Harding: Lewis's Medical-Surgical Nursing, 11th Edition

NGN Case Study

Title: Sepsis

Scenario: A 73-year-old male was taken to the Emergency Department by ambulance because his wife found him sitting up in his recliner, awake but not responsive. He takes sitagliptin daily for type 2 diabetes mellitus and a daily multivitamin. A rapid assessment reveals the following: opens eyes when his name is called; otherwise keeps them closed. Does not follow instructions. Skin warm and flushed. Heart rhythm regular, rate 114; ECG shows sinus tachycardia. BP 96/52; respirations 24. Temperature 101.5°F (38.6°C). SPO_2 96% on room air; lungs clear to auscultation bilaterally. Abdomen soft, nondistended, with normoactive bowel sounds in all quadrants. Trace edema noted on ankles and shins bilaterally. The patient has a large bandage on his right arm; his wife explained that he cut himself badly when gardening a few days ago and they wrapped it with a bandage to stop the bleeding. The wound on the right forearm is 3.2 cm long, 0.5 cm wide, and 0.2 cm deep, with redness around the wound and a moderate amount of yellowish drainage on the bandage. Laboratory results are listed below. The stroke team evaluated the patient using the NIH Stroke Scale; the evaluation was negative for a stroke. A STAT CT scan came back normal.

Laboratory Results:

Na 144 mEq/L

K 4.9 mEq/L

Glu 134 mg/dL

BUN 22 mg/dL

Creatinine 1.4 mg/dL

Lactic acid 2.9 mg/dL

Procalcitonin 0.6 ng.mL

WBC 19.2 1000/mm^3

Hgb 16 g/dL

Hct 44%

Platelet count 249,000 mm^3

1. **NGN Item Type:** Highlighting/Enhanced Hot Spot

Highlight or place a check mark next to the assessment findings that require follow-up by the nurse.

Answers:

A73-year-old male was taken to the Emergency Department by ambulance because his wife found him sitting up in his recliner, awake but not responsive. He takes sitagliptin daily for type 2 diabetes mellitus and a daily multivitamin. A rapid assessment reveals the following: opens eyes when his name is called; otherwise keeps them closed. Does not follow instructions. Skin warm and flushed. Heart rhythm regular, rate 114; ECG shows sinus tachycardia. BP 96/52; respirations 24. Temperature 101.5°F (38.6°C). SPO_2 96% on room air; lungs clear to auscultation bilaterally. Abdomen soft, nondistended, with normoactive bowel sounds in all quadrants. Trace edema noted on ankles and shins bilaterally. The patient has a large bandage on his right arm; his wife explained that he cut himself badly when gardening a few days ago and they wrapped it with a bandage to stop the bleeding. The wound on the right forearm is 3.2 cm long, 0.5 cm wide, and 0.2 cm deep, with redness around the

wound and a moderate amount of yellowish drainage on the bandage. Laboratory results are listed below. The stroke team evaluated the patient using the NIH Stroke Scale; the evaluation was negative for a stroke. A STAT CT scan came back normal.

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Hgb 16 g/dL

Hct 44%

Platelet count 249,000 mm^3

Rationale:

Sepsis is a life-threatening syndrome in response to an infection (in this case, an arm wound). Diagnostic criteria for sepsis are listed in Table 66.4. The assessment for this patient includes the following diagnostic criteria for sepsis: a suspected or documented infection (the arm wound), altered mental status, fever (temperature above 100.9°F [38.3°C]), heart rate above 90 beats/minute, systolic BP less than or equal to 100 mm Hg, and tachypnea (respiratory rate above or equal to 22/minute). The elevated BUN, creatinine, lactic acid, procalcitonin, and WBC count are also diagnostic criteria for sepsis. The patient has a history of type 2 diabetes;

therefore a glucose level of above 140 is a possible result for this patient. However, the glucose levels will be monitored per the facility's diabetes protocol. Evaluation for a stroke by the stroke team is followed by a STAT CT scan for further evaluation of the patient's symptoms. The other assessment findings and diagnostic test results are within normal limits.

Cognitive Skill: Recognize Cues

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 66, pp. 1659, 1572.

2. **NGN Item Type:** Cloze

Choose the *most likely* options for the information missing from the statement below by selecting from the list of options provided.

The nurse recognizes that based on the patient's history and diagnosis, he is currently at risk for complications, especially _____, _____, and _____.

