

LINCOLN MEMORIAL UNIVERSITY
Caylor School of Nursing
Nursing 124/125
Spring 2010

LESSON PLAN: **Alterations in Urinary Elimination**

DATES & TIMES: **See Class Syllabus**

OBJECTIVES: **Upon completion of the unit, the student will demonstrate mastery of the following objectives in the clinical/campus laboratory, in individual and group conferences and on written materials, the ability to:**

1. Review the anatomy and physiology of the renal and urinary systems.
2. Define and use the key terms as listed in the assigned readings.
3. Describe the process of urination.
4. Recognize factors that commonly influence urinary problems.
5. Utilize techniques of therapeutic communication to assess urinary elimination needs.
6. Differentiate characteristics of normal and abnormal urine.
7. Outline the nursing responsibilities for common diagnostic tests of the urinary tract.
8. Apply the nursing process to the care of human persons with commonly occurring urinary elimination problems.
9. Demonstrate appropriate nursing interventions for human persons experiencing ineffective responses to urinary elimination.
10. Differentiate between continent and incontinent urinary diversions, and implement care for each.
11. Discuss the psychosocial impact of bladder cancer and adaptation to a urinary diversion system.
12. Utilize the RAM nursing process to provide care for the adult experiencing any of the following disorders of the renal/urinary system:
 - a. Inflammatory disorders
 - b. Vascular/obstructive disorders
 - c. Genitourinary trauma
 - d. Genitourinary cancer
13. Identify the physiologic action, use, side effects and nursing implications of drugs used in pharmacological management of commonly occurring urinary elimination needs.
14. Identify different types and treatment of erectile dysfunction.
15. Utilize the nursing process to plan care for the patient undergoing prostatectomy.
16. List advantages and disadvantages of the four types of prostatectomy: transurethral, suprapubic, retropubic, and perineal.
17. Identify and discuss clinical manifestations of testicular and penile cancer and identify nursing care.
18. Identify medications on the drug list by generic name, classification, mechanism of action, clinically significant side effects, normal dosage and nursing implications.
19. Correctly calculate dosages for the administration of IV, IM and oral medications.

TOPICAL OUTLINE:**I. Alteration of Urinary Elimination**

- A. Nursing Assessment of Renal Function
 - a. History
 - b. Physical Assessment
- B. Common Diagnostic Exams
 - a. Intravenous Pyelogram (IVP)
 - b. Retrograde Pyelogram
 - c. Urodynamic studies
 - d. Cystoscopy and Urethroscopy
 - e. KUB
 - f. CT
 - g. MRI
 - h. Renal Ultrasound
 - i. Nuclear Scan
 - j. Renal Biopsy
 - k. Urinalysis
 - i. Clean catch
 - ii. Culture & Sensitivity
- C. Utilizing the RAM Nursing Process of patients with Common Urinary Problems including: risk factors, assessment, analysis/nursing diagnosis, nursing interventions & evaluation/expected outcomes.
- D. Incontinence (stress, urge, reflex, overflow, functional)
 - 1. Retention
 - 2. Urinary Tract Infections
 - a. Lower UTI's
 - i. Cystitis
 - ii. Prostatitis
 - iii. Urethritis
 - b. Upper UTI's
 - i. Acute pyelonephritis
 - ii. Chronic pyelonephritis
 - iii. Renal abscess
 - iv. Interstitial nephritis
 - 3. Neurogenic Bladder
 - a. Spastic Bladder
 - b. Flaccid Bladder
 - 4. Strictures

- II. Nursing care of adults with common disorders of the urinary tract and kidneys, including risk factors, assessment, analysis/nursing diagnosis, nursing interventions and evaluation/expected outcomes.
- A. Vascular/Obstructive Disorders
 - a. Calculi (urolithiasis)
 - b. Nephrosclerosis
 - c. Renal cysts
 - B. Genitourinary Trauma (see handout)
 - a. Renal trauma
 - b. Ureteral trauma
 - c. Bladder trauma
 - d. Urethral trauma
 - C. Genitourinary Cancer
 - a. Renal cancer
 - b. Bladder cancer
- III. Nursing Management of patients with Urinary Diversions
- A. Ileal Conduit (Ileal loop)
 - B. Cutaneous ureterostomy
 - C. Nephrostomy
 - D. Indiana Pouch
 - E. Kock Pouch
 - F. Ureterosigmoidostomy
- III. Nursing care of adults with common disorders of the male genitourinary system, including risk factors, assessment, analysis/nursing diagnosis, nursing interventions and evaluation/expected outcomes
- A. Assessment and diagnostic evaluation
 - B. Erectile dysfunction
 - C. Conditions of the prostate
 - a. Prostatitis
 - b. Benign Prostatic Hyperplasia (BPH)
 - c. Prostate Cancer
 - D. Testicular Cancer
 - E. Penile Cancer

