidney</td>
</tr>
<tr>
<td></td>
<td>nephroma</td>
<td>kidney tumor</td>
</tr>
<tr>
<td></td>
<td>nephrosis</td>
<td>abnormal kidney condition</td>
</tr>
<tr>
<td></td>
<td>nephroptosis</td>
<td>drooping kidney</td>
</tr>
<tr>
<td></td>
<td>nephrostomy</td>
<td>create new opening into kidney</td>
</tr>
<tr>
<td></td>
<td>nephrotomy</td>
<td>incision into kidney</td>
</tr>
<tr>
<td></td>
<td>nephropathy</td>
<td>kidney disease</td>
</tr>
<tr>
<td></td>
<td>nephroscopy</td>
<td>surgical fixation of (floating) kidney</td>
</tr>
<tr>
<td></td>
<td>nephrolithiasis</td>
<td>condition of kidney stones</td>
</tr>
<tr>
<td></td>
<td>nephrosclerosis</td>
<td>hardening of the kidney</td>
</tr>
</tbody>
</table>

TEACHING STRATEGIES
• Reinforce how many words in the urinary system can be constructed from word parts.
• Read aloud urinary system words that are made up of word parts; have students identify parts and define terms, either aloud or individually on paper.
• Write sentences on the board using common words; have students substitute correct medical terms.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES
Worksheet 9B
• Medical Term Analysis
Worksheet 9C
• Chapter Review
Quiz 9E
• May be used as a worksheet

Text
• Practice Exercises
• Terminology Checklist

Student DVD-ROM
• Learning games
• Flash cards

CW
• Practice questions
OBJECTIVE 7
Identify and define urinary system vocabulary terms.
Text pages: 290–291; PowerPoint slides: 57–61

**LECTURE NOTES**

- anuria: complete suppression of urine formed by kidneys and a complete lack of urine excretion
- azotemia: accumulation of nitrogenous waste in bloodstream; occurs when kidney fails to filter these wastes from blood
- calculus: stone formed within organ by accumulation of mineral salts; found in kidney, renal pelvis, ureters, bladder, or urethra; plural is calculi
- catheter: flexible tube inserted into body for purpose of moving fluids into or out of body; most commonly used in reference to a tube threaded through urethra into bladder to withdraw urine
- diuresis: increased formation and secretion of urine

**TEACHING STRATEGIES**

- Write sentences on the board using common words; have students substitute correct medical terms.
- Jeopardy Game
  - Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Pathology, Diagnostic, and Therapeutic terms.
- Pop Questions
  - Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

**PREFIXES**

- ren/o: renal pertaining to kidneys
- ut/o: urologist specialist in urinary system
- urology: study of urinary system
- ureter/o: ureteral pertaining to ureter
- ureterectasis: ureter dilation
- ureterolith: ureter stone
- ureterostenosis: narrowing of ureter
- urethr/o: urethral pertaining to the urethra
- urethralgia: urethra pain
- urethritis: urethra inflammation
- urethrorrhagia: rapid bleeding from urethra
- urethroscope: instrument to visually examine urethra
- urethrosténosis: narrowing of urethra
- urin/o: urinometer instrument to measure urine
- urinary: pertaining to urine

**SUFFIXES**

- -uria: anuria condition of no urine (produced by kidney)
  - bacteriuria: bacteria in urine
  - dysuria: condition of difficult or painful urination
  - glycosuria: condition of sugar in urine
  - hematuria: condition of blood in urine
  - ketonuria: ketones in urine
  - nocturia: condition of frequent nighttime urination
  - oliguria: condition of scanty amount of urine
  - polyuria: condition of (too) much urine
  - proteinuria: protein in urine
  - pyuria: condition of pus in urine

**ASSSESSMENTS**

- Quiz 9E—Word Building Quiz
- Quiz 9G—Chapter Review
- Test Bank—questions
enuresis
involuntary discharge of urine after age by which bladder control should have been established; usually by age 5; also called bed-wetting at night

frequency
greater-than-normal occurrence in urge to urinate, without increase in total daily volume of urine; frequency is indication of inflammation of bladder or urethra

hesitancy
decrease in force of urine stream, often with difficulty initiating flow; often a symptom of a blockage along urethra, such as enlarged prostate gland

micturition
another term for urination

debranch of medicine involved in diagnosis and treatment of diseases and disorders of kidney; physician is nephrologist

renal colic
pain caused by kidney stone; can be excruciating pain and generally requires medical treatment

stricture
narrowing of passageway in urinary system

uremia
accumulation of waste products (especially nitrogenous wastes) in bloodstream; associated with renal failure

urgency
feeling need to urinate immediately

urinary incontinence
involuntary release of urine; in some patients indwelling catheter is inserted into bladder for continuous urine drainage

urinary retention
inability to fully empty bladder; often indicates blockage in urethra

urology
branch of medicine involved in diagnosis and treatment of diseases and disorders of urinary system; physician is a urologist

voiding
another term for urination

LEARNING ACTIVITIES
Worksheet 9C
• Chapter Review

Text
• Practice Exercises
• Terminology Checklist
• Medical Record Analysis
• Chart Note Transcription