Options

Septic shock

Fluid overload

Respiratory failure

Hypertensive crisis

Coronary vessel occlusion

Acute kidney injury

Answers:

Options

Septic shock ✓

Fluid overload

Respiratory failure ✓

Hypertensive crisis

Coronary vessel occlusion

Acute kidney injury ✓

Rationale:

Sepsis is a life-threatening syndrome in response to an infection. With sepsis, the patient has a dysregulated response and new organ dysfunction related to the infection. Sepsis can quickly deteriorate into septic shock, which is characterized by persistent hypotension, despite adequate fluid resuscitation, and inadequate tissue perfusion that results in tissue hypoxia. Septic shock has an increased mortality risk due to profound circulatory and metabolic abnormalities. Respiratory failure is common in septic shock and develops in 85% of patients with sepsis. Acute kidney injury may occur due to prolonged hypoperfusion of the kidneys. Hypertensive crisis and coronary vessel occlusion are not potential complications.

Cognitive Skill: Analyze Cues

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 66, pp. 1569, 1571, and 1579.

Scenario: Within the hour, the patient is transferred to a step-down unit and the admitting nurse is reviewing orders for cultures and antibiotics, which include piperacillin-tazobactam and vancomycin. The patient is receiving intravenous normal saline at 150 mL/hour after receiving two 500 mL fluid boluses of normal saline in the emergency department. He is more awake but still confused and does not know where he is. He states that his right arm "hurts really bad" but he is unable to rate the pain on a 1 to 10 scale. Vital signs are: Temperature 101°F (38.3°C), pulse 100, respirations 22, BP 104/98. He is on oxygen 2 L/min per nasal cannula, and the latest SpO_2 reading is 97%. He voided 500 mL of dark amber urine into a urinal. A wound care specialist will be coming in to assess the arm wound; the arm wound is loosely covered with a gauze dressing and is draining a small amount of yellowish fluid.

1. **NGN Item Type:** Cloze

Based on the patient's condition, the patient's **priority** needs will be to prevent _____**1**_____ and _____**1**_____. In addition, he will need interventions to prevent _____**2**_____, _____**2**_____, _____**2**_____, and _____**2**_____.

Options for 1	**Options for 2**
Musculoskeletal weakness	Diarrhea
Pain	Stress ulcers
Injury from falling	Skin breakdown
Hypoxia	Fluid volume deficit
	Venous thromboembolism (VTE)

Answers:

Options for 1	**Options for 2**

Musculoskeletal weakness	Diarrhea ✓
Pain ✓	Stress ulcers ✓
Injury from falling ✓	Skin breakdown ✓
Hypoxia	Fluid volume deficit
	Venous thromboembolism (VTE) ✓

Rationale:

Several complications may occur with a confused patient admitted for sepsis and an arm wound. Priorities include addressing his pain levels and keeping him safe from injury due to falling. He is at high risk for falls due to his altered mental status. Other priorities include stress ulcer prophylaxis, prevention of skin breakdown, and prevention of VTE, but these can be addressed after his pain level is addressed and his safety is assured. Diarrhea is a possible adverse effect of the piperacillin-tazobactam antibiotic. Musculoskeletal weakness, hypoxia, and fluid volume deficit are not priority issues at this time.

Cognitive Skill: Prioritize Hypotheses

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 66, pp. 1579, 1581.

2. **NGN Item Type:** Matrix

Use an X for the nursing actions listed below that are <u>Indicated</u> (appropriate or necessary), <u>Contraindicated</u> (could be harmful), or <u>Nonessential</u> (makes no difference or

not necessary) for the patient's care at this time. Only one selection can be made for each nursing action.

Nursing Action	Indicated	Contraindicated	Nonessential
Start the antibiotic before initiating other orders.			
Obtain blood cultures before beginning the antibiotic.			
Change the arm dressing every 2 hours.			
Administer pain medication.			
Measure intake and output every 1 to 2 hours.			
Apply soft restraints to prevent falls.			

Answers:

Nursing Action	Indicated	Contraindicated	Nonessential
Start the antibiotic before initiating other orders.		X	
Obtain blood cultures before beginning the antibiotic.	X		
Change the arm dressing every 2 hours.			X
Administer pain medication.	X		

Measure intake and output every 1 to 2 hours.	X		
Apply soft restraints to prevent falls.		X	

Rationale:

Blood cultures must be obtained before the first dose of an antibiotic is given. The dressing should be changed if the dressing becomes soiled, not every 2 hours. The wound care specialist has not yet given wound care orders; therefore regular dressing changes are not yet indicated. When patients are unable to self-report pain, the nurse must be able to recognize behavioral symptoms of pain and medicate accordingly. Then, observe the patient for a decrease in pain-related behaviors. Intake and output should be measured every 1 to 2 hours to assess the adequacy of renal perfusion. It is not appropriate to use restraints to prevent falls. Alternatives, such as bed alarms, should be considered.

Cognitive Skill: Generate Solutions

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 5, p. 73; Ch. 8, p. 124; Ch. 11, p. 168; Ch. 66, p. 1583.