REQUIRED READINGS:

Kee, J. L., Hayes, E. R., McCuiston, L. E. (2009). *Pharmacology: A nursing process approach* (6th ed.). St. Louis, MO: Saunders Elsevier. Chapter 33, p. 485, & Chapter 56, p. 898.

Silvestri, L. A. (2008). *Saunders comprehensive review for NCLEX-RN* (4th ed.). Philadelphia: Saunders Elsevier. Chapter 61, p. 925 (Omit Renal Failure, Dialysis, Kidney Transplant), Chapter 62, p. 966.

Smeltzer, S. G., Bare, B. G., Hinkle, J. L., & Cheever, K. H. (2008). *Brunner and Suddarth's textbook of medical – surgical nursing* (11th ed.). Philadelphia: Lippincott Williams & Wilkins. Chapters 43, 44, 45, & 49.

Wissmann, J. (2000-2007). *Adult medical-surgical nursing RN edition 7.1. Current mastery series review module*. Assessment Technologies Institute. Unit 5 (Ch. 44, 45, 46, 47) & Unit 12 (Ch. 119, 121, & 122).

CLINICAL OBJECTIVES/SKILLS:

1. Assess the renal status and urinary function of assigned adults in the clinical setting.
2. Accurately prepare and assess the patient for radiologic and endourologic procedures of renal and urinary function.
3. Initiate nursing measures to prevent urinary tract infections.
4. Teach dietary changes necessary for adults with ineffective responses to urinary elimination.
5. Teach dietary changes and restrictions necessary to promote adaptation in adults with renal calculi, strictures, urinary tract infections, incontinence, retention, neurogenic bladder, and/or urinary diversions.
6. Utilize the Roy Adaptation Model nursing process to provide care to adults with common compromised responses to urinary elimination.
7. Initiate measures to maintain fluid and electrolyte balance in assigned adults with compromised responses of elimination.
8. Provide preparation, teaching, and follow-up care for adults undergoing common diagnostic tests for urinary elimination.
9. Correctly calculate intake and output.
10. Obtain a urine specimen.
11. Accurately prepare, maintain and assess patients with catheters and closed urinary drainage systems including removal of catheters.
12. Care for a patient with a continuous bladder irrigation system.
13. Provide care of a patient with a urinary diversion device.

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Urinary Elimination Medications

Cholinergics

- Urecholine (bethanecol chloride)

Anticholinergics

- Propantheline bromide (Pro-Banthine)
- Imipramine hydrochloride (tofranil)

Antispasmodics

- Oxybutynin chloride (Ditropan)
- Dicyclomide hydrochloride (Bentyl)
- Belladonna and Opioid (B & O) suppositories

Urinary Tract Infection Medications

- Antibiotics
 - Trimethoprim sulfamethoxazole (Bactrim or Septra)
 - Ciprofloxacin (Cipro)
 - Nitrofurantoin (Macrochantin)
 - Cephalexin (Keflex)
 - Tetracycline
- Phenazopyridine hydrochloride (Pyridium, Azo-Standard)
- Acetohydroxamic acid (Lithostat)

Narcotic Analgesic

- Morphine Sulfate
- Meperidine (Demerol)

Non-Narcotic Analgesic

- Ketoralac (Toradol)

Other

- Oxybutynin (Ditropan)
- Diphenhydramine (Benadryl)
- Epinephrine
- Allopurinol (Zyloprim)

Bowel Prep for Urinary Diagnostics

- Magnesium Citrate

Rev 12/15/09

- Go-Lytely
- Fleets Enema
- Bisacodyl (Ducolax)

