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Medical Diagnosis/Disease: UTI

NCLEX IV (8): Physiological Integrity/Physiological Adaptation

Anatomy and Physiology

Normal Structures

- upper urinary system consists of 2 kidneys and 2 ureters.
- the lower urinary system consists of a urinary bladder and urethra.
- Urine is formed in the kidneys and drains through the ureters to be stored in the bladder, and then passes out of the body through the urethra.
- the kidneys are the principal organs of the urinary system.
- primary functions of the kidneys are to regulate the volume and composition of extracellular fluid and excrete waste products from the body.
- the kidneys also function to control BP, make erythropoietin, activate vitamin D and regulate acid-base balance.
- kidneys are bean-shaped organs located behind the peritoneum on either side of the vertebra column.
- right kidney is lower than the left.
- An adrenal gland lies on top of each kidney.
- Each kidney is surrounded by a significant amount of fat and connective tissue that cushion, support and help the kidney to maintain its position.
- nephron is the functional unit of the kidney
- urine formation begins at the glomerulus, where blood is filtered.
- the tubules collecting ducts are responsible for the reabsorption of essential materials and nonessential ones.
- the ureters are tubes that carry urine from the renal pelvis to the bladder.
- the hilus is the entry site for renal veins and ureter
- parenchyma is the tissue of the kidney
- cortex is outer layer
- Inner is the medulla

Pathophysiology of Disease

The urinary tract above the urethra is normally sterile. Several mechanical and physiological defense mechanisms aid in maintaining sterility and preventing UTIs. These defense s include normal voiding with complete bladder emptying, ureterovesical junction (UVJ) competence, and ureteral peristaltic activity that propels urine toward the bladder. The antibacterial properties abundant antimicrobial proteins and peptides that interfere with the bacterial growth. A change in any of these defense mechanisms increases the risk for UTI. The organisms that usually cause UTIs originate in the perineum. They are introduced via the ascending route from the urethra. Most infections are caused by gram-negative bacilli normally found in the gastrointestinal tract. However gram-positive organisms, such as streptococci, enterococci, and staphylococcus saprophyticus can also cause UTIs. A common factor contributing to ascending infection is urologic instrumentation. Instrumentation allows bacteria that are normally present at the opening of the urethra to enter the urethra or bladder. Sexual intercourse promotes “milking” of bacteria from the vagina and perineum. It may cause minor urethral trauma that predisposes women to UTIs. UTIs can result from hematogenous transmission, in which blood-borne bacteria invade the kidneys, ureters and bladder from elsewhere in the body. For a kidney infection to occur, there must be prior injury to the urinary tract such as obstruction of the ureter, damage caused by stones, or renal scars. UTIs are the most common health care-associated infection. They are mainly due to the use of an indwelling catheter. CAUTIs are often caused by E. coli and lead to extended hospital stays increased health care costs and increased mortality.

NCLEX IV (7): Reduction of Risk

Anticipated Diagnostics

Labs

- obtain a dipstick urinalysis
- WBCs**
- leukocyte esterase (and enzyme present in WBCs indicating pyuria)
- urine culture (a void midstream technique)**

Additional Diagnostics

- Ultrasound
- CT scan
- cystoscopy (a procedure that allows dr. to examine the lining of you bladder and the tube that carries urine out of your body)

NCLEX II (3): Health Promotion and Maintenance

Contributing Risk Factors

- Urine retention
- Previous UTI
- Sexual Activity
- Pregnancy
- Age (younger/older)
- Poor hygiene
- Indwelling catheter
- Chronically alkaline urine
- Obesity
- HIV infection
- Female
- Prior injury urinary tract

Signs and Symptoms

*LUTS occur in patients who have UTIs of the upper urinary tract as well as those confined to the lower tract.

*symptoms are related to either bladder storage or bladder emptying

Emptying symptoms:

- Dysuria
- Hesitancy (difficulty starting urine stream, delay between initiation of urination and beginning of flow of urine, diminished urinary stream)
- Intermittency (interruption or urinary stream while voiding)
- Postvoid dribbling (urine loss after completing voiding)
- Urinary retention or incomplete emptying

Storage Symptoms

- incontinence
- Nocturia (awaken by urge to void 2 or more times during sleep)
- Nocturnal enuresis
- Urgency
- Urinary frequency (more than 8 times in 24h period, <200mL each void)

Upper UTIs

- fever
- chills
- flank pain
- *LUT does not usually have systemic manifestations