Student DVD-ROM
• Learning games
• Flash cards

CW
• Practice questions
• Case Study

ASSESSMENTS
Quiz 9G—Chapter Review
Test Bank—questions

OBJECTIVE 8
Identify and define selected urinary system pathology terms.
Text pages: 291–293; PowerPoint slides: 62–69

LECTURE NOTES
Kidney
acute tubular necrosis (ATN) damage to renal tubules due to presence of toxins in urine or to ischemia; results in oliguria

diabetic nephropathy accumulation of damage to glomerulus capillaries due to chronic high blood sugars of diabetes mellitus

glomerulonephritis inflammation of kidney (primarily of the glomerulus); since glomerular membrane is inflamed, it becomes more permeable and will allow protein and blood cells to enter filtrate; results in protein in urine (proteinuria) and hematuria

hydronephrosis distention of renal pelvis due to urine collecting in kidney; often result of obstruction of ureter

nephrolithiasis presence of calculi in kidney; usually begins with solidification of salts present in urine

TEACHING STRATEGIES
• Select two students to do 5-minute presentations of their Internet research in class.
• Write sentences on the board using common words; have students substitute correct medical terms.

Jeopardy Game
• Have students create questions for terms in this section for a Jeopardy game to be played in class — may be combined with Vocabulary, Diagnostic, & Therapeutic terms.

Pop Questions
• Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.
nephrotic syndrome (NS) damage to glomerulus resulting in protein appearing in urine, proteinuria, and corresponding decrease in protein in bloodstream

nephroptosis downward displacement of kidney out of normal location; commonly called floating kidney

polycystic kidneys formation of multiple cysts within kidney tissue. Results in the destruction of normal kidney tissue and uremia

pyelonephritis inflammation of renal pelvis and kidney; one of most common types of kidney disease; may be result of lower urinary tract infection that moved up to kidney by way of ureters; may be large quantities of white blood cells and bacteria in urine; blood (hematuria) may even be present in urine in this condition; can occur with any untreated or persistent case of cystitis

renal cell carcinoma cancerous tumor that arises from kidney tubule cells

renal failure inability of kidneys to filter wastes from blood resulting in uremia; may be acute or chronic; major reason for patient being placed on dialysis

Wilm's tumor malignant kidney tumor found most often in children

**Urinary Bladder**

bladder cancer cancerous tumor that arises from cells lining bladder; major symptom is hematuria

bladder neck obstruction (BNO) blockage of bladder outlet; often caused by enlarged prostate gland in males

cystocele hernia or protrusion of urinary bladder into wall of vagina

interstitial cystitis disease of unknown cause in which there is inflammation and irritation of bladder; most commonly seen in middle-aged women

neurogenic bladder loss of nervous control that leads to retention; may be caused by spinal cord injury or multiple sclerosis

urinary tract infection (UTI) infection, usually from bacteria, of any organ of urinary system; most often begins with cystitis and may ascend into ureters and kidneys; most common in women because of their shorter urethra

**ASSESSMENTS**

**Quiz 9G**—Chapter Review

**Test Bank**—questions

**IRDVD**
- See PowerPoint presentation on the Instructor's Resource DVD for video on the topics of renal failure and kidney stones

**Visual Aids**
- Obtain a copy of IVP film to show in class, possibly one displaying calculus.

**LEARNING ACTIVITIES**

**Internet research**
- Have students select a specific pathology and use Internet resources to research its symptoms, diagnosis, and treatments.

**Worksheet 9C**
- Chapter Review

**Text**
- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

**Student DVD-ROM**
- Learning games
- Flash cards

**CW**
- Practice questions
- Case Study
- Web Destination activity on kidney stones
- New York Times link for research into specific pathologies
OBJECTIVE 9
Identify and define selected urinary system diagnostic procedures.

