

**Medical-Surgical Nursing: An
Integrated Approach, 2E
Chapter 29**

**NURSING CARE OF THE CLIENT:
URINARY SYSTEM**

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NVOC 22C – Medical-Surgical Nursing

Urology

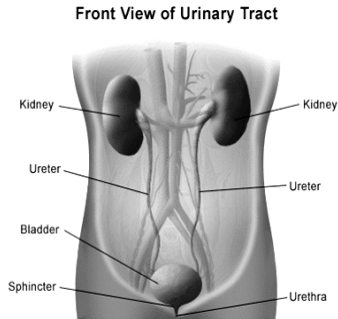
- The study of disorders of the urinary system.

**Warning Signs of Kidney
Disease**

- Burning or difficulty during urination.
- Increase in the frequency of urination, especially at night.
- Passage of bloody appearing urine.
- Puffiness around the eyes, or swelling of the hands and feet, especially in children.
- Pain in the small of the back just below the ribs (not aggravated by movement).
- High blood pressure.

Anatomy of the Urinary System

- Consists of two kidneys, two ureters (upper urinary tract), a urinary bladder, and a urethra (lower urinary tract).

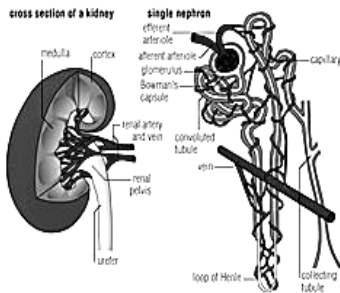


Urinary system parts and their functions:

- **two kidneys** - a pair of purplish-brown organs located below the ribs toward the middle of the back. Their function is to:
 - remove liquid waste from the blood in the form of urine.
 - keep a stable balance of salts and other substances in the blood.
 - produce erythropoietin, a hormone that aids the formation of red blood cells.

–The kidneys remove urea from the blood through tiny filtering units called nephrons. Each nephron consists of a ball formed of small blood capillaries, called a glomerulus, and a small tube called a renal tubule. Urea, together with water and other waste substances, forms the urine as it passes through the nephrons and down the renal tubules of the kidney.

Nephron



Urinary system parts and their functions:

- **two ureters** - narrow tubes that carry urine from the kidneys to the bladder.
 - Muscles in the ureter walls continually tighten and relax forcing urine downward, away from the kidneys.
 - If urine backs up, or is allowed to stand still, a kidney infection
 - can develop. About every 10 to 15 seconds, small amounts of urine are emptied into the bladder from the ureters.

Urinary system parts and their functions:

- **bladder** - a triangle-shaped, hollow organ located in the lower abdomen. It is held in place by ligaments that are attached to other organs and the pelvic bones.
 - The bladder's walls relax and expand to store urine, and contract and flatten to empty urine through the urethra.
 - The typical healthy adult bladder can store up to two cups of urine for two to five hours.
 - Normal daily output – 1200-1500 mL
- **Micturition** -

Urinary system parts and their functions:

- **two sphincter muscles** - circular muscles that help keep urine from leaking by closing tightly like a rubber band around the opening of the bladder.
- **nerves in the bladder** - alert a person when it is time to urinate, or empty the bladder.

Urinary system parts and their functions:

- **urethra** - the tube that allows urine to pass outside the body.
 - The brain signals the bladder muscles to tighten, which squeezes urine out of the bladder.
 - At the same time, the brain signals the sphincter muscles to relax to let urine exit the bladder through the urethra. When all the signals occur in the correct order, normal urination occurs.
 - Women – approx 1 ¼-2 in (3-5 cm)
 - Men – approx 8 in (20 cm)

Terminologies

- Absence of urine output –
- Bacteria in the urine –
- Costovertebral angle tenderness –
- Voiding without stream, in small amts, frequently or constantly –
- Painful or difficult urination –
- Involuntary voiding while asleep –
- Blood in urine -

Terminologies

- Awakening to void –
- Excessive production and excretion of urine –
- Leakage of urine in small amounts while bladder remains full and distended -

