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Medical Diagnosis/Disease: UTI

NCLEX IV (8): Physiological Integrity/Physiological Adaptation

Anatomy and Physiology
Normal Structures
Upper urinary tract: kidneys & ureters
Lower urinary tract: bladder & urethra
Kidneys: filter blood, removes waste and excretes it in urine, monitors BP, secretes renin
-capsule: outer covering
-hilum: where the renal artery enters, & the renal vein & ureter leave the kidney
-medulla -> renal pyramids -> renal papillae -> renal columns (portions of cortex extending between pyramids)
-medulla + cortex = parenchyma
- central region = renal pelvis (located in the renal sinus) -> minor/major calyces
-parenchyma contains fx units = nephrons = urine passes from here to minor calyces
Ureters: carry urine from renal pelvis to urinary bladder, middle layer contains smooth muscle which aids in peristalsis to propel the urine
Bladder: temporary reservoir for urine in the pelvic cavity
-when empty: has folds called rugae which allow bladder expansion
-muscularis: layer of smooth muscles collectively called the detrusor muscle (contraction of this muscle expels urine)
-trigone: formed by 3 openings in the floor (2 from ureters, 1 from urethra)
-band of the detrusor muscle encircles the urethral opening to form the internal urethral sphincter
Urethra: final passageway for flow of urine
-opening to outside= external urethral orifice
-much longer in males, transports both urine & semen

Pathophysiology of Disease
Infections of upper or lower urinary tract

E.coli = (gram - from GI tract) most common pathogen (primarily in women), Candida albicans = 2nd most common pathogen (indwelling cath/asx colonization)

Pyelonephritis = inflammation of the renal parenchyma, **Cystitis** = inflammation of the bladder, **Urethritis** = inflammation of the urethra, **Urosepsis** = systemic UTI (life threatening)
Uncomplicated = occur in otherwise normal urinary tract & usually only involve the bladder, **Complicated** = structural/fx problem in tract (obstruction, stones, cath, abnormality, AKI, CKD, DM, neurologic diseases)

Urinary tract above urethra = sterile

Defense mechanisms that maintain sterility/prevent UTIs = normal voiding, ureterovesical junction, ureteral peristaltic activity
Urine characteristics that interfere w bacterial growth = acidic pH (<6), high urea conc, glycoproteins
**change in any of these defense mechanisms inc risk of UTI

Organisms usually causing UTI originate from the perineum, instrumentation (examination, cath) & sex may introduce bacteria, hematogenous transmission (blood-borne bacteria from elsewhere in body), CAUTI

NCLEX IV (7): Reduction of Risk

Anticipated Diagnostics
Labs

Dipstick urinalysis: ID presence of nitrites, WBC, leukocyte esterase

Urine culture
*clean-catch urine sample
*culture w sensitivity testing determines the bacteria's susceptibility to a variety of ABX

Clinically significant = bacterial count of 10⁵

Additional Diagnostics

Imaging of urinary tract: ultrasound, CT

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors
Sex
Urologic instrumentation (cath, cytosopic examinations)
Infection/bacteria elsewhere in the body
Not taking ABX as Rx
Proper hygiene: keeping perineum clean, wiping front to back
Dehydration
Not regularly voiding
Vaginal douches, harsh soaps, bubble baths, powders & sprays

Signs and Symptoms
Painful urination, abd/back/flank pain, fever, sepsis, chills, dysuria, frequency (>q2h), urgency, suprapubic discomfort, pressure, hematuria, sediment/cloudy urine, asx, non-specific sx (fatigue, anorexia)
Elderly: non-localized abd discomfort, cognitive impairment, generalized clinical deterioration (*temp = unreliable)

NCLEX IV (7): Reduction of Risk

Possible Therapeutic Procedures
Non-surgical
Antimicrobial therapy: empiric ABX, or chosen from results of sensitivity testing

Surgical
N/A (unless due to an occlusion)

Prevention of Complications
(What are some potential complications associated with this disease process)

Practice good hygiene, wipe from front to back, keep perineal area clean, pee before & after sex, take ABX as Rx, void regularly, maintain adequate fluid intake, avoid products that may irritate the perineal area