Text pages: 293–294; PowerPoint slides: 70–76

LECTURE NOTES

Clinical Laboratory Test
- blood urea nitrogen (BUN)
- clean catch specimen
- creatinine clearance
- urinalysis (U/A, UA)
- urine culture and sensitivity (C & S)

Diagnostic Imaging
- cystography
- excretory urography (EU)
- intravenous pyelogram (IVP)
- kidney, ureter, bladder (KUB)
- retrograde pyelogram
- voiding cystourethrography (VCUG)

Endoscopic Procedure
- cystoscopy

TEACHING STRATEGIES
- Review an actual urine culture and sensitivity report.
- Write sentences on the board using common words; have students substitute correct medical terms.

IRDVD
- See PowerPoint presentation on the Instructor’s Resource DVD for a video on the topic of urinalysis.

Jeopardy Game
- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Therapeutic terms.

Pop Questions
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

LEARNING ACTIVITIES

Worksheet 9C
- Chapter Review

Text
- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM
- Learning games
- Flash cards

CW
- Practice questions
- Case Study
- New York Times link for research into specific diagnostic procedures

ASSESSMENTS

Quiz 9G—Chapter Review

Test Bank—questions
OBJECTIVE 10
Identify and define selected urinary system therapeutic procedures.

Text pages: 294–296; PowerPoint slides: 77–84

LECTURE NOTES

Medical Treatments

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheterization</td>
<td>Insertion of tube through urethra and into urinary bladder for purpose of withdrawing urine or inserting dye</td>
</tr>
<tr>
<td>Extracorporeal shockwave lithotripsy (ESWL)</td>
<td>Use of ultrasound waves to break up stones; process does not require invasive surgery</td>
</tr>
<tr>
<td>Hemodialysis (HD)</td>
<td>Use of artificial kidney machine that filters blood of person to remove waste products; use of technique in patients who have defective kidneys is lifesaving removal of toxic waste substances from body by placing warm chemically balanced solutions into peritoneal cavity; wastes are filtered out of blood across peritoneum; used in treating renal failure and certain poisonings</td>
</tr>
<tr>
<td>Peritoneal dialysis</td>
<td></td>
</tr>
</tbody>
</table>

Surgical Treatments

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithotripsy</td>
<td>Destroying or crushing stones in bladder or urethra</td>
</tr>
<tr>
<td>Meotomy</td>
<td>Incision into meatus in order to enlarge opening of urethra</td>
</tr>
<tr>
<td>Nephrolithotomy</td>
<td>Surgical incision to directly remove stones from kidney</td>
</tr>
<tr>
<td>Renal transplant</td>
<td>Surgical placement of donor kidney</td>
</tr>
</tbody>
</table>

TEACHING STRATEGIES

- Write sentences on the board using common words; have students substitute correct medical terms.

Jeopardy Game

- Have students create questions for terms in this section for a Jeopardy game to be played in class—may be combined with Vocabulary, Pathology, and Diagnostic terms.

Pop Questions

- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

Visual Aids

- Purchase a Foley catheter kit from a medical supply house and illustrate how the balloon is inflated to anchor catheter in the bladder.

IRDVD

- See PowerPoint presentation on the Instructor’s Resource DVD for video on the topics of catheterization and peritoneal dialysis.

Guest Speaker

- Invite a dialysis technician to speak to the class about hemodialysis and peritoneal dialysis.

LEARNING ACTIVITIES

Worksheet 9C

- Chapter Review

Text

- Practice Exercises
- Terminology Checklist
- Medical Record Analysis
- Chart Note Transcription

Student DVD-ROM

- Learning games
- Flash cards

CW

- Practice questions
- Case Study
- Web Destination activity on kidney transplants
- New York Times link for research into specific treatment procedures

ASSESSMENTS

Quiz 9G—Chapter Review
Test Bank—questions
**OBJECTIVE 11**

Identify and define selected medications relating to the urinary system.

Text page: 296; PowerPoint slide: 85

**LECTURE NOTES**

<table>
<thead>
<tr>
<th>Classification</th>
<th>Action</th>
<th>Generic and Brand Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antibiotics</td>
<td>used to treat bacterial infections of urinary tract</td>
<td>ciprofloxacin, Cipro; nitrofurantoin, Macrobid</td>
</tr>
<tr>
<td>Antispasmodic</td>
<td>medication to prevent or reduce bladder muscle spasms</td>
<td>oxybutynin, Ditropan; neostigmine, Prostigmine</td>
</tr>
<tr>
<td>Diuretics</td>
<td>medication that increases volume of urine produced by kidneys; useful in treatment of edema, kidney failure, heart failure, and hypertension</td>
<td>furosemide, Lasix; spironolactone, Aldactone</td>
</tr>
</tbody>
</table>

**TEACHING STRATEGIES**

**Pop Questions**
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

**LEARNING ACTIVITIES**
- Have students use a PDR and/or the Internet to look up additional information regarding these medications, such as dosage, side effects, and contraindications

**Worksheet 9C**
- Chapter Review

**Text**
- Practice Exercises
- Terminology Checklist

**Student DVD-ROM**
- Learning games
- Flash cards

**CW**
- Practice questions

**ASSESSMENTS**

Test Bank—questions

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**OBJECTIVE 12**

Define selected abbreviations associated with the urinary system.