Nursing Assessment

- Subjective
 - Change in voiding habits
 - Problems with elimination or changes in patterns of urination
 - Frequency
 - Nocturia
 - Hesitancy of stream
 - Urgency
 - Retention
 - Incontinence
 - Enuresis
 - Dribbling
 - Hematuria

Nursing Assessment

- Subjective
 - Urethral discharge
 - Burning on voiding
 - Pain: suprapubic or flank
 - Pruritus, dry skin

Changes in the Urinary System Related to Aging

- Nephrons decrease, resulting in decreased filtration and gradual decrease in excretory and reabsorptive functions of renal tubules.
- Glomerular filtration rate decreases, resulting in decreased renal clearance of drugs.
- Blood urea nitrogen increases 20% by age 70.
- Sodium-conserving ability is diminished.
- Bladder capacity decreases.
- Renal function increases when client is lying down.
- Bladder and perineal muscles weaken, resulting in ability to empty bladder.
- Incidence of stress incontinence increases in females.
- Prostate may enlarge, causing frequency or dribbling.

Altered Urinary Elimination Patterns: Urinary Retention

- A person who is unable to void when there is an urge to void has *urinary retention*.
- This creates urinary stasis and increases the possibility of infection.

Altered Urinary Elimination Patterns: Urinary Incontinence

- The involuntary loss of urine from the bladder.
- May be a complication of urinary tract problems or neurologic disorders and may be permanent or temporary.
- Nsg Measures:
 - Minimize embarrassment; provide privacy
 - Wash, dry, & inspect skin
 - Prevent decubitus ulcers
 - Provide bladder training

Classifications of Incontinence

- *Stress incontinence*: leakage of urine from coughing, laughing, jogging, dancing, etc.
- *Urge incontinence*: occurs when a person is unable to suppress the sudden urge to urinate.
- *Overflow incontinence*: when the bladder becomes so full and distended that urine leaks out.
- *Total incontinence*: when no urine can be retained in the bladder, usually due to neurologic problem.
- *Nocturnal Enuresis*: incontinence that occurs during sleep.

Infectious Disorders: Cystitis

- An inflammation of the urinary bladder.
- More common in females.
- Common causes are coitus, prostatitis, and diabetes mellitus.
- S/S:
 - Dysuria, urgency, frequency, hematuria, pyuria
 - Bladder spasms

Infectious Disorders: Pyelonephritis

- A bacterial infection of the renal pelvis, tubules, and interstitial tissue of one or both kidneys.
- Pathology:
 - Ascending infection from a lower GU tract infection
 - Staph or Strep infection in the blood
- S/S
 - Nausea, chills, dysuria, CVA (Costovertebral angle tenderness)

Infectious Disorders: Pyelonephritis

- Your client is a 22 year-old woman with pyelonephritis. She presented to your clinic 2 days ago and was placed on a broad-spectrum antibiotic. She has minimal insurance and limited prescription benefits. You are speaking to the client during a routine follow-up call when the physician tells you he wants to change the client's antibiotic. The physician orders nitrofurantoin (Macrochantin). What is your understanding of this medication?
 - It is a narcotic analgesic drug.
 - It is a urinary antiseptic drug.
 - It is a nonsteroidal anti-inflammatory drug (NSAID).
 - It is a non-narcotic analgesic drug

**Infectious Disorders:
Pyelonephritis**

- In reviewing laboratory data of the client receiving treatment for pyelonephritis, which of the following would be most indicative of treatment effectiveness?
 - Decreasing urine output
 - Decreasing urine white blood cells
 - Increasing urine specific gravity
 - Increasing red blood cell count

**Infectious Disorders:
Pyelonephritis**

- The nurse correlates increased risk of pyelonephritis in clients with a history of
 - Urinary incontinence
 - Hypertension
 - Renal calculi
 - Anemia

**Infectious Disorders:
Pyelonephritis**

- The nurse correlates which rationale to the administration of urinary antiseptic medications for clients with pyelonephritis?
 - Provides comfort
 - Decreases bacterial count
 - Enhances action of antibiotics
 - Destroys white blood cells

Infectious Disorders: Acute Glomerulonephritis

- A condition that can affect one or both kidneys.
- In both acute and chronic disease, the glomerulus within the nephron unit becomes inflamed.
- Predominantly a disease of children and young adults when cause is bacterial.
- Viral form can affect all ages.

