

Demographic Data

Date of Admission: 06/21/2021

Admission Diagnosis/Chief Complaint: Urinary tract infection/Low back pain

Age: 93 years old (07/22/1927)

Gender: Male

Race/Ethnicity: Caucasian

Allergies: Lisinopril: Hives

Code Status: Full

Height in cm: 170 cm (66.9 inches)

Weight in kg: 64.4 kg (142 pounds)

Psychosocial Developmental Stage: Ego integrity versus Despair (McLeod, 2018)

Cognitive Developmental Stage: Formal operational (McLeod, 2018)

Braden Score: 20

Morse Fall Score: 60

Infection Control Precautions: Contact (methicillin-resistant staphylococcus aureus)

Medical History

Medical History (Chronic & Ongoing): Patient has a past medical history of acute kidney injury, congestive heart failure, bladder cancer, hyperdense renal cyst, inguinal hernia, acute decompensation heart failure, chronic obstructive pulmonary disease, benign prostatic hyperplasia, hypertension, methicillin-resistant staphylococcus aureus, moderate aortic stenosis, pulmonary hypertension, and paroxysmal atrial fibrillation.

Prior Hospitalizations: The patient's recent hospitalizations include a urinary tract infection, chronic kidney disease, bilateral hydronephrosis, chronic diastolic heart failure, and a ureteral stricture. The dates of these hospitalizations were not able to be accessed and the patient did not recall the dates.

Chronic Medical Issues: Patient has chronic urinary tract infections, controlled hypertension, and controlled paroxysmal atrial fibrillation.

Social History: Patient has a history of smoking 3 packs of cigarettes a day for 43 years beginning in 1939 at 12 years old and ending in 1982. Patient denies any history of alcohol consumption. Patient denies any use of recreational or illicit drug use.

Admission History

A 93-year-old Caucasian male presented to the Sarah Bush emergency room on June 21, 2021 with back pain and urinary retention. The patient described the back pain as a dull pain that was accompanied by stomach pain that radiated from the back. The patient stated, "when I tried to pee, I couldn't get it to come out". The patient rated the back and stomach pain as a 6/10 on the numeric pain scale. The patient stated he tried to use ice and heat for the back pain, but he did not have any relief. The patient said he started feeling better after taking gabapentin, acetaminophen, and after getting treated for the urinary tract infection at the hospital.

Pathophysiology

Disease process:

The urinary tract is usually sterile and unaffected by colonization of foreign bacteria even when there's consistent contamination of the urethra with foreign bacteria (Ohio State University, 2019). Women tend to be more at risk for a urinary tract infection because their rectum is close to the urethral opening where there is an excess of bacteria. If there is an obstruction in the bladder, then there is a more risk of a bacterial infection and the patient has obstruction related to swelling of his kidneys. The patient has urinary retention due to a prostatic enlargement and when there is stasis of urine, this pool becomes a place where bacterial likes to grow, so this is also a risk factor for a urinary tract infection. The body releases bacteria through voiding so the fact that the patient is not able to urinate consistently can cause a growth of foreign bacteria. The bacteria may have a seal that resists the acid in the patient's urine, and they may produce cytotoxic necrotizing factor and hemolysins that create further colonization of the bacteria. *Proteus mirabilis*, bacteria in the stool, produces urease which can lessen the acidity of the urine and they are flagellated so this causes a mass of bacteria to move together. Sexual intercourse and contraceptive diaphragms can cause further exposure to these bacteria (Capriotti, 2020).

S/S of disease:

Symptoms of a urinary tract infection include frequency, urgency, hesitancy, possible hematuria, and burning during urination. The patient may also experience pain in the lower urinary tract area. The patient may also only dribble out a small amount of urine because of retaining urine. These symptoms are caused by edema of the urethra and bladder. A male patient may experience bladder spasms. The patient did not experience bladder spasms, but burning, hesitancy, and retention (Capriotti, 2020).