Text page: 297; PowerPoint slides: 86–90

**LECTURE NOTES**

AGN acute glomerulonephritis
ARF acute renal failure
ATN acute tubular necrosis
BNO bladder neck obstruction
BUN blood urea nitrogen
catheterization
C&S culture and sensitivity
cath catheterization
Cl− chloride
CRF chronic renal failure
cysto cystoscopic exam
ESRD end-stage renal disease
ESWL extracorporeal shockwave lithotripsy

**TEACHING STRATEGIES**

- Emphasize importance of learning abbreviations and their full meanings; point out how some abbreviations, such as UTI, I&O, and BUN are typically used rather than full terms.
- Write sentences on the board using medical terms; have students substitute correct abbreviations for the terms.
- Encourage students to add abbreviations to their flash cards.
### Learning Activities

#### Quiz 9F
- May be used as a worksheet

#### Text
- Practice Exercises

#### Student DVD-ROM
- Learning games
- Flash cards

#### CW
- Practice questions

### Assessments

- **Quiz 9F**—Abbreviations Quiz
- **Quiz 9G**—Chapter Review
- **Test Bank**—questions

### Memory Game
- Have students assist in creating a memory game to be played in class.

### Pop Questions
- Use Clicker questions as either a pretest or posttest quiz to gauge student comprehension during lecture.

### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>excretory urography</td>
</tr>
<tr>
<td>GU</td>
<td>genitourinary</td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>bicarbonate</td>
</tr>
<tr>
<td>HD</td>
<td>hemodialysis</td>
</tr>
<tr>
<td>H₂O</td>
<td>water</td>
</tr>
<tr>
<td>I&amp;O</td>
<td>intake and output</td>
</tr>
<tr>
<td>IVP</td>
<td>intravenous pyelogram</td>
</tr>
<tr>
<td>K⁺</td>
<td>potassium</td>
</tr>
<tr>
<td>KUB</td>
<td>kidney, ureter, bladder</td>
</tr>
<tr>
<td>mL</td>
<td>milliliter</td>
</tr>
<tr>
<td>Na⁺</td>
<td>sodium</td>
</tr>
<tr>
<td>NS</td>
<td>nephrotic syndrome</td>
</tr>
<tr>
<td>pH</td>
<td>acidity or alkalinity of urine</td>
</tr>
<tr>
<td>RP</td>
<td>retrograde pyelogram</td>
</tr>
<tr>
<td>SG, sp. gr.</td>
<td>specific gravity</td>
</tr>
<tr>
<td>U/A, UA</td>
<td>urinalysis</td>
</tr>
<tr>
<td>UC</td>
<td>urine culture</td>
</tr>
<tr>
<td>UTI</td>
<td>urinary tract infection</td>
</tr>
<tr>
<td>VCUG</td>
<td>voiding cystourethrograph</td>
</tr>
</tbody>
</table>
**Worksheet 9A**

**New Combining Form and Suffix Handout**

Directions: For each combining form below, write out its meaning and then locate a new term from the chapter that uses the combining form or suffix.

<table>
<thead>
<tr>
<th>Combining Forms</th>
<th>Meaning</th>
<th>Chapter Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. azot/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>2. bacteri/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>3. cyst/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>4. glomerul/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>5. glycos/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>6. keton/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>7. lith/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>8. meat/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>9. nepht/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>10. noct/i</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>11. olig/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>12. pyel/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>13. ren/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>14. ur/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>15. ureter/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>16. urethr/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>17. urin/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>18. vesic/o</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suffixes</th>
<th>Meaning</th>
<th>Chapter Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>19. -lith</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>20. -lithiasis</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>21. -ptosis</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>22. -tripsy</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
<tr>
<td>23. -uria</td>
<td>_______</td>
<td>_______</td>
<td>_______</td>
</tr>
</tbody>
</table>
**Worksheet 9B**  
**Medical Term Analysis**

Directions: Below are terms built from word parts used in this chapter that are not analyzed in the Word Building Table. Many are built from word parts you have learned in previous chapters. Analyze each term presented below by listing and defining each of the word parts used to build each term.

