Altered Urinary Elimination EDAPT

(Week 2)

Nursing Care: Altered Urinary Elimination

Introduction to Nursing Care: Altered Urinary Elimination

Altered urinary elimination occurs as a result of many different physiological or pathological causes. Physiological causes can include aging or compensation for extreme fluid status changes (e.g., dehydration). Pathological conditions that affect urinary elimination can include diabetes mellitus, uncontrolled hypertension, infection, or cancer. Structural obstruction can occur with kidney stones, trauma, or post-surgery complications. As a nurse, looking for cues such as the underlying causes and assessment findings will help to manage clients who have altered urinary elimination.

By completing this learning activity, you will gain the knowledge and skills needed to:

- Assess a client for alterations in the urinary system.
- Identify nursing diagnoses for clients who have urinary alterations.
- Develop and implement a plan of care to address and intervene in clients with urinary alterations.
- Identify health promotion and prevention strategies for clients who are at risk for urinary alterations.
- Evaluate a plan of care to determine its effectiveness and strategize changes that may be needed based on the nursing assessment of clients with urinary alterations.

Altered Urinary Elimination

The urinary system is vital in filtering and excreting what's not needed by the body. Filtration is measured by glomerular filtration rate (GFR). The kidneys can reabsorb fluids and electrolytes when needed to maintain homeostasis. The kidneys can prevent additional health issues by excreting waste, excess fluids, and unneeded electrolytes.

Kidneys do so much more than filter waste by creating urine. They control blood pressure, regulate acid-base balance, make erythropoietin, activate Vitamin D, and assist with the regulation of bone breakdown and absorption. Therefore, when a client has altered urinary elimination, they can have hypertension and hypotension, metabolic acidosis, severe electrolyte imbalances, anemia, and calcium-phosphorus imbalances. **The kidneys require over 20% of the total cardiac output to maintain an adequate blood flow of 1200 ml/minute.**

The glomerulus filters anything that goes through the kidneys. The normal glomerular filtration rate is 125 ml/minute. The tubules are responsible for the reabsorption and excretion of the waste products. **Urine is then sent through the ureters to the bladder, which has a capacity of 600 to 1,000 ml.**

When the kidneys fail, it is caused by:

prolonged reduced blood flow through the kidney—when this occurs, the client becomes oliguric or anuric (little/no urine) destruction of the filtration system (glomerulus)—when this occurs, urine still comes out, but electrolytes and toxins collect ureteral blockage—when this occurs, urine does not come out but continues to collect and cause back pressure in the urinary system, leading to hydronephrosis and kidney ischemia

Nursing Assessment

Altered urinary elimination can be caused by medical or surgical complications. It is also common to have inherited kidney disease, or a family history suggesting a predisposition to urinary abnormalities. There are social components including frequent urinary tract or sexually transmitted infections that could put the client at higher risk of urinary problems. Working in environments that may cause high levels of dehydration combined with the intake of carbonated concentrated fluids can lead to kidney stone formation. Finally, some medications can put additional stress on the urinary system as well. Here are some common assessment cues to consider:

History	Nursing Assessment
Past Medical History	Trauma, infection, obstruction (kidney stones), uncontrolled hypertension, diabetes mellitus, cancer, multiple sclerosis, streptococcal infection
Past Surgical History	Any surgery can predispose the client to develop renal insufficiency.
Family History	Kidney stones, polycystic kidney disease, Gitelman syndrome, Bartter syndrome, Alport syndrome
Social History	Tobacco use, sexually transmitted infections, toxic chemical exposure, intravenous drug use, strenuous work (at high temperatures)
Medication History	Frequent non-steroidal anti-inflammatory use, diuretic use

Identifying Cues

Nurses can identify cues that may suggest an altered urinary elimination problem.