Medications for Erectile Dysfunction

- Aloprostadiol (Prostin)
- Sildenafil (Viagra)
- Verdenafil (Levitra)
- Tadalafil (Cialis)
- Testosterone (Delatesteryl)

Medications for Benign Prostatic Hypertrophy (BPH)

- Tamsulosin (Flomax)
- Prazosin (minipress)
- Doxazosin (Cardura)
- Terazosin (Hytrin)
- Saw Palmetto

Anti-Neoplastics

- Bacille Calmette-Guerin (BCG)
- Thiopeta
- Leuprolide (Lupron)
- Goserelin (Zoladex)

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Alteration in Urinary Elimination Study Guide

1. List several medications that could be used to treat acute and/or chronic pyelonephritis. Include patient teaching and common side effects.
2. What condition is commonly treated with oxybutynin (ditropan) and phenazopyridine (Pyridium)? Include patient teaching for these two medications.
3. What is the difference in the mechanism of action of loop diuretics and osmotic diuretics?
4. What teaching related to adverse reactions and precautions should be included in a teaching plan for a patient on diuretics?
5. What medications are most often prescribed for the treatment of erectile dysfunction?
6. What is the mechanism of action of the above meds and what information should be included in a teaching plan for a patient taking this medication?

7. Name a medication commonly used to treat BPH and answer the following questions.
 - a. What is the usual dosage schedule for this med?
 - b. What is the MOA?
 - c. List common side effects.

8. Name 4 meds used to treat prostate cancer and answer the following questions related to these meds:
 - a. What is the MOA?
 - b. How are these meds administered?
 - c. Identify patient teaching information to be included in a teaching plan.

Diuretics

Used for treatment of hypertension (HTN), edema, congestive heart failure (CHF), renal dysfunction

Diuretic class	Mechanism of action	General information	Contraindications	Side effects/adverse effects	Nursing considerations
<p><u>Thiazide diuretics</u></p> <ul style="list-style-type: none"> • <u>Hydrochlorothiazide</u> <ul style="list-style-type: none"> ○ Esidrix ○ Hydrodiuril • <u>Chlorothiazide</u> <ul style="list-style-type: none"> ○ Diuril ○ Chlorthalidone ○ Quinethazone 	Inhibit reabsorption of salt (Na ⁺ and Cl ⁻) in the distal renal tubule thereby increasing excretion of salt and water	<ul style="list-style-type: none"> • Orally • Generally mild side effects • Effective for long-term use • Can be primary treatment for HTN 	<ul style="list-style-type: none"> • Allergy and allergy to sulfonamides • F/E imbalance • Gout • Diabetes • Renal disease • Liver disease • Pregnancy/lactation 	<ul style="list-style-type: none"> • Dizziness, vertigo, weakness • Nausea, vomiting, anorexia • Dry mouth • Orthostatic hypotension • Polyuria, nocturia • Photosensitivity • Muscle weakness or cramps 	<ul style="list-style-type: none"> • Administer early AM to decrease sleep disturbance. • Give with food or milk to decrease GI disturbance • Stand slowly – safety precautions • Monitor electrolyte levels (esp. K⁺) • Add K⁺ rich foods or supplement • Monitor I & O, daily weight, and hydration • Home care - Patient report weight change of more than 3lb/day • Photosensitivity – wear sunscreen, sunglasses, and protective clothing • Increased risk of dig toxicity with hypokalemia
<p><u>Loop Diuretics</u></p> <ul style="list-style-type: none"> • Furosemide (Lasix) <ul style="list-style-type: none"> ○ Usual dose 20 – 80 mg • Bumetanide (Bumex) • Ethacrynic acid (Edecrin) • Torsemide (Demadex) 	Inhibits reabsorption of salt in the proximal and distal renal tubules and the loop of Henle	<ul style="list-style-type: none"> • Potent, rapid-acting diuretic • Can be given PO, IM, or IV • Used often with thiazides fail or patient needs rapid diuresis 	<ul style="list-style-type: none"> • Same as thiazides 	<ul style="list-style-type: none"> • Same as thiazides • Glycosuria • Thrombophlebitis • Blood dyscrasias • Ototoxic (can cause irreversible hearing loss – especially when given rapid IV push) • Rash 	<ul style="list-style-type: none"> • Same as thiazides • IV administration <ul style="list-style-type: none"> ○ Slow IV push (10 – 20mg/min) • Check compatibility with other meds and IVF • Protect from light • Use within 24 hours after dilution