<table>
<thead>
<tr>
<th>Medical Term</th>
<th>Word Part Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. necrosis</td>
<td></td>
</tr>
<tr>
<td>2. antibiotic</td>
<td></td>
</tr>
<tr>
<td>3. azotemia</td>
<td></td>
</tr>
<tr>
<td>4. cystocele</td>
<td></td>
</tr>
<tr>
<td>5. cystography</td>
<td></td>
</tr>
<tr>
<td>6. cystoscopy</td>
<td></td>
</tr>
<tr>
<td>7. urography</td>
<td></td>
</tr>
<tr>
<td>8. glomerular</td>
<td></td>
</tr>
<tr>
<td>9. glomerulonephritis</td>
<td></td>
</tr>
<tr>
<td>10. hydronephrosis</td>
<td></td>
</tr>
<tr>
<td>11. intravenous</td>
<td></td>
</tr>
</tbody>
</table>

(Continued)
12. meatotomy

13. nephrolithotomy

14. nephrology

15. nephrotic

16. neurogenic

17. peritubular

18. polycystic

19. pyelonephritis

20. carcinoma

21. retroperitoneal

22. uremia

23. urinalysis

(Continued)
24. urography

25. urology

26. cystourethrography
Worksheet 9C
Chapter Review

Anatomy and Physiology

1. The organs of the urinary system are the ____________, ____________, ____________, and ____________.
2. The functional unit of the kidneys is the ____________.
3. The main function of the urinary system is to ____________.
4. The outer region of the kidney is the ____________ and the inner region is the ____________.
5. The renal corpuscle consists of the ____________ and ____________.
6. The kidneys are responsible for ____________ or balance in the body.
7. The three stages of urine production are: ____________, ____________, and ____________.
8. ____________ indicates the amount of dissolved substances in the urine.
9. Urine is normally ____________ colored and 95 percent ____________.
10. Urine is carried from the kidneys to the bladder in the ____________ and from the bladder to the outside of the body in the ____________.

Word Building

Directions: Build a term that means:

1. excision of the bladder __________________________________________________
2. bladder pain __________________________________________________
3. surgical crushing of a stone __________________________________________________
4. kidney softening __________________________________________________
5. kidney tumor __________________________________________________
6. kidney disease __________________________________________________
7. ureter stone __________________________________________________
8. narrowing of the urethra __________________________________________________
9. condition of sugar in the urine __________________________________________________
10. condition of pus in the urine __________________________________________________

(Continued)
<table>
<thead>
<tr>
<th>Matching</th>
<th>1. calculus</th>
<th>a. protrusion of bladder into vaginal wall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. urgency</td>
<td>b. urinalysis</td>
</tr>
<tr>
<td></td>
<td>3. enuresis</td>
<td>c. decrease in the force of the urine stream</td>
</tr>
<tr>
<td></td>
<td>4. micturition</td>
<td>d. a flat abdomen X-ray</td>
</tr>
<tr>
<td></td>
<td>5. hesitancy</td>
<td>e. commonly seen in children</td>
</tr>
<tr>
<td></td>
<td>6. hydronephrosis</td>
<td>f. medication to increase urine volume</td>
</tr>
<tr>
<td></td>
<td>7. nephroptosis</td>
<td>g. involuntary discharge of urine</td>
</tr>
<tr>
<td></td>
<td>8. cystocele</td>
<td>h. artificial filtering waste from blood</td>
</tr>
<tr>
<td></td>
<td>9. renal failure</td>
<td>i. may be caused by spinal cord injury</td>
</tr>
<tr>
<td></td>
<td>10. Wilm's tumor</td>
<td>j. treatment for kidney stones</td>
</tr>
<tr>
<td></td>
<td>11. neurogenic bladder</td>
<td>k. X-ray of renal pelvis</td>
</tr>
<tr>
<td></td>
<td>12. hematuria</td>
<td>l. stone</td>
</tr>
<tr>
<td></td>
<td>13. BUN</td>
<td>m. implantation of a donor kidney</td>
</tr>
<tr>
<td></td>
<td>14. U/A</td>
<td>n. accumulation of urine in renal pelvis</td>
</tr>
<tr>
<td></td>
<td>15. IVP</td>
<td>o. test that grows bacteria in a culture medium</td>
</tr>
<tr>
<td></td>
<td>16. urine C&amp;S</td>
<td>p. collects uncontaminated urine for testing</td>
</tr>
<tr>
<td></td>
<td>17. kidneys, ureter, bladder</td>
<td>q. feeling need to urinate immediately</td>
</tr>
<tr>
<td></td>
<td>18. cystoscopy</td>
<td>r. blood in the urine</td>
</tr>
<tr>
<td></td>
<td>19. catheterization</td>
<td>s. medication to treat bacterial infection</td>
</tr>
<tr>
<td></td>
<td>20. hemodialysis</td>
<td>t. floating kidney</td>
</tr>
<tr>
<td></td>
<td>21. ESWL</td>
<td>u. insertion of a flexible tube into the bladder</td>
</tr>
<tr>
<td></td>
<td>22. renal transplant</td>
<td>v. another term for urination</td>
</tr>
<tr>
<td></td>
<td>23. clean catch specimen</td>
<td>w. blood test for kidney function</td>
</tr>
<tr>
<td></td>
<td>24. antibiotic</td>
<td>x. visual exam of the bladder</td>
</tr>
<tr>
<td></td>
<td>25. diuretic</td>
<td>y. inability of the kidneys to filter wastes</td>
</tr>
</tbody>
</table>
Quiz 9A
New Word Parts Quiz
Directions: Define the combining form or suffix in the spaces provided.