Nursing Diagnosis: Altered cognition

Possible Cause: Sodium imbalance

Symptoms: Dizziness, lightheadedness, confusion, altered level of consciousness

Nursing Diagnosis: Acid-base imbalance

Possible Cause: Metabolic acidosis or alkalosis

Symptoms: Increased or decreased respiratory rate, shortness of breath

Nursing Diagnosis: Decreased cardiac output

Possible Cause: Potassium imbalance leading to arrhythmias

Symptoms: Chest discomfort, palpitations, syncope or near-syncopal episodes

Nursing Diagnosis: Fluid balance excess

Possible Cause: Renal failure

Symptoms: Edema, shortness of breath

Nursing Diagnosis: Pain

Possible Cause: Nephrolithiasis, inflammation, infection

Symptoms: Dysuria, oliguria, pelvic or abdominal pain, flank pain

Nursing Diagnosis: Impaired urinary elimination

Possible Cause: Urethral or ureteral blockage, renal insufficiency or failure

Symptoms: Oliguria or anuria, abdominal fullness, urinary hesitancy

Nursing Diagnosis: Altered mobility

Possible Cause: Calcium or phosphorus imbalance

Symptoms: Muscle weakness, fatigue, hyperreflexia or hyporeflexia

Nursing Diagnosis: Altered tissue integrity

Possible Cause: High urea levels

Symptoms: Yellowish/white skin color changes

Diagnostic Testing

The diagnostic studies will help to identify the underlying cause(s) of the altered urinary elimination. Some diagnostic studies are invasive.

Serum Laboratory Tests

- **Complete blood count (CBC)**: Reduced kidney function can cause anemia, which is evaluated in this test. Bleeding and clotting information and white blood cell counts (which can be elevated in infection) are also included.
- **Electrolytes and kidney function**: A basic or complete metabolic panel measures most electrolytes and includes creatinine and Blood Urea Nitrogen (BUN) (describes kidney function). Sometimes additional electrolytes are ordered, including magnesium or phosphorous.

- **Uric acid**: A buildup of this substance in the blood can lead to kidney stones.
- **Glomerular filtration rate**: This test identifies how well the kidneys are working by measuring the speed at which the glomerulus filters.
- **Blood culture**: This test is used to check the blood for bacteria that may have spread from a urinary tract infection or pyelonephritis.

Urine Tests

- **24-hour urine test**: This is used to measure the amount of filtered substances over a 24-hour period by collecting all urine for a 24-hour period. When the 24-hour clock starts, the first void is discarded, and the remainder of the urine output is collected in an approved container and placed on ice. If one void is missed and not collected, then the entire 24-hour clock must start over.
- **Urinalysis**: This analyzes information about the urine content or presence of glucose, protein, red blood cells (RBCs), or ketones. In addition, it will give the osmolality and urine specific gravity.
- **Urine culture and sensitivity**: This will identify possible bacteria that is causing an infection.

Radiology Tests

- **Basic radiology tests**: Xray and ultrasound testing are often used to identify nephrolithiasis, cysts, or fluid around the kidney (hydronephrosis).
- **Radiology testing with contrast dye**: Imaging technique using contrast dye to visualize kidney deformities, kidney stones, ureteral blockages, or other physical abnormalities. Dye can be toxic to the kidney and interact with medication. Increased fluid intake should be encouraged, which assists the contrast dye in getting eliminated from the body. Avoid using Metformin for up to 48 hours after the contrast procedure. Assessing for an allergy to iodine or shellfish can indicate a client may react badly to the dye.
- **Magnetic resonance imaging**: Uses a magnetic field to take highly detailed pictures of the urinary system to look for tumors, abscesses, or fluid surrounding the kidney.
- **Cystoscopy**: Direct visualization of the urethra and bladder using a tiny camera advanced through the urethra. This can show bladder tumors or bladder wall inflammation. Anesthesia is usually used for this procedure. Possible cystoscopy complications that include dysuria and hematuria include infection and bleeding.
- **Biopsy**: Using a simple surgical procedure to collect kidney tissue for evaluation under a microscope. This can identify kidney or bladder cancer. This is a surgical procedure that may require anesthesia and recovery. Controlling bleeding, avoiding lifting for 5 to 7 days, and holding anticoagulants as ordered may be indicated.
- **Urodynamic studies**: This will assess the urine outflow or any obstruction to urine by measuring the flow rate of the urine exiting the bladder.