NCLEX IV (7): Reduction of Risk

Possible Therapeutic Procedures

Non-surgical

- encourage fluids
- instruct voiding every 2-3 hrs
- encourage cranberry juice or vitamin C 500-1000 mg/day
- Limit use of indwelling catheters

Surgical

N/A

Prevention of Complications

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

- repeat infection
- kidney damage
- narrowed urethra in men
- sepsis
- low birth weight or premature infant when pregnant
- urosepsis

NCLEX IV (6): Pharmacological and Psychosocial/Holistic

Parenteral Therapies

Anticipated Medication

NCLEX IV (5): Basic Care and Comfort

Non-Pharmacologic Care

NCLEX III (4):

Care Needs

What stressors might a patient

Management

Antibiotics

- cephalexin
- fluconazole (fungal UTI)
- Fosfomycin (monurol)
- nitrofurantoin (macrobid, Macrobid)
- TMP/SMX (Bactrim, Bactrim DS)
- Trimethoprim alone (sulfa allergy)

*uncomplicated UTIs are treated with a short term course of antibiotics, typically for 3 days

*complicated UTIs need a longer period of tx, lasting 7-14 days or more

Uncomplicated UTIs

- ampicillin
- amoxicillin
- cephalosporins

Measures

- Adequate fluid intake
- patient teaching

with this diagnosis be experiencing?

- pain associated with UTI
- Reoccurring UTIs
- confusion in older adults

Client/Family Education

List 3 potential teaching topics/areas

- Taking antimicrobial drugs as ordered
- Maintaining adequate daily fluid intake
- voiding regularly (every 3-4hrs) and before and after intercourse

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
- Radiologist
- Case management
- lab tech
- pharmacists
- hospitalist

Potential Patient Problems (Nursing Diagnoses)

To Be Completed Before the Simulation

Anticipated Patient Problem: Impaired Urinary Elimination

Clinical Reasoning: Urinary Tract Infection

Goal 1: Pt will void at least 30ml/hr during my time of care

Goal 2: Pt will drink 240ml of fluid during my time of care

Relevant Assessments	Multidisciplinary Team Intervention
(Prewrite) What assessments pertain to your patient's problem? Include timeframes.	(Prewrite) What will you do if your assessment is abnormal?
Assess urinary patters and etiology qshift, prn	Request for possible need of antidiuretic medication
Assess bladder for distention qshift, prn	Encourage frequent toileting with assistance q1hr
Assess urine output q1hour, prn	Encourage 1,000-1,500 a day of preferred drink
Assess urine characteristics, including color, odor, frequency, etc, prn	Obtain a urine culture determine any bacteria
Assess for signs of incontinence such as voiding without knowing, q1hr, prn	Provide with incontinence pad and possible catheter external catheter
Assess I&Os and hydration status q2hrs, PRN	Encourage preferred nutrition and hydration to ensure proper intake of fluids and nutrients

To Be Completed Before the Simulation

Anticipated Patient Problem: Impaired Skin integrity

Clinical Reasoning: Urinary Tract Infection

Goal 1: Pt will maintain skin integrity by keeping the skin dry and clean throughout my shift

Relevant Assessments	Multidisciplinary Team Intervention
(Prewrite) What assessments pertain to your patient's problem? Include timeframes.	(Prewrite) What will you do if your assessment is abnormal?
Assess the activity level and mobility to move independently Q4hr	If unable to get out of bed Q2 turn positioning Q2hr
Assess the general condition of skin Q2hr	Apply barriers and creams prn/Q2hr during repositioning
Assess for erythema and blanching Q2hr	Ensure adequate skin perfusion to relieve pressure on bony prominences
Assess for urinary incontinence Q2hr	Change pad and complete peri care after every incontinence episode
Assess layers to ensure only three layers are present qshift, prn	Remove any additional layer over three
Assess for catheter placement qshift, prn	Ensure proper cleaning of skin to prevent any type of breakdown

Goal 2: Pt will rotate Q2hr to prevent skin breakdown during my time of care

To Be Completed During the Simulation:

Actual Patient Problem: Impaired Gas exchange

Clinical Reasoning: O2 stat 88%, reports difficulty breathing

Goal: Pt will maintain an oxygenation saturation of 92% on 2L NC during my time of care

Met: ☐ Unmet: ☒

Goal: Pt will have bilateral clear lung sounds at the end of my care

Met: ☒ Unmet: ☐

Actual Patient Problem: Impaired Skin Integrity

Clinical Reasoning: stage 2 pressure injury on coccyx, bucks traction in place

Goal: Pt skin will remain dry and intact during my time of care

Met: ☒ Unmet: ☐

Goal: Pt will q2turn with assistance of independently during my time of care

Met: ☐ Unmet: ☒

Additional Patient Problems:

Risk for fall

Impaired urinary elimination

Below will be your notes, add more lines as needed. **Relevant Assessments:** Indicate pertinent assessment findings.