1. azot/o ____________________________________________________________
2. bacteri/o __________________________________________________________
3. cyst/o ____________________________________________________________
4. glomerul/o _________________________________________________________
5. glycos/o __________________________________________________________
6. keton/o ___________________________________________________________
7. lith/o _____________________________________________________________
8. meat/o ___________________________________________________________
9. nephro/o __________________________________________________________
10. noct/i _____________________________________________________________
11. olig/o ____________________________________________________________
12. pyel/o _____________________________________________________________
13. ren/o _____________________________________________________________
14. ur/o _____________________________________________________________
15. ureter/o __________________________________________________________
16. ureth/o __________________________________________________________
17. urin/o ____________________________________________________________
18. -lith _____________________________________________________________
19. -lithiasis _________________________________________________________
20. -ptosis __________________________________________________________
21. -tripsy __________________________________________________________
22. -uria ____________________________________________________________
Quiz 9B
Spelling Quiz

Directions: Write each term as your instructor pronounces it.

1. ____________________________________________
2. ____________________________________________
3. ____________________________________________
4. ____________________________________________
5. ____________________________________________
6. ____________________________________________
7. ____________________________________________
8. ____________________________________________
9. ____________________________________________
10. ____________________________________________
11. ____________________________________________
12. ____________________________________________
13. ____________________________________________
14. ____________________________________________
15. ____________________________________________
16. ____________________________________________
17. ____________________________________________
18. ____________________________________________
19. ____________________________________________
20. ____________________________________________
Quiz 9C
Labeling Diagram

Directions: Label the structures of the urinary system.

1. __________________
2. __________________
3. __________________
4. __________________
5. __________________
Quiz 9D
Labeling Diagram

Directions: Label the internal structures of the kidney.

1. __________________
2. __________________
3. __________________
4. __________________
5. __________________
6. __________________
7. __________________
Quiz 9E
Word Building Quiz

Directions: Build a single medical term for each phrase below.

1. bladder pain _________________________________________________________________
2. bladder inflammation _________________________________________________________
3. bladder stone ________________________________________________________________
4. surgical repair of the bladder __________________________________________________
5. rapid bleeding from the bladder ______________________________________________
6. instrument used to visually examine the bladder _________________________________
7. condition of sugar in the urine ________________________________________________
8. surgical crushing of a stone ___________________________________________________
9. softening of the kidney _______________________________________________________ 
10. kidney tumor ______________________________________________________________
11. drooping kidney _____________________________________________________________
12. surgical fixation of (floating) kidney ____________________________________________
13. kidney disease _____________________________________________________________
14. hardening of the kidney _____________________________________________________
15. condition of (frequent) nighttime urination ________________________________
16. X-ray record of the renal pelvis ______________________________________________
17. surgical repair of the renal pelvis ____________________________________________
18. condition of pus in the urine ________________________________________________
19. narrowing of a ureter _________________________________________________________
20. urethra inflammation _________________________________________________________
21. instrument to visually examine the urethra _____________________________________
22. condition of no urine (produced by kidney) ______________________________________
23. condition of difficult or painful urination ______________________________________
24. condition of blood in the urine ______________________________________________
25. condition of (too) much urine ________________________________________________
Quiz 9F
Abbreviations Quiz

Directions: Write the medical term for which each abbreviation stands.