					<ul style="list-style-type: none"> Assess patient frequently for s/s of F/E imbalance
<p><u>Potassium-Sparing Diuretics</u></p> <ul style="list-style-type: none"> Spironalactone (Aldactone) Triamterene (Dyrenium) 	Blocks the effects of aldosterone in the renal tubule, causing loss of Na ⁺ and H ₂ O and retention of K ⁺	<ul style="list-style-type: none"> Used especially if hypokalemia is a problem Also used to treat patient with high aldosterone levels 	<ul style="list-style-type: none"> Allergy hyperK⁺ renal disease lactation use cautiously with ACE inhibitors 	<ul style="list-style-type: none"> dizziness, drowsiness, headache diarrhea, cramping rash 	<ul style="list-style-type: none"> similar to thiazides avoid high K⁺ foods avoid salt substitutes for GI problems, administer after meals
<p><u>Osmotic Diuretics</u></p> <ul style="list-style-type: none"> Mannitol (Osmitol) 	Hinders reabsorption of water in the kidneys leading to loss of water and sodium chloride)	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> renal disease intracranial bleeding dehydration CHF 	<ul style="list-style-type: none"> Dizziness Nausea, anorexia Dry mouth, thirst Diuresis Dizziness 	<ul style="list-style-type: none"> Given IV only Do not refrigerate – causes crystallization Use IV filter with tubing Foley catheter (F/C) may be inserted to manage and monitor diuresis Monitor patient's hydration status,

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Genitourinary Trauma Handout

Site of Injury	Causes	Symptoms	Medical Management	Surgical Management
Ureteral Trauma	Penetrating trauma and unintentional injury during surgery. Gunshot Wounds (95%)	None specific Often Discovered during exploratory surgery	Control hemorrhage, pain and infection Monitor H & H Monitor for oliguria, hemorrhagic shock and acute peritonitis	Surgical repair with stent placement
Bladder Trauma	Pelvic fracture Multiple trauma Blow to lower abdomen when bladder is full	Contusions – ecchymosis Complications include hemorrhage, shock, sepsis and extravasation of blood into tissues	Same as above	Surgical repair of bladder, urinary diversion devices or artificial bladder
Urethral Trauma	Blunt trauma to lower abdomen or pelvic region. Pelvic fractures.	Classic triad – blood at urinary meatus, inability to void and distended bladder	Same as above	Surgical repair of Urethra. Suprapubic catheter possibly.
				For all of above: Delayed surgical repair is favored because of fewer long-term complications such as impotence, strictures and incontinence. Indwelling catheter up to 1 month
Renal Trauma	Blunt Trauma – automobile or motorcycle crashes, falls, athletic injuries and assaults (80 – 90%). Penetrating Trauma – GSW, stabbing (10 – 20%)	Pain, renal colic, hematuria, mass or swelling in flank, ecchymosis. Hematuria most common, but there is no relationship between the degree of hematuria and degree of injury. Hypovolemia and shock likely with significant hemorrhage.	Control hemorrhage, pain and infection. Preserve and restore renal function All urine saved to detect RBCs. H & H Monitored Monitor for oliguria and hemorrhagic shock. Assess for hematoma around lower ribs and vertebrae, flank and abdomen.	Depends on severity of injury. Vascular injuries require immediate surgical intervention. Nephrectomy possible

Nursing Management for All Genitourinary Trauma

1. Assess GU/Renal system frequently for detection of flank and abdominal pain
2. Assess for muscle spasms and flank swelling
3. Routine incision care for patients receiving surgery.
4. Teach patient about home care of surgical site
5. Teach patient to report fever, hematuria, flank pain or s/s decreased kidney function.
6. Activity is gradually increased including driving and lifting. The time frame will be individual and provided by surgeon.
7. Follow-up care includes monitoring of blood pressure and restriction of activities for 1 month.
8. Renal trauma/surgery patients should also be advised to keep periodic follow-up assessment for BUN, creatinine and creatinine clearance.

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