NCLEX IV (6): Pharmacological and Parenteral Therapies

Anticipated Medication Management
ABX: fluconazole, trimethoprim, phenazopyridine, ampicillin, amoxicillin, 1st gen cephalosporin, fluoroquinolones, **FIRST LINE TX** = nitrofurantoin, fosfomycin, trimethoprim/sulfamethoxazole (TMP/SMX)
Urinary analgesic: phenazopyridine

NCLEX IV (5): Basic Care and Comfort

Non-Pharmacologic Care Measures
Adequate fluid intake
Hygiene

NCLEX III (4): Psychosocial/Holistic Care Needs

What stressors might a patient with this diagnosis be experiencing?
Pain, confusion, discomfort, inability to resume daily responsibilities due to frequent urination/pain

Client/Family Education

List 3 potential teaching topics/areas
• phenazopyridine may cause urine to turn orange/red

• Take ABX as Rx for entirety of Rx to avoid ABX resistance/recurrent infection

• Health promotion: proper hygiene

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)

Urology, pharmacy, laboratory, nutrition, nursing, primary care physician

Potential Patient Problems (Nursing Diagnoses)

List two potential patient problems you will be addressing along with clinical reasoning, goals/expected outcomes, assessments, and priority nursing interventions. The patient problems must be in priority order.

Problem # 1: Acute Pain: Urethra/Suprapubic/Flank Areas

Clinical Reasoning: Inflamed urinary tract due to infection

Goal/EO: ATI will report pain score no greater than 3/10 on the standardized numerical pain scale during my time of care.

Ongoing Assessments: pain PQRST q4h, pain score q4h, pain goal q shift, evaluate meaning of/relationship to pain q shift, s/sx r/t pain (elevated BP, HR, Temperature) q4h

- NI:
1. Anticipate the need for pain relief q4h
 2. Eliminate additional stressors or sources of discomfort PRN
 3. Provide rest periods to facilitate comfort, sleep, relaxation q4h
 4. Administer Lorazepam PO as indicated on MD order
 5. Encourage hydration PO with drink of choice at all times
 6. Encourage distraction techniques (TV, Reading, etc.) q4h
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Problem # 2: Deficient Fluid Volume

Clinical Reasoning: Frequent urination caused by UTI

Goal/EO: ATI is normovolemic evidenced by normal skin turgor, systolic BP greater than or equal to 90 (or baseline), and HR of 60-100bpm prior to discharge.

Ongoing Assessments: weight q day, maintain strict I&Os at all times, measure BP/HR q4h, assess skin turgor q shift, monitor serum electrolytes q8h, assess oral mm q shift

- NI:
1. Encourage ATI to drink extra fluid at all times to reach a goal of 2-3L/day
 2. Perform oral hygiene q shift
 3. Administer IV fluids and maintain flow rate per MD order
 4. Assist ATI with eating at mealtimes
 5. Encourage food choices containing electrolytes (sodium, potassium) at mealtimes
 6. Educate ATI on the importance of maintaining sufficient fluid volume intake (2-3L/day) prior to discharge

ATI Virtual Clinical Questions and Reflection:

- 1) Identify two members of the healthcare team collaborating in the care of this patient:
 - a. Angela, RN, charge nurse
 - b. Craig, RN
- 2) What were some steps the nursing team demonstrated that promoted patient safety?
 - a. Ensuring call bell was within reach of patient at all times
 - b. Checking on patient within appropriate timeframe after administering PO medication
 - c. Verifying the patient using name and date of birth identifiers
- 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:
Asking to turn the TV volume down so the nurse could give the patient his undivided attention, explaining to the patient each step of an assessment or procedure prior to or throughout the process, professional pleasant communication between interdisciplinary team members
 - 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: excess fluid volume, ineffective breathing pattern
- 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: I think that using distraction techniques could have been a helpful tool once the patient was stabilized, since she was upset about not being a good candidate for hip surgery. Having her read a book or watch TV that she enjoys might help take her mind off the situation and helped ease her emotions or anxiety.
 - ii. If **no**, describe:

- 4) After completing the scenario, what is your patient at risk for developing?
 - a. Metabolic Acidosis

- b. Why? The patient's ABGs evidence that she is at risk for metabolic acidosis, which was exacerbated when she became septic. Sepsis is a widespread infection that triggers a whole-body inflammatory response. In this case, it can lead to distributive shock because of the presence of infectious microorganisms in the blood from an active UTI.
- 5) What was your biggest "take-away" from participating in the care of this patient? How did this impact your nursing practice?