1. AGN ____________________________
2. ARF ____________________________
3. ATN ____________________________
4. BNO ____________________________
5. BUN ____________________________
6. cath ____________________________
7. Cl^- ____________________________
8. CRF ____________________________
9. C&S ____________________________
10. cysto __________________________
11. ESWL __________________________
12. EU ____________________________
13. HD ____________________________
14. H_2O __________________________
15. I&O ____________________________
16. IVP ____________________________
17. K+ _____________________________
18. KUB __________________________
19. Na+ __________________________
20. RP ____________________________
21. SG, sp. gr. ______________________
22. U/A, UA ________________________
23. UC ____________________________
24. UTI ____________________________
25. VCUG _________________________
Quiz 9G
Chapter Review

PART I: Multiple Choice
Directions: Circle the correct answer.

1. Excision of a kidney is called
   a. nephrectomy.
   b. nephropexy.
   c. nephrotomy.
   d. renectomy.

2. A distention of the renal pelvis due to urine collecting in the kidney, often the result of obstruction, is
   a. nephrolithiasis.
   b. hydrenephrosis.
   c. cystocele.
   d. pyelonephritis.

3. In nephromegaly there is
   a. an enlargement in the kidney.
   b. a stone present in the kidney.
   c. an inflammation of the kidney.
   d. a prolapse of the kidney.

4. The abbreviation UTI stands for
   a. urethral toxic infection.
   b. ureter total inflammation.
   c. urinary tract incontinence.
   d. urinary tract infection.

5. The medical term for abnormal kidney condition is
   a. nephroptosis.
   b. nephrosis.
   c. nephromalacia.
   d. nephritis.

6. The act of voiding urine is called
   a. nocturia.
   b. micturition.
   c. oliguria.
   d. urodynia.

7. What is inflammation of the bladder called?
   a. nephritis
   b. urinary tract infection
   c. cystitis
   d. pyelitis

8. What is the use of an artificial kidney machine to filter the blood of a person to remove waste products called?
   a. catheterization
   b. hemodialysis
   c. dwell time
   d. BUN

9. What is the medical term for ureteral narrowing?
   a. ureterostenosis
   b. ureterolysis
   c. ureterosclerosis
   d. urethrostenosis

10. What is the functional unit of the kidney?
    a. glomerulus
    b. renal tubule
    c. nephron
    d. renal corpuscle

(Continued)
PART II: Matching
Directions: Match the term with its definition.

____ 1. polyuria                              a. scanty amount of urine
____ 2. dysuria                              b. condition of blood in urine
____ 3. pyuria                               c. condition of too much urine
____ 4. oliguria                             d. condition of ketones in urine
____ 5. nocturia                             e. frequent nighttime urination
____ 6. enuresis                             f. difficult urination
____ 7. hematuria                            g. complete lack of urine secretion
____ 8. ketonuria                            h. condition of pus in urine
____ 9. anuria                               i. bed-wetting at night

PART III: Abbreviations
Directions: Write the full meaning of the following abbreviations.

1. BUN  ____________________________________________
2. GU   __________________________________________
3. IVP  __________________________________________
4. KUB  __________________________________________
5. CRF  __________________________________________
Chapter 9 Answer Keys

Worksheet 9A Answer Key

1. nitrogenous waste
2. bacteria
3. urinary bladder
4. glomerulus
5. sugar, glucose
6. ketones
7. stone
8. meatus
9. kidney
10. night
11. scanty
12. renal pelvis
13. kidney
14. urine
15. ureter
16. urethra
17. urine
18. bladder
19. stone
20. condition of stones
21. drooping
22. surgical crushing
23. condition of the urine

Worksheet 9B Answer Key

1. necr/o = death; -osis = abnormal condition
2. anti- = against; bi/o = life; -tic = pertaining to
3. azot/o = nitrogenous waste; -emia = blood condition
4. cyst/o = bladder; -cele = hernia/protrusion
5. cyst/o = bladder; -graphy = process of recording
6. cyst/o = bladder; -scopy = process of viewing
7. ur/o = urine; -graphy = process of recording
8. glomerul/o = glomerulus; -ar = pertaining to
9. glomerul/o = glomerulus; nephr/o = kidney; -itis = inflammation
10. hydr/o = water; nephr/o = kidney; -osis = abnormal condition
11. intra- = within; ven/o = vein; -ous = pertaining to
12. meat/o = meatus; -otomy = incision
13. nephr/o = kidney; lith/o = stone; -otomy = incision
14. nephr/o = kidney; -ology = study of
15. nephr/o = kidney; -tic = pertaining to
16. neur/o = nerve; -genic = producing
17. peri- = around; tubule = not a standard word part; -ar = pertaining to
18. poly- = many; cyst = not a standard word part; -ic = pertaining to
19. pyel/o = renal pelvis; nephr/o = kidney; -itis = inflammation
20. carcin/o = cancer; -oma = tumor
21. retro- = backwards; peritone/o = peritoneum; -al = pertaining to
22. ur/o = urine; -emia = blood condition
23. urin/o = urine; -ysis = to break
24. ur/o = urine; -graphy = process of recording
25. ur/o = urine; -ology = study of
26. cyst/o = bladder; urethr/o = urethra; -graphy = process of recording