Infectious Disorders: Chronic Glomerulonephritis

- The prognosis for acute Glomerulonephritis is often good when treatment is begun early; however, chronic Glomerulonephritis generally leads to permanent kidney damage.

Nephritic Syndrome

- *disorder of glomeruli characterized by tissue swelling (edema), high blood pressure, and the presence of red blood cells in the urine.*

CAUSES

- **Acute nephritic syndrome**
 - infection by streptococcus
 - Infections by other types of bacteria, such as staphylococcus and pneumococcus, viral infections such as chickenpox, and parasitic infections
 - Membranoproliferative glomerulonephritis, IgA nephropathy, Henoch-Schönlein purpura, systemic lupus erythematosus, mixed cryoglobulinemia, Goodpasture's syndrome, and Wegener's granulomatosis

Nephritic Syndrome

- **Symptoms**
 - About half of the people with acute nephritic syndrome have no symptoms.
 - If symptoms do occur,
 - fluid retention and tissue swelling (edema) - may first appear as puffiness of the face and eyelids but later is prominent in the legs.
 - low urine volume
 - dark urine that contains blood.
 - Blood pressure increases as kidney function becomes impaired.
 - high blood pressure and swelling of the brain may produce headaches, visual disturbances, and more serious disturbances of brain function.
 - In older people, nonspecific symptoms, such as nausea and a general feeling of illness (malaise), are more common.

Nephritic Syndrome

Treatment

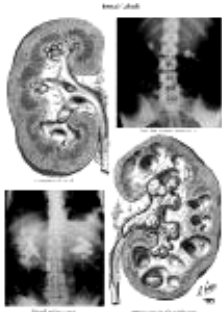
- **No specific treatment is available in most cases of acute nephritic syndrome.**
- **low protein and low sodium**
- **Diuretics may be prescribed to help the kidneys excrete excess sodium and water.**
- **High blood pressure needs to be treated.**

Nephritic syndrome

- The nurse correlates which of the following clinical manifestations to the client with nephritic syndrome?
 - Oliguria
 - Hyperalbuminemia
 - Hypokalemia
 - Proteinuria

Obstructive Disorders: Urolithiasis

- A calculus, or stone, formed in the urinary tract.
- The size and location of the stone within the urinary system greatly affects the degree of pain.



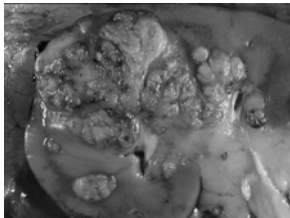
Obstructive Disorders: Urinary Bladder Tumors

- Bladder cancer occurs most frequently after the age of 50.
- The only early warning signs are increased urinary frequency and painless, intermittent hematuria.
- Main risk factor is cigarette smoking.



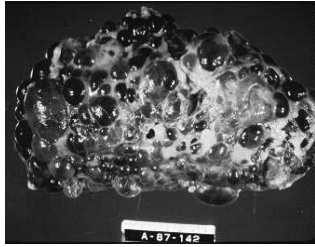
Renal Tumors

- Risk factors include smoking, familial incidence, and preexisting renal disorders.
- Symptoms include weight loss, dull flank pain, gross hematuria, and a mass that may be palpable in the flank area.



Polycystic Kidney

- Polycystic kidney disease (PKD) may be inherited or acquired.
- Multiple grape-like cluster of fluid-filled cysts develop in and greatly enlarge both kidneys.



Polycystic Kidney

- The nurse prioritizes which of the following in the care of the client with polycystic kidney disease?
 - Monitor urine output
 - Assess for blood loss
 - Provide pain relief measures.
 - Administer prescribed antihypertensive medications

Acute Renal Failure

- The rapid deterioration of renal function with rising blood levels of urea and other nitrogenous wastes is called *acute renal failure*.
- Term used when some kidney function remains (total and permanent kidney failure is called end-stage renal disease).

Chronic Renal Failure (End-Stage Renal Disease)

- A slow, progressive condition in which the kidney's ability to function ultimately deteriorates. The condition is not reversible.
- Lifetime dialysis becomes inevitable unless kidney transplantation is performed successfully.

