Student Name: Gracie Brewster
Medical Diagnosis/Disease: UTI

NCLEX IV *(8)*: Physiological Integrity/Physiological Adaptation

Anatomy and Physiology

Normal Structures

A & P

See separate page :)

Pathophysiology of Disease

infections that affect the urinary tract.
Escherichia coli is most common. Seen primarily in women (shorter urethra).
Candida albicans is second most common causing UTIs associated with indwelling caths.
Terms used to delineate the location is pyelonephritis, cystitis, urethritis.

Urosepsis → spread to entire system!

NCLEX IV *(7)*: Reduction of Risk

Anticipated Diagnostics

Labs
- CBC - culture
- UA
- clean catch
- 24h urine
- BUN/CREAT - GFR

Additional Diagnostics
- ultrasound
- CT scan

NCLEX II *(3)*: Health Promotion and Maintenance

Contributing Risk Factors
- Women - obesity
- congenital defects that lead to obstructions.
- Aging - multiple sex partners
- DM
- HIV infection - pregnancy
- Renal impairment
- retention - poor hygeine
- catheters
- stones

Signs and Symptoms

"LUTS"
- dysuria
- hesitency
- frequency
- urgency
- suprapubic pressure
- hematuria
- sediment
- cloudy
- fever, chills
- flank pain.

"older"
- cognitive changes

Possible Therapeutic Procedures

Non-surgical
- Abx
- hydration

Surgical
- obstruction removal?

Otherwise, NA.

NCLEX IV *(7)*: Reduction of Risk

Prevention of Complications

(What are some potential complications associated with this disease process)
- Urosepsis!
- recurring infection
- kidney damage

NCLEX IV *(6)*: Pharmacological and Parenteral Therapies

Anticipated Medication Management
- Antibiotics
- IVF
- (TMP, SMX)
- cipro / levo fluxacin

NCLEX IV *(5)*: Basic Care and Comfort

Non-Pharmacologic Care Measures
- Hydration - warm shower or bath.
- I & O
- daily weight - cranberry juice
- local heat
- ↓ caffeine, ETOH, citric juices.

NCLEX III *(4)*: Psychosocial/Holistic Care Needs

What stressors might a patient with this diagnosis be experiencing?
- pain
- long term abx?
- fear of septic shock.
- Embarrassment

Client/Family Education

List 3 potential teaching topics/areas
- Wipe perineal area from front to back.
- Finish entire course of antibiotics
- proper peri-care, overall hygeine.

NCLEX I *(1)*: Safe and Effective Care Environment

Multidisciplinary Team Involvement

(Which other disciplines do you expect to share in the care of this patient)
- Urologist
- PCP
- Infectious disease
- Microbiology

can be classified as complicated + uncomplicated.

uncomplicated - otherwise normal urinary tract.

complicated - urinary tract with structural or functional problems. (ex: obstruction, stones, catheter, AKI, CKD).

patho

The urinary traut above the urethra is normally sterile. many mechanisms aid in maintaining sterility such as normal voiding w/ complete emptying of bladder, ureterovesical junction competence, and ureteral peristaltic activity that propels urine → bladder. Antibacterial characteristics are maintained by an acidic PH, high urea concentration and glycoproteins interfering w/ bacterial growth. change in any of these will increase the risk of UTI's.

The organisms that usually cause UTI's originate in the perineum and introduced via the ascending route from the urethra. instrumentation allows bacteria that are normally present at the urethra to enter the urethra or bladder. sexual intercourse promotes "milking" of bacteria from the vagina and perineum and may cause trauma → UTI's. They can also result from hematogenous transmission (blood borne bacteria invade kidneys, ureters, or bladder) for this to occur, there must be prior injury to urinary traut.

UTIs - are the most common HAI (usually by "CAUTIs" indwelling catheters).

THE URINARY SYSTEM A&P

The UPPER URINARY SYSTEM consists of 2 kidneys and 2 ureters
The LOWER URINARY SYSTEM consists of a urinary bladder and urethra...