Worksheet 9C Answer Key

Anatomy and Physiology

1. kidneys, ureters, urinary bladder, and urethra
2. nephron
3. filter and remove waste from the blood
4. cortex; medulla
5. glomerulus; Bowman’s (glomerular) capsule
6. homeostasis
7. filtration, reabsorption, and secretion
8. Specific gravity
9. straw; water
10. ureters; urethra
Word Building

1. cystectomy  
2. cystalgia  
3. lithotripsy  
4. nephromalacia  
5. nephroma  

6. nephropathy  
7. ureterolith  
8. urethrosthenosis  
9. glycosuria  
10. pyuria

Matching

1. l  
2. q  
3. g  
4. v  
5. c  
6. n  
7. t  
8. a  
9. y  
10. e 
11. i  
12. r  
13. w

14. b  
15. k  
16. o  
17. d  
18. x  
19. u  
20. h  
21. j  
22. m  
23. p  
24. s  
25. f

Quiz 9A Answer Key

1. nitrogenous waste  
2. bacteria  
3. bladder  
4. glomerulus  
5. sugar, glucose  
6. ketones  
7. stone  
8. meatus  
9. kidney  
10. night  
11. scanty  
12. renal pelvis  
13. kidney  
14. urine  
15. ureter  
16. urethra  
17. urine  
18. stone  
19. condition of stones  
20. drooping  
21. surgical crushing  
22. condition of the urine

Quiz 9B Answer Key

1. azotemia  
2. bacteriuria  
3. calculus  
4. calyx  
5. catheterization  
6. crystalgia  
7. cystocele  
8. diuretic  
9. enuresis  
10. genitourinary  
11. glomerulus  
12. pyelonephritis  
13. lithotripsy  
14. micturition  
15. nephrolithiasis  
16. nephroptosis  
17. peritubular  
18. ureterectasis  
19. urethralgia  
20. incontinence
Quiz 9C Answer Key
1. kidney
2. urinary bladder
3. ureter
4. male urethra
5. female urethra

Quiz 9D Answer Key
1. cortex
2. medulla
3. calyx
4. renal pelvis
5. renal papilla
6. renal pyramid
7. ureter

Quiz 9E Answer Key
1. cystalgia
2. cystitis
3. cystolith
4. cystoplasty
5. cystorrhagia
6. cystoscope
7. glycosuria
8. lithotripsy
9. nephromalacia
10. nephroma
11. nephrophtosis
12. nephropexy
13. nephropathy
14. nephrosclerosis
15. nocturia
16. pyelogram
17. pyeloplasty
18. pyuria
19. ureterostenosis
20. urethritis
21. urethroscope
22. anuria
23. dysuria
24. hematuria
25. polyuria

Quiz 9F Answer Key
1. acute glomerulonephritis
2. acute renal failure
3. acute tubular nephrosis
4. bladder neck obstruction
5. blood urea nitrogen
6. catheterization
7. chloride
8. chronic renal failure
9. culture and sensitivity
10. cystoscopy
11. end-stage renal disease
12. extracorporeal shockwave lithotripsy
13. excretory urography
14. genitourinary
15. bicarbonate
16. hemodialysis
17. water
18. input and output
19. intravenous pyelogram
20. potassium
21. kidneys, ureters, bladder
22. milliliter
23. sodium
24. nephrotic syndrome
25. acidity or alkalinity
26. retrograde pyelogram
27. specific gravity
28. urinalysis
29. urine culture
30. urinary tract infection
31. voiding cystourethrography
## Quiz 9G Answer Key

### Multiple Choice

1. A  
2. B  
3. A  
4. D  
5. B  
6. B  
7. C  
8. B  
9. A  
10. C  

### Matching

1. c  
2. f  
3. h  
4. a  
5. e  
6. i  
7. b  
8. d  
9. g  

### Abbreviations

1. blood urea nitrogen  
2. genitourinary  
3. intravenous pyelogram  
4. kidneys, ureter, bladder  
5. chronic renal failure