Multidisciplinary Team Intervention: What interventions were done in response to your abnormal assessments?

Reassessment/Evaluation: What was your patient's response to the intervention?

Patient Problem	Time	Relevant Assessments	Time	Multidisciplinary Team Intervention	Time	Reassessment/Evaluation
IGE	0715	SOB, HOB <30 degrees, O2 stat 88%	0715	2L O2 NC administered. Deep breathing exercises	0745	O2 90% on 2L NC
IGE	0815	AP reports pt is "breathing harder". Temp: 100.6, O2: 89, HRL 98, BP: 130/94 RR: 28, Bilateral crackles present. Sputum present. Pitting edema	0815	O2 saturation increased to 4L NC	0834	O2 saturation 94% on 4L NC
IGE	0900	Neighbor dropped off home meds – CHF cardiac meds	0900	Pharmacy contacted for recon	1330	0.25 digoxin PO. Furosemide 20mg IVP. Chest-x-ray ordered. CBC and BMP re-ordered, albuterol 0.5% nebulizer ordered by Dr.

RFF, impaired skin integrity	1330	Yelling for help. Pt found on floor, fell out of bed	1330	Assisted back to bed, provider notified and hip x-ray ordered	1400	x-ray revealed hip fx. Not a candidate for sx per Dr. Baxter and Ortho surgeon due to CHF. Bucks traction LLE 10lbs ordered
Shift change occurred	-	-	-	-	-	-
Impaired skin integrity		Bed bath given. Report of sore bottom. Stage 2 pressure injury over coccyx.		Barrer cream placed over sore. Doctor notified for orders		Stage 2 still present with barrier cream. Skin intact
IGE, IUE		O2 level 85%. RR 32 and shallow. Temp 101 with chills. Cloudy urine with minimal output		6L N.C. Notify provider		Restless. Signs of distributive shock. STAT ABGs, blood culture x2, CBC with differential, activates protein C and urinalysis, 0.9% sodium chloride solution at 150ml/hr ordered

ATI Virtual Clinical Questions and Reflection:

1) Identify two members of the healthcare team collaborating in the care of this patient:

- a. Angela
- b. Dr. Baxtor

2) What were some steps the nursing team demonstrated that promoted patient safety?

- a. Called the pharmacy to clarify questions regarding at home medications
- b. The nursing assistant relayed her concerns regarding the patient to the nurse. She noticed that there were some changes and immediately informed the nurse leaving the nurse to perform an assessment and provide additional care.
- c. After the patient fell out of bed, the nurse ensured to notify, resulting in an x-ray to be performed.

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, I believe that this nursing and medical team had very professional therapeutic communication techniques. When working with each other, each staff member ensured they were fully listening to the information they were being told. Additionally, if they were unsure about a direction or needed clarification, they made sure to ask any questions they had. When assisting and caring for the patient, the staff ensured that they explained every step they were doing to the patient as well as ensured she was comfortable during their time of care.
- 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:
 - i. Originally, I had my primary problem as impaired urinary elimination. While I feel that was a concern during the time of care, I changed my primary problem to impaired gas exchange as it is a more important concern to address.

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:

ii. If no, describe:

Both of my nursing problems, impaired urinary elimination and impaired skin integrity were seen in this scenario. My nursing assessments and interventions related to assessing the urine, maintain I&O, assessing skin breakdown, etc, which were all used throughout this scenario.

4) After completing the scenario, what is your patient at risk for developing?

- a. Distributive shock
- b. Why? I believe that this patient is going sepsis due to her current signs and symptoms. Distributive shock is one of the causes of sepsis. This patient had a fever as well as confusion and a UTI.

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

One of my biggest take aways from participating in this care was the importance of maintaining safety with your patient. During the scenario, the nurses ensured that their patient was safe, yet the patient fell completely out of bed. While this situation did not result in a major outcome for the patient, it still caused for her to not be prepared for a surgery, furthering her stay. This will impact my personal nursing practice because it allowed me to understand the importance of truly knowing your patient. I feel as if I were in a situation like the one in the scenario, due to some of her behaviors, I would have implemented additional measures to ensure her safety. I learned that not patient is fully one hundred percent safe of any fall risk, therefor as the nurse, it is a huge responsibility to ensure the correct measures are set in place to provide the best safety to my patient.