Method of Diagnosis:

A lower urinary tract infection is diagnosed with a urine culture and urinalysis. A urinalysis will show leukocyte esterase, indicating white blood cells if there's an infection by testing a dipstick. The urine colure will show an infection if there is a colony number of bacteria greater than 1,000/mL (Capriotti, 2020)

Treatment of disease:

The best treatment for this infection is an antibiotic. The most common prescribed antibiotics are trimethoprim-sulfamethoxazole and nitrofurantoin, but fluoroquinolones can be used. Phenazopyridine is often used to relief the pain from this infection. Hydration should be used to clear out the bacteria through the urine. Many studies have also showed that cranberry juice decreases risks of a urinary tract infection because it prevents the bacteria to holding on to the bladder wall (Capriotti, 2020).

Lab Values/Diagnostics

Serum Abnormalities

RBC (4.28-5.41 $10^6/\text{mL}$): 2.83

- Patient has acute kidney injury, so his erythrocyte count is low (Capriotti, 2020)

HGB (13-17 g/dL): 8.3

- Patient has acute kidney injury, so his hemoglobin is low (Capriotti, 2020)

HCT (38.1-48.9%): 24.8

- Patient has acute kidney injury, so his hematocrit is low (Capriotti, 2020)

Calcium (8.6-10.3 mg/dL): 8.2

- Patient's kidneys are secreting more calcium since his kidneys are not functioning correctly due to the acute kidney injury (Capriotti, 2020)

BUN (7-25 mg/dL): 31

- Patient's kidneys are not functioning correctly due to the kidneys not functioning correctly, so the kidneys are secreting more blood urea nitrogen (Capriotti, 2020)

Creatinine (0.70-1.30 mg/dL): 1.62

- Patient's kidneys are not functioning correctly due to the kidneys not functioning correctly, so the kidneys are secreting more creatinine (Capriotti, 2020)

Urinary Analysis: White blood cells (0-5): >100

- Patient has a urinary tract infection so there are white blood cells in his urine to help fight the infection (Capriotti, 2020)

Urinary culture: (Negative): >100,000 streptococcus species

- Patient has bacteria in his urinary tract, causing an infection (Capriotti, 2020)

Diagnostics

1-view chest x-ray: The patient shows bilateral patchy groundglass opacities, cardiomegaly, and bilateral pleural effusions (Sarah Bush Lincoln Health Reference Guide, 2021). The chest x-ray was assessing for further kidney failure since the patient has a history of acute kidney failure.

Electrocardiogram (EKG): The patient showed a ventricular paced rhythm with a ventricular rate of 57. The patient has a history of paroxysmal atrial fibrillation (Sarah Bush Lincoln Health Reference Guide, 2021).

Computed Tomography of the abdomen and pelvis without contrast: The patient showed bilateral hydronephrosis of the kidneys, debris in the distal ureters, thickening of the bladder wall, an enlarged prostate, a confirmed cyst on the left renal nodule on 05/23/21, cardiomegaly, and bilateral pleural effusions with atelectasis. The patient has chronic heart failure due to the cardiomegaly, has a history of hydronephrosis of the kidneys, and a history of chronic obstructive pulmonary disease related to the pleural effusions and the atelectasis (Sarah Bush Lincoln Health Reference Guide, 2021).

Complete Echocardiogram without contrast: The patient's echocardiogram showed an ejection fraction of 55-65%, mild to moderate left ventricular hypertrophy, some enlargement of the right atria, severe enlargement of the left atria, closure of the aortic valve, and some regurgitation of the tricuspid valve. The patient has a history of diastolic heart failure and acute decompensation heart failure, so these valves are not working correctly. The imaging-diagnosis relationship is evident by the indications and the succeeding findings (Sarah Bush Lincoln Health Reference Guide, 2021).

Medications

Amlodipine (calcium channel blocker): Patient has a history of hypertension.

- This medication can cause hypotension, so monitor the patient's blood pressure. This medication should be used cautiously in heart failure so the patient's EKG should be monitored (Jones & Bartlett, 2019).

Atorvastatin (HMG-CoA reductase inhibitor): Patient has a history of heart failure to restore blood flow and prevent reoccurrence of heart failure.

- This medication can cause urinary retention and the patient already has urinary retention, so monitor the patient's input and output. Monitor the patient for hypotension and assess the patient's blood pressure (Jones & Bartlett, 2020).