My biggest take away from this clinical experience is that you really have no idea what kind of condition your patient is going to be in until you are able to get your eyes on them and do an assessment. As I completed my pre-scenario research, I was strictly thinking about UTIs and expecting that to be the patient's priority problem. However, as soon as the simulation began, I quickly realized that there were far bigger concerns to prioritize in the care of this patient. This is going to impact my nursing practice moving forward, especially when in clinical when I am doing patient research prior to meeting my patient. I'm going to remember that the chart information is useful, but often does not always paint the full picture.

SOAP Note Based on Priority Problems

Priority Patient Problem #1: Excess Fluid Volume

<p><u>Subjective:</u></p> <p><i>This section explains the client symptoms. Include a narrative of the patient's complaints/concerns and/or information obtained from secondary sources.</i></p>	<p>History Present Illness (HPI): UTI – Urosepsis, Left Hip fracture</p> <p>PMH: CHF, DM, cholesterol</p> <p>Allergies: NKA</p> <p>Current Medications: glyburide 2.5mg PO daily with breakfast, levofloxacin 250mg IV bolus q12h, digoxin 0.25mg PO now, Digoxin 0.25mg PO starting 8/2/xx, furosemide 20mg IV bolus if less than 500 mL UO in next 6hr, albuterol 0.5% in 3mL 0.9% NaCl via nebulizer q6h, acetaminophen 325mg PO q4h PRN for fever greater than 37.7C, lorazepam 2mg PO q6h PRN for agitation and restlessness, lactated ringers 1000mL IV at 30mL/hr</p>
<p><u>Objective:</u></p> <p><i>This section is your clinical observations. Include pertinent vital signs, pertinent labs and diagnostics related to the priority problem.</i></p>	<p>Vital Signs: T 38.1C, HR 98, RR 28, BP 130/94, O2 Sat 89% 2L</p> <p>Labs: Hgb 11.3g/dL, Hct 33%, WBC 13,000, BUN 21mg/dL, Albumin 3.2mg/dL, cholesterol 225mg/dL</p> <p>Diagnostics: Urinalysis: urine cloudy, slight amber, specific gravity 1.039, protein 2mg/dL, leukocyte esterase +, WBC 10, RBC 4-6, RBC casts +, Xray: Heart - lungs well aerated, no evidence of consolidation, heart size enlarged consistent with hypertrophy of LV</p>
<p><u>Assessment:</u></p> <p><i>Focused assessments on your priority problem.</i></p>	<p>Intake 2710mL, Output 200mL, RR 28, O2 sat 89% on 2L, rapid shallow breathing, restlessness, agitation, crackles over heart, pitting edema bilateral LE +2, nausea, bucks traction to LLE with 10lb weight</p>
<p><u>Plan</u></p> <p>*Based on priority problem only</p> <p><i>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?</i></p>	<p>Plan:</p> <p>Continue Digoxin 0.25mg PO starting 8/2/xx, furosemide 20mg IV bolus if less than 500 mL UO in next 6hr, albuterol 0.5% in 3mL 0.9% NaCl via nebulizer q6h, lorazepam 2mg PO q6h PRN for agitation and restlessness</p> <p>Strict I&Os, assess edema, LOC, breath sounds, monitor HR, BP, O2 Sat and RR closely, maintain positioning for optimal breathing (semi-high fowler's), preform diligent catheter/peri care</p> <p>Consult nutrition for low sodium, heart healthy diet</p> <p>Teaching & Resources:</p> <p>Educate patient on treatment plan, importance of adhering to medications, implementation of a heart healthy diet, cholesterol and diabetes management, assess and suggest needed changes for lifestyle habits</p>