KIDNEYS:

- Main organs of the urinary syst. Primary functions include the regulation of volume and composition of Extracellular fluid, AND the excretion of waste products from the body.
- They function to control BP, make erythropoietin, activate VitaminD, and regulate acid-base balance.

macrostructure – They are paired and bean shaped located behind the peritoneum on either side of the vertebral column, just around the 3rd lumbar and 12th thoracic vertebra. [R is lower than L]. An adrenal gland lies on top of each. It is surrounded by fat and connective tissue (for cushion). A thin smooth layer of fibrous tissue [The capsule] covers each surface. This protects them and is a shock absorber. The hilus, on the medial side of each is where the renal artery and nerves enter and where the renal vein and ureter exit. The parenchyma is the tissue of the kidney [outer layer is called the cortex, inner layer is called the medulla]. The medulla consists of a few pyramids... The Apices (TOPS), are the papillae [through which urine passess to enter the calyces]. minor calyces widen and form into major calyces, this forms into a funnel shaped sac called the renal pelvis. Those minor and major calyces transport urine to the renal pelvis, it then drains through the ureters to the bladder.

microstructure – The nephron is the functional unit of the kidney. Each nephron is composed of the glomerulus, Bowmans capsule, and a tubular system consisting of the proximal convoluted tubule, loop of Henle, distal convoluted tubule, and collecting tubules. The cortex includes the glomerulus, Bowmans capsule, and proximal/distal tubules. The medulla includes the loop of henle and collecting tubules. Many collecting tubules join to form a single collecting duct, eventually merging to empty via the papilla.

BLOOD SUPPLY

Blood flow to the kidneys [around 1200 mL/min. - Accounts for 20-25% of the cardiac output. Blood reaches them via the renal artery which arises from the aorta and enters kidneys through the hilus. The renal artery divides into secondary and even smaller branches forming an afferent arteriole. This divides into the glomerulus [a collection of up to 50 capillaries]. These capillaries unite in the efferent arteriole. This splits to form the peritubular capillaries surrounding the tubular system. ALL peritubular capillaries drain into the venous system and the renal vein empties into the IVC.

URINE FORMATION

This is the outcome of the complex process of filtration, reabsorption, secretion/excretion of water, electrolytes, and metabolic waste products. Filtration begins @ the glomerulus [where blood filters]. It is a semipermeable membrane, allowing a portion of the filtered blood to go into bowmans capsule. from there, it begins to pass down to the tubule. The glomerular filtrate is similar to blood, but lacks blood cells, platelets, and large plasma proteins. The tubules and collection ducts reabsorb essential materials and excrete others. Reabsorption is passage of substance from the lumen of the tubules through the tubule cells, and into capillaries. Tubular secretion is the passage of substance from the capillaries through tubular cells, into lumen of tubule. cont. →

URINE FORMATION (cont'd)

(GFR): Glomerular filtration Rate - amount of blood filtered each minute by the glomeruli.

proximal convoluted tubule: 80% electrolytes absorbed.
- normally all glucose, amino acids, proteins (small).

As reabsorption continues in the loop of henle, water is conserved!

↓LOOP is permeable to water and moderately permeable to sodium, urea, other solutes.

↑LOOP Chloride ions actively reabsorbed, followed by passive reabsorption of sodium ions.

Anti Diuretic Hormone [ADH] is needed for water reabsorption [for balance in kidneys]. Allows H_2O to be reabsorbed into peritubular capillaries and returned to circulation. Osmoreceptors detect ↓ in plasma osmolality sending neural input to hypothalamus. Axons sent to posterior pituitary to inhibit ADH secretion. In the absence of ADH, tubules become impermeable to water → leaving body as urine. [Aldosterone: reab. of Na^+ and water, in exchange for Na^+, K^+ are excreted]
Acid Base regulation - reabsorbing and conserving HCO_3^- and secreting excess H^+.

[ANP (atrial natriuretic peptide ↑ sodium excretion + inhibits renin, ADH, Angio. II. This results in Large volume of diluted urine.]

- Involved in calcium balance. - Active vitamin D essential for calcium absorption.

URETERS -

Tubes carrying urine from renal pelvis to the bladder. [circular/longitudinal].

Uretopelvic Junction: narrow area where each ureter joins the renal pelvis.

They insert to either side of bladder base, at the ureterovesical junctions.

BLADDER -

Behind symphisis pubis and anterior to the vagina and rectum. [stretchable, sac-like]

- Reservoir for urine, contracts when empty.

Normal Adult Output/Day: 1500mL/day.

URETHRA -

Sm. tube incorporates smooth muscle of bladder neck extending to striated muscle of external meatus.

① control voiding

② conduit for urine from bladder to outside of the body.

ACTIVE LEARNING TEMPLATE: *Medication*

STUDENT NAME Gracie Brewster
MEDICATION Lorazepam REVIEW MODULE CHAPTER
CATEGORY CLASS Antianxiety

PURPOSE OF MEDICATION

Expected Pharmacological Action
Enhances action of inhibitory neurotransmitter gama-aminobutyric acid in CNS. impacts memory, motor, sensory and cognitive function.

Therapeutic Use
Produces anxiolytic, anticonvulsant, sedative, muscle relaxant, and antiemetic effects.