Ceftriaxone (third-generation cephalosporin): Patient has a urinary tract infection.

- This medication can be toxic to the kidneys, so the patient's blood urea nitrogen (BUN) and creatinine should be monitored. Assess the patient for a superinfection, including coughing, malaise, diarrhea, perineal rash, itching, redness, fever, and swelling (Jones & Bartlett, 2020).

Formoterol (selective beta2-adrenergic agonist): Patient has a history of COPD to prevent inflammation in the lungs.

- Monitor the patient's glucose levels as this medication can cause hyperglycemia. Monitor the patient's blood pressure as this can cause hypertension (Jones & Bartlett, 2020).

Furosemide (Loop diuretic): Patient has high blood pressure.

- Monitor the patient's potassium levels as this can cause hyperkalemia and EKG changes. Weigh the patient before and after therapy to measure the amount of fluid loss (Jones & Bartlett, 2020).

Gabapentin (1-amino-methyl cyclohexane acetic acid): Patient has severe low back pain.

- Monitor the patient's renal function by assessing the BUN and creatinine levels. Monitor the patient's ALT and AST as this medication can affect the liver (Jones & Bartlett, 2020).

Pantoprazole (Proton pump inhibitor): Patient is using this medication prophylactically to prevent stomach ulcers in the hospital.

- Monitor the patient's platelet levels in the complete blood count (CBC) as this medication can cause thrombocytopenia. Monitor the patient for muscle pain as this medication can cause myalgia and rhabdomyolysis (Jones & Bartlett, 2020).

Revefenacin (anticholinergic): Patient needs maintenance therapy for chronic obstructive pulmonary disease.

- Monitor the patient's pain level as this medication can cause further back pain. Monitor the patient's urinary output as this medication can cause further urinary retention, which the patient already has (Jones & Bartlett, 2020).

Tamsulosin (Alpha adrenergic antagonist): Patient has a history of bladder cancer and an enlarged prostate.

- Monitor the patient's EKG as this medication causes atrial fibrillation. Monitor the patient's blood pressure and heart rate as this medication can cause tachycardia and hypotension (Jones & Bartlett, 2020).

Acetaminophen (Nonsalicylate, para-aminophenol derivative): Patient has back pain and this medication treats pain.

- Monitor the patient's ALT and AST as this medication can affect the liver. Monitor the patient's BUN and creatinine as this medication can affect the kidneys negatively (Jones & Bartlett, 2020).

Albuterol (adrenergic): Patient has a history of COPD, so this medication helps open up the patient's airways.

- Monitor the patient's glucose levels as this medication can cause hyperglycemia. Monitor the patient's potassium levels as this medication can cause hypokalemia (Jones & Bartlett, 2020).

Ondansetron (selective serotonin (5-HT₃) receptor antagonist): The patient is taking this for nausea since this is a symptom of his infection and back pain.

- Assess the patient's mood as this medication can cause serotonin syndrome. Monitor the patient's vital signs, breathing, and for edema as this medication can cause heart problems, such as cardiopulmonary arrest, arrhythmias, and a prolonged QT interval (Jones & Bartlett, 2020).

Physical Exam/Assessment

General: Patient is alert and oriented to year, place, person, and reason for visit x4. He appears to be well-nourished and in no apparent/noticeable distress. He is cooperative and appropriately dressed for the weather and is well-groomed.

Integument: Patient's skin is usual for ethnicity, warm, dry, intact, and slightly pink in all areas of his body with no rashes, abrasions, drains, or wounds present. Patient has **bruises on bilateral forearms**. Patient has no clubbing or cyanosis. Patient has **loose skin as it does not fall back into place** immediately after being pinched. Patient's Braden score is 20, which means there is no risk for pressure ulcers or impaired skin integrity due to decreased lower extremity mobility.