Scenario: The wound care specialist assessed the patient’s arm wound and ordered wound cultures and indicates that the wound will heal by secondary intention. An alginate dressing is applied, with orders to change it twice daily. After 3 days, the patient is less confused but unsteady on his feet when assisted to the chair. He states that he does not like hospital food.

1. **NGN Item Type:** Extended Drag and Drop

Use an X to indicate which actions in the left column would be implemented by the nurse. Note that not all nursing actions will be used.

Nursing Actions	Implementation
Maintain fall precautions.	
Assess and document the wound characteristics with every dressing change.	
Obtain a wound culture of the exudate from the wound.	
Clean the wound with povidone-iodine before applying a new dressing.	
Replace the dressing if it becomes saturated with drainage.	
Observe the wound for signs of delayed wound healing.	
Request a nutritional consult for parenteral nutrition.	

Answers:

Nursing Actions	Implementation
	Maintain fall precautions.
	Assess and document the wound characteristics with every dressing change.

Obtain a wound culture of the exudate from the wound.	
Clean the wound with povidone-iodine before applying a new dressing.	
	Replace the dressing if it becomes saturated with drainage.
	Observe the wound for signs of delayed wound healing.
Request a nutritional consult for parenteral nutrition.	

Rationale:

It is essential to maintain fall precautions while he is in the hospital to prevent injury; he is in a different environment, is still confused, and is unsteady on his feet. The wound's characteristics need to be assessed with every dressing change; documentation should include the wound's appearance, location, size (longest length and widest width), depth, wound margins, and drainage. Wound cultures are done with a swab rotated over a cleansed 1 cm^2 area near the center of the wound; use enough pressure to extract wound fluid from deep tissue layers. Cultures are not taken from exudate or necrotic tissue because these will not provide an accurate sample. The dressing should be changed as ordered twice daily, but also if it because saturated with drainage. Patients with diabetes may have delayed wound healing. Undernutrition puts a person at risk for poor healing; in order to heal, adequate intake of protein, fats, and carbohydrates are needed. Parenteral nutrition is only needed if the patient

cannot tolerate oral/enteral feeding. A nutritional consult would help to determine appropriate supplements, and assess his food likes and dislikes.

Cognitive Skill: Take Action

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 5, p. 71; Ch. 11, pp. 164, 167–168.

2. **NGN Item Type:** Matrix

For each assessment finding, use an X to indicate whether the interventions were Effective (helped to meet expected outcomes), Ineffective (did not help to meet expected outcomes), or Unrelated (not related to the expected outcomes).

Assessment Finding	**Effective**	**Ineffective**	**Unrelated**
States that his pain level is a 4 1 hour after pain medication; previously stated it was an 8.			
Systolic blood pressure remains greater than or equal to 90 mm Hg.			
Gets out of bed by himself to walk in the room.			
Denies difficulty with urination.			
No drainage noted from the wound. Wound measures 3 cm long by 0.4 cm wide by 0.1 cm deep. Redness			

decreased.			
Patient eats 25% of his meals and 50% of the supplement provided.			

Answers:

Assessment Finding	**Effective**	**Ineffective**	**Unrelated**
States that his pain level is a 4 1 hour after pain medication; previously stated it was an 8.	X		
Systolic blood pressure remains greater than or equal to 90 mm Hg.	X		
Gets out of bed by himself to walk in the room.		X	
Denies difficulty with urination.			X
No drainage noted from the wound. Wound measures 3 cm long by 0.4 cm wide by 0.1 cm deep. Redness decreased.	X		
Patient eats 25% of his meals and 50% of the supplement provided.		X	

Rationale:

Effective outcomes reflect pain relief, safety, stable vital signs, and wound healing. Evaluate the effectiveness of pain medications to ensure that the patient's pain management goals are

being met. The wound size has gone from 3.2 × 0.5 × 2 cm to 3 × 0.4 × 0.1 cm; a decrease in wound drainage, size, and redness indicates healing. Adequate nutritional intake, including protein, fats, and carbohydrates, is needed for wound healing. The patient's intake needs to improve to meet nutritional requirements. Patients who are at risk for falling (he is unsteady on his feet) need to walk with assistance rather than alone. A patient who is unsteady yet walking without assistance is at a high risk for injury from a fall. Maintaining systolic blood pressure equal to or over 100 mm/Hg reflects improved perfusion. Urination difficulty is not related to the expected outcomes for this scenario.

Cognitive Skill: Evaluate Outcomes

Reference: Harding et al., *Medical-Surgical Nursing,* 11th ed., 2020, Ch. 5, p. 71; Ch. 8, p. 110; Ch. 11, pp. 164, 167.