Complications
Drowsiness, dizziness
Rare: Weakness, ataxia, HA, hypotension, n/v, injection site reaction.

Medication Administration
- 0.5, 1, 2 mg tablets.
- give with food
- may be crushed
- 0.5-2 mg q4-6h.
- up to 10mg per day.

Contraindications/Precautions
Hypersensitivity, acute glaucoma, severe Resp. depression
neonates, renal/hepatic impairment. depression, R/F suicidal ideation.

Nursing Interventions
- vital signs
  - BP, RR, HR
- Mood

Interactions
Valproic Acid ↑ effects, Alcohol or other CNS depressants may ↑ effects.
Herbals with sedative properties

Client Education
- Drowsiness common!
- seek attention if thoughts of suicide, worsening or onset of depression.

Evaluation of Medication Effectiveness
↓ in restlessness, calmness, decrease in seizure related symptoms.

ACTIVE LEARNING TEMPLATE: *Medication*

STUDENT NAME Gracie Brewster
MEDICATION Levofloxacin REVIEW MODULE CHAPTER _____
CATEGORY CLASS Antibiotic

PURPOSE OF MEDICATION

Expected Pharmacological Action
Inhibits DNA enzyme gyrase in susceptible micro. org's.
interferes w/ bacterial cell wall replication.

Therapeutic Use
Bactericidal
Treatment of susceptible infections.

Complications
Diarrhea, nausia, Abd pain, dizziness, drowsiness, HA,
RARE - swelling in hands, calves, chest pain

Medication Administration
IVPB
250-750 mg q24h.
Incompatible with...
- Lasix
- heparin
- insulin
- Diprivan

Contraindications/Precautions
Hypersensitivity
CNS disorders, seizure disorder, renal impairment, braaycaraia. DM, hypokalemia

Nursing Interventions
- serum glucose
- labs (infection)
- VS
- bowel activity

Interactions
↓ effect of BCG, Antacids ↓ absorption, NSAIDS ↑ CNS stimulation, may ↑ anticoag effect of warfarin.

Client Education
- complete drug therapy
- report adverse effects
- Drink plenty of fluids.

Evaluation of Medication Effectiveness
- Infection goes away, improves.
- WBC WNL.
  - no fever, chills.

Gracie Brewster

Patient Problems (Nursing Diagnoses)

List two potential patient problems you will be addressing as part of your nurse's notes, along with clinical reasoning, goals/expected outcomes, assessments, and priority nursing interventions. The patient problems must be in priority order. Six nursing interventions for each priority problem must be completed.

Problem # 1 Impaired Urinary Elimination
Clinical Reasoning: Urinary tract infection

Goal/EO: Patient will have a urinary output of at least 30mL/hr during my time of care.
Ongoing Assessments: Assess voiding pattern, I&O, amount/frequency/characteristics of urine output.

NI:
1. Encourage adequate fluid intake during my time of care.
2. Encourage continued ambulation or position changes during my time of care.
3. Insert urinary catheter as ordered if indicated during my shift.
4. Administer prescribed antibiotic as ordered during my time of care.
5. Encourage pt to void q2hours to flush bacteria, if indicated by provider during my care.
6. Teach to avoid colas, ETOH, tea, and coffee during my care.

Problem # 2 Acute pain: suprapubic/lower back area.
Clinical Reasoning: Urinary tract infection

Goal/EO: Patient will report a pain of 5/10 or less on numeric scale during my time of care.
Ongoing Assessments: Assess parst of pain q4hr. Assess pain goal q4hr.

NI:
1. Administer analgesic as ordered during my time of care.
2. Apply a heating pad to suprapubic area or lower back during my time of care.
3. Instruct patient to use sitz bath for relief during my shift.
4. Encourage diversional activities such as reading or watching TV during my time of care.
5. Eliminate additional stressors or sources of discomfort during my shift.
6. Provide rest periods and clustered care during my shift.

ATI Virtual Clinical Questions and Reflection:

1) Identify two members of the healthcare team collaborating in the care of this patient:
   a. Craig, RN
   b. Dr. Baxter
2) What were some steps the nursing team demonstrated that promoted patient safety?
   a. Medication reconciliation by craig and the pharmacy.
   b. Reassessing SpO2% for optimal safety concerning breathing.
   c. Continuous communication and instruction between Dr. Baxter and nurses for safety (breathing, heart failure, shock, skin integrity).
3) Do you feel the nurse and medical team utilized therapeutic communication techniques when interacting with individuals, families, and health team members of all cultural backgrounds?
   a. If **yes**, describe:
   Yes, all of the nurses and Dr. Baxter use therapeutic communication with Mrs. Jordan. They were descriptive and informative during assessing and interventions, but also allowed for and showed comfort to her during a time of confusion, fear, and pain. Asking open-ended questions and active listening. They also clarified topics that Mrs. Jordan was not familiar with such as buck's traction.
   b. ~~If no, describe~~:

Reflection

1) Go back to your Preconference Template:
   a. Indicate (circle, star, highlight, etc.) the components of your preconference template that you saw applied to the care of this patient. ✓
2) Review your Nursing Process Form: Did you select a correct priority nursing problem?
   a. If **yes,** write it here: _____
   b. If **no,** write what you now understand the priority nursing problem to be:
   Decreased cardiac output
3) Review your Patient Problem Form: Did you see many of your anticipated nursing assessments and interventions used?
   a. Were there interventions you included that *were not* used in the scenario that could help this patient?
      i. If **yes,** describe:
      Encouraging mobility, ambulation (with assistance) and changing positions. Applying heating pad to affected area. (↑ urine output)
      ii. If **no,** describe:
      NA
4) After completing the scenario, what is your patient at risk for developing?
   a. Urosepsis shock, death; worsening CHF.
   b. Why? UTI, shortness of breath, decreased level of consciousness, incorrect medication use (multiple doses/bottles).

5) What was your biggest "take-away" from participating in the care of this patient? How did this impact your nursing practice?

The biggest take-away from participating in the care of this patient is that even if the admitting diagnosis is centered around one topic, their main problem and center of care could be something much different than anticipated. In this case, Mrs. Jordan was diagnosed with a urinary tract infection, however, her most pertinent problem was actually decreased cardiac output. Yes, urinary elimination and urine characteristics where something to very closely monitor and treat, but her problems concerning cardiac health leading to impaired gas exchange (due to her history of heart failure) where much more important to tackle as a team. This experience showed me to think critically about what is most important when caring for a patient with many problems. Moving forward in my nursing practice, I can continue to think critically and reference this scenario. for example, if my patient has a UTI but is short of breath, I wont wait to assist in improving gas exchange to treat the UTI, instead, I will do all I can to assist in fixing the most pertinent problem at hand. (think ABC's). This was very helpful and will help in bettering my nursing practice in centered care!

SOAP Note Based on Priority Problems

Priority Patient Problem #1: Decreased cardiac output

Subjective: *This section explains the client symptoms. Include a narrative of the patient's complaints/concerns and/or information obtained from secondary sources.*	**History Present Illness (HPI):** 78 female, JJ, admitted to ED for urosepsis. **PMH:** Chronic heart failure, Diabetes. **Allergies:** NKA **Current Medications:** Furosemide (20mg/40mg) Potassium chloride (20meq/40meq) Digoxin .125, Atenolol 25mg, Isosorbide 10mg. (new med orders below) (Med reconciliation requested by Craig, RN to pharm.)
Objective: *This section is your clinical observations. Include pertinent vital signs, pertinent labs and diagnostics related to the priority problem.*	**Vital Signs:** T: 100.6, HR: 98, RR: 28, BP: 130/94, SpO2: 89% 2L NC. (most recent) T: 101 HR: 98, RR: 24, BP: 128/82, SpO2: 85% 4L. **Labs:** Cholesterol: 225 Albumin: 3.2 ABG: Ph: 7.28, CO2: 35 HCO3: 20 **Diagnostics:** WBC: 13000, BUN: 21 XRAY: ♡ size enlarged, consistent with hypertrophy of L ventricle.
Assessment: *Focused assessments on your priority problem.*	very short of breath, lung clear but shallow respirations [redacted]. states "I dont feel so good" and said she is "so cold". HR: 98, RR: 28, BP: 130/94, SpO2: 89% 2L NC. output: 0700, 100mL (indwelling cather) Total output: 460 - urine cloudy, slight amber color.
Plan ***Based on priority problem only** *Include what your plan is for the client. What treatments or medications are needed? You can include procedures, consults, labs/diagnostics, etc. What nursing interventions are being performed?*	**Plan:** Orders • Levofloxacin 250mg IV bolus q12hr. • O_2 per nasal cannula to keep sats 79O%. • up as tolerated. • Low sodium diet. • VS q4hr. • Routine I&O • Digoxin 0.25mg PO daily starting 8/2/xx. • Furosemide: 20mg IV bolus if UO < 500mL in 6hours. Albuterol 0.5% via neb q2hr PRN resp. difficulty. Discontinue IV lactated ringers. change to 0.9% sodium chloride 150mL/hr. **Teaching & Resources:** • Finish entire abx course! • Medication compliance!