HEENT: Head is round and bilaterally equal with no obvious contusions or abnormalities. Patient is negative for headaches and has no lymphadenopathy. Patient's ears are free of discharge, are symmetrical and bilaterally placed on the side of the head, and tympanic membranes are a pearly, grey color. The patient's eyes are placed in the center of the face, symmetrical without them being too far apart or too close to each other. The pupils are equal, round, and reactive to light and accommodation. The patient's sclera is white, and the conjunctiva is a bright red. The patient was **wears glasses and has dentures**. Patient's nares are bilaterally equal and has no deviated septum. There is no pain or discomfort noted from patient upon palpitation of sinuses. No drainage noted from the nares. Patient has **difficulty hearing**. Patient's gums are a pale pink, firm, and moist. The patient has no missing teeth, **teeth were yellow, and he has 7 dental carries**. Rise and fall of the soft pallet were observed and the tonsils and the uvula are pink and moist and are placed centrally in the patient's mouth with no deviation to one side or the other.

Cardiovascular: A **murmur** was heard in the aortic, pulmonic, Erb's point, tricuspid, and mitral locations with no detected S3 gallops or masses. Patient has **atrial fibrillation with a bundle branch block**. Patient has a pulse of 67 beats per minute which were equal and bilaterally bounding in both carotid, brachial, radial, posterior tibial, popliteal, and dorsalis pedis pulse sites. Patient has 3+ normal pulses in carotid, radial, posterior tibial, dorsalis pedis, and brachial arteries. Patient has adequate capillary refill as it took less than 3 seconds for color/blood to return to the patient's nail bed on his fingers and toes. Patient has no neck vein distension. No pitting edema or swelling was noted in any of the patient's extremities or centrally on his body.

Respiratory: Respirations were even, nonlabored, and clear/free of fluid both anteriorly and posteriorly in both lobes of the left lung and all three lobes of the right. Patient was averaging 16 breaths a minute, which is an average rate. **Rales are heard at the bases with crackles heard in all lobes**. Patient has no stridor, coarse rhonchi, wheezes, or chest wall tenderness. No accessory muscles were being used to help the patient breathe

Gastrointestinal:

Patient is on a regular diet at home and at the hospital.

Height: 170 cm

Weight: 64.4 kg

Bowel sounds auscultated are active in all 4 quadrants with approximately 26 clicks and gurgles per minute. Patient had 1 loose, moderate amount of brown stool on 06/20/21. Patient did not experience any pain or tenderness upon light or deep palpation. Patient has no abdominal distension, masses, ostomies, scars, drains, or wounds. Patient has no nasogastric, feeding, or percutaneous endoscopic gastrostomy (PEG) tubes.

Genitourinary: Urine was a dark yellow and cloudy with a foul odor. Patient voided a total of 1750 mL of urine during my clinical rotation. According to the patient, the patient did not experience pain with urination and did not note incontinence or urgency. He did experience burning upon voiding, retention and hesitancy. The genitals had no erythema or discharge and no catheter was present.

Musculoskeletal: Patient is up with 1 assisted and a gait belt. Patient needs assistance to the bathroom in the hospital but does not need help at home with activities of daily living. Patient's range of motion is within normal limits. He has bilaterally equal strength and grip in both his feet and hands. Patient's strength is 5/5 during hip flexion, hip abduction, and hip adduction. Morse fall risk score of 60 puts the patient at a high fall risk.

Neurological: Patient is oriented to person, place, time and situation. His cognition is normal. His speech is gargled. Patient is alert and responds to light and deep stimuli. Patient moves all extremities well and his pupils are equal and reactive to light and accommodation.

Most recent VS (include date/time and highlight if abnormal):

06/22/2021 at 0735:

- Temp: 36.1 Celsius (97.0 Fahrenheit)
- HR: 64 bpm (beats per minute)
- SaO₂: 94% on 3 liters nasal cannula
- Respirations: 18
- BP: 123/57 mmHg

06/22/2021 at 1422:

- Temp: 36.7 Celsius (98.1 Fahrenheit)
- HR: 67 bpm
- SaO₂: 97% 3 liters nasal cannula
- Respirations: 16
- BP: 127/63 mmHg

Pain and pain scale used: 2/10 on the numeric scale: Patient describes the pain as a dull sensation and the pain radiates to his stomach. Patient's pain has been resolved by gabapentin and acetaminophen when he needs it.