Chronic Renal Failure (End-Stage Renal Disease)

- Causes:
 - Glomerulonephritis, pyelonephritis, polycystic kidney, diabetes
 - Essential hypertension
 - Lupus erythematosus
 - Toxic agents
 - Vascular disorders

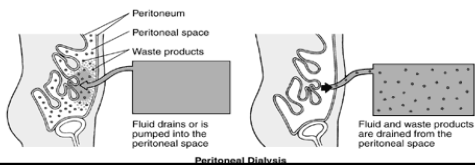
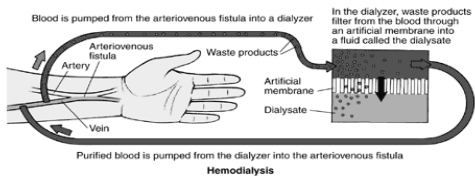
Chronic Renal Failure

- A client with chronic renal failure asks the nurse about the relationship between the disease and high blood pressure. Which explanation by the nurse is most accurate?
 - "The waste products in your blood interfere with other mechanisms that control blood pressure."
 - "Because your kidneys cannot get rid of fluid, your blood pressure goes up."
 - "This is a compensatory mechanism that increases blood flow through the kidneys in an effort to get rid of some of the waste products."
 - "Your damaged kidneys no longer release a hormone that prevents high blood pressure."

Dialysis

- A mechanical means of removing nitrogenous waste from the blood by imitating the function of the nephrons.
- Two types of dialysis: *hemodialysis* and *peritoneal dialysis*.
- Strict aseptic care is mandatory for dialysis clients.

Dialysis



Hemodialysis

In planning discharge instructions for the client with a recently created vascular access for hemodialysis, the nurse includes which of the following? (Choose all that apply.)

- Discuss ways to modify activities to allow for complete arm rest.
- Demonstrate how to find distal pulses
- Teach the client to assess the bruit once per day.
- Teach the client how to assess for bruit.
- Demonstrate how to assess for infection
- Discuss reasons for not allowing blood pressure measurements to be taken in the arm with access.

Peritoneal Dialysis

- In evaluating a client's understanding of administration of peritoneal dialysis, which client action would require an intervention by the nurse?
 - The client warms the dialysate before starting the infusion.
 - The client uses soap and water to clean ports before connecting to dialysis tubing.
 - The client weighs himself before starting process
 - The client wears sterile gloves when connecting/disconnecting the tubing

Peritoneal Dialysis

- A client with chronic renal failure is undergoing peritoneal dialysis. Which nursing measure will be most helpful in promoting outflow drainage of the dialyzing solution?
 - Turn the client from side to side.
 - Elevate the height of the dialysate bag.
 - Apply manual pressure to the client's lower abdomen.
 - Push the peritoneal catheter in approximately one inch further.

Peritoneal Dialysis

- Clients receiving peritoneal dialysis for chronic renal failure need adequate protein in their diet because:
 - The systemic uremia interferes with protein synthesis.
 - Protein is lost during the dialysis procedure.
 - Protein levels determine the effectiveness of dialysis therapy.
 - Blood loss associated with peritoneal dialysis decrease protein levels

Peritoneal Dialysis

- Types
 - Intermittent Peritoneal Dialysis (IPD)
 - Continuous ambulatory peritoneal dialysis (CAPD)
 - Continuous cycling peritoneal dialysis (CCPD)

Kidney Transplantation

- Organ rejection is a risk. Signs of rejection include generalized edema, tenderness over the graft site, decreased urine output, hematuria, weight gain, and fatigue.

Kidney Transplantation

- In discussing kidney donation with the sibling of a client in need of a kidney replacement, which of the following would not allow the sibling to donate a kidney?
 - Taking nonsteroidal anti-inflammatory medications for chronic low back pain
 - History of blood transfusions
 - Medication-controlled hypertension
 - History of anemia

Kidney Transplantation

- In preparing discharge teaching for the client after receiving a kidney transplant, the nurse teaches the client to monitor for which of the following as indications of rejection?
 - Headaches
 - Fatigue
 - Decreased appetite
 - Painful urination