Active Orders

Daily assessment of temperature every 4 hours

- Patient has an infection and the temperature assesses if the patient is getting worse.

Take full course of Ceftriaxone

- Patient has a urinary tract infection so taking the full course of antibiotics will help prevent further infections.

Daily urine culture

- The patient's urine is assessed for bacteria every day to test if the infection has cleared out of his system.

Pain assessment every 4 hours

- Patient still has lower back pain even with antibiotic treatment so assessing the back is necessary if the back pain is not related to the kidneys or the infection.

Assess the patient's urine every time he voids

- The patient's urine should be assessed for color, cloudiness, and odor as these assessments can show if the patient still has an infection or if the infection is being treated correctly.

Assess the patient's input and output

- The patient has urinary retention, so monitoring his input and output can show if he is still retaining urine or if he is voiding correctly and without retention.

Nursing Diagnosis 1	Nursing Diagnosis 2	Nursing Diagnosis 3
Infection related to the patient complaining of urinary tract infections as evidenced by a positive urine culture and white blood cells in his urine.	Impaired urinary elimination related to the patient not able to void all the urine he needs to void as evidenced by "I have trouble peeing out everything I need to and it feels like I still need to go"	Acute pain related to the patient complaining of back pain as evidenced by "I'd say it's a dull pain" and "probably around a 2/10" on the numeric pain scale.

<p style="text-align: center;">Rationale</p> <p>If the infection continues without treatment, this could cause the bacteria to enter the blood and cause the patient to be septic which is life threatening.</p>	<p style="text-align: center;">Rationale</p> <p>The patient has urinary retention related to the infection and this causes stasis of the urine that creates an area for foreign bacteria colonization, putting the patient at risk for further infections.</p>	<p style="text-align: center;">Rationale</p> <p>The patient has a history of hydronephrosis, acute kidney injury, and a urinary tract infection so these can cause the kidneys to be inflamed and cause lower back pain.</p>
<p style="text-align: center;">Interventions</p> <p>Intervention 1: Make sure the patient is taking the full course of the prescribed antibiotics.</p> <p>Intervention 2: Evaluate the patient's urine for signs of an infection, including cloudiness, fever, burning during urination, and frequency.</p>	<p style="text-align: center;">Interventions</p> <p>Intervention 1: Palpate the patient's bladder every 4 hours.</p> <p>Intervention 2: Encourage increased fluid intake (3-4 liters) to help increase the flow of the kidneys.</p>	<p style="text-align: center;">Interventions</p> <p>Intervention 1: Administer pain mediation as needed every 4 hours.</p> <p>Intervention 2: Apply heating pad to the lower back area for 20 minutes as needed.</p>
<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient continued with the antibiotic regimen without any side effects and continued to consent taking the antibiotic. The intravenous antibiotic continued to run after I left clinical. The patient's urine was cloudy, but the patient stated, "there's not as much burning when I pee" and his temperature was within normal limits (McLeod, 2018).</p>	<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient's bladder was less palpable during the second assessment, assuming the patient is voiding more as the day continues. The patient attempted to drink 3-4 liters of water during the day as I gave him goals to drink 20 ounces every 3 hours to break up the day (McLeod, 2018).</p>	<p style="text-align: center;">Evaluation of Interventions</p> <p>The patient requested the pain medication 2 times during my clinical rotation, stating that it provided him relief in his lower back. Patient requested the heating pad once during the shift stating that it "soothes my back" (McLeod, 2018).</p>

References (3) (APA):

- Capriotti, T. (2020). *Davis advantage for pathophysiology: Introductory concepts and clinical perspectives* (2nd ed.). F.A. Davis Company Jones & Bartlett Learning. (2019). *2020 nurse's drug handbook* (19th ed.). Jones & Bartlett Learning.

McLeod, S. (2018). *Erik erikson's stages of psychosocial development*. Simply Psychology. <https://www.simplypsychology.org/Erik-Erikson.html>

Ohio State University. (2019). *Pathophysiology of an uti*. <https://u.osu.edu/utieducation/pathophysiology-of-uti/>

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