Sepsis/Septic Shock Unfolding Reasoning Case Study
Clinical Day One Dr. Smith

This is a case study that mimics a real patient in the hospital. As you read the scenario, information is given to you about the patient as it becomes available. You need to fill in what data is relevant and tell why it has clinical significance. You can work on this as an individual or with your peers. Turn this into my dropbox by 1430 today.

Student Name: Stephanie Pigg
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Jack Holmes, 72 years old

Primary Concept(s)
Perfusion & Gas Exchange
Interrelated Concepts
• Inflammation • Infection • Tissue Integrity • Clinical Judgment • Patient Education • Communication

HISTORY OF PRESENT PROBLEM:

Jack Holmes is a 72-year-old Caucasian male brought to the ED by ambulance from a skilled nursing facility (SNF). According to the report from the paramedic, the SNF nursing staff attempted to wake him up this morning and he would not respond. His BP was 74/40 with a MAP of 51. He has a history of Parkinson's disease, COPID, CHF, HTN, depression, and a stage IV decubitus ulcer on his coccyx that developed three months ago. He does not follow commands, is unresponsive to verbal stimuli, but responds to a sternal rub with grimacing and withdrawing from stimulus.

PERSONAL/SOCIAL HISTORY:

He has lived at the SNF for the past 3 years and has been bed bound the past year due to his advanced Parkinson's disease. He was a heavy smoker, 1 PPD for 40 years until he moved to the SNF. He has no next of kin listed.

What data from the histories are Relevant and must be interpreted as clinically significant by the nurse?

RELEVANT data from the present problem	**What is the clinical significance of this data? What should you be looking for as the nurse?**
BP 74/40 w/ MAP 51 72 yrs. old w/ Parkinson's disease & hx. of COPD, CHF, HTN, & depression Pt. unresponsive to verbal stimuli (responds to sternal rub w/ grimacing & withdrawal) Stage IV decubitus ulcer on coccyx (3 months old)	Signs of septic shock (infection + low BP) Pt. hx of cardiac & respiratory issues lead to compromised oxygenation & tissue perfusion Parkinson's is a neurogenerative disease, pt. has signs of advanced stages Due to depression pt. is experiencing a decline in production of dopamine Signs of progressive stage of septic shock (no CPR needed due to pt. still breathing & responding to stimuli)
RELEVANT data from the social history	**What is the clinical significance of this data? What should you be looking for as the nurse?**
Bed bound for past year Former heavy smoker (1 pack a day for 40 yrs.) SNF for 3 yrs. No next of kin	Lack of family & support Diagnosis & lack of independence lead to depression Lung, heart, & vascular damage from smoking, COPD

VITAL SIGNS:

Patient Care Info upon arrival to ED

Vital Signs	PQRST Pain Assessment	
T 103.4 F P 135 (irregular) R 32 (regular, shallow) BP 76/39 MAP 51 O2 91% 2L NC Weight 242 lbs	Provoking/Palliative Quality Region/Radiation Severity Timing	Not responsive verbally, withdraws to pain, no other indications of pain

What data from the vital signs and pain assessments are Relevant and must be interpreted as clinically significant by the nurse?

RELEVANT data from the vital signs & pain assessment	What is the clinical significance of this data? What should you be looking for as the nurse?
T 103.4 F Irregular pulse Shallow, quick respirations Low BP & MAP Low O2	Signs of infection, possible septic shock Risk for arrythmias due to low systolic MAP < 65, poor organ perfusion & oxygenation Increased risk for MODS Pt. has hx of COPD so O2 may be baseline w/ the 2L NC, but is inadequate for now

ASSESSMENT DATA:

Current Assessment:	
General Appearance	Pale, warm to touch. Appears tense
Respirations	Tachypneic, working hard to breath, intercostal and suprasternal retractions present. Breath sounds diminished and light crackles in the lower lobes bilaterally. Nail beds have noticeable clubbing, barrel chest present
Cardiac	Pale, 1+ pitting edema lower extremities, systolic murmur with an irregular rhythm, radial weak pulses/thready, cap refill >3 seconds
Neuro	Does not open eyes to sound or pain, withdraws to pain, incomprehensible sounds to painful stimuli, does not follow commands but does not resist when moved on to a stretcher. PERRL
GI	Distended abdomen, firm/nontender, bowel sounds hypoactive in all quadrants
GU	Foley catheter placed to monitor UO, 50 mL tea colored urine with no sediment, no odor present
Skin	Stage IV decubitus to coccyx 1 cm X 0.5 cm X 0.5 cm depth, wound bed with visual bone noted at the base with large areas of necrosis on both sides of the sacrum bone. When dressing was removed, a large amount of yellow/green purulent drainage was noted with a foul odor. Surrounding mucus membranes were dry and pale.

Determine the current Glasgow Coma Scale Score based on the neurological assessment data:

Eye opening	
Spontaneous	4
To Sound	3
To Pain	2
No response	1
Motor Response	
Obeys Commands	6
Localizes Pain	5
Normal flexion (withdrawal)	4
Abnormal flexion	3
Extension	2
None	1
Verbal Response	
Oriented	5
Confused conversation	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Total	7

What data from the vital signs and pain assessments are Relevant and must be interpreted as clinically significant by the nurse?

RELEVANT assessment data	What is the clinical significance of this data? What should you be looking for as the nurse?
GCS score of 7 Pale, appears tense Tachypneic, excess effort for breathing, diminished breath sounds, barrel chest, & clubbing +1 pitting edema, murmur, irregular rhythm, weak radial pulses & threading, cap refill > 3 sec. Distended & firm abdomen & hypoactive bowel sounds Tea colored urine Stage IV coccyx wound w/ visual bone noted, necrosis, & large amount of yellow/green drainage	Severe brain injury for GCS < 8 ("Lower than 8, intubate") Poor cardiac output Mechanical ventilation possible Tachypneic, pt. is trying to blow off CO2 & get oxygen NG or OG placement possibly needed depending on HCP Proper output, but consider fluid resuscitation due to urine color Possible osteomyelitis due to coccyx possibly being infected (needs repositioning more)

Cardiac Telemetry Strip:

What data from the cardiac telemetry strip are Relevant and must be interpreted as clinically significant by the nurse?

Regular or Irregular? P wave present? QRS normal or abnormal?
Interpretation of strip: HR 160 irregular, normal QRS, A. fib. w/ RVR **Irregular** **No P wave, Normal QRS**
Clinical Significance
Pt. is having a problem w/ the Atria. There is atrial quivering & the heart is not appropriately pushing blood to the ventricle

DIAGNOSTIC RESULTS:

What data from the diagnostic testing are Relevant and must be interpreted as clinically significant by the nurse?

Radiology: Chest X Ray	
Results:	**Clinical Significance:**
Cardiac silhouettes slightly enlarged. No infiltrates present.	**Pt. heart is enlarged causing excessive stress (characteristic of CHF). Risk of heart failure due to stress of sustaining excess work**

LAB RESULTS:

Complete Blood Count (CBC)					
	WBC	HGB	PLTs	% Neuts	Bands
Current:	18.5 ↑	13.1 trending ↓	250 ↑	85.2 ↑	3
Most Recent:	12.4	13.2	175	64	0

Basic Metabolic Panel (BMP)					
	Na	K	Gluc.	reate.	
Current:	147 ↑	5.2 ↑	172 ↑	1.6 ↑	

Misc.					
	Lactate	PT/INR	GFR		
Current:	7.4	1.6	45		
Most Recent:	n/a	0.9	>60		

Liver Panel					
	Albumin	Total Bili	Alk. Phos.	ALT	AST
Current:	2.9 ↓	5.1 ↑	285	134	175
Most Recent:	3.1	0.9	48	17	12

What data from the serum lab results are Relevant and must be interpreted as clinically significant by the nurse?

RELEVANT lab data	What is the clinical significance of this data? What should you be looking for as the nurse?
Increased WBC, Neutrophils, & Bands Increased Platelets Increased potassium & sodium Increased Glucose & creatinine High lactate & present PT/INR GFR 45 Decreased albumin Increased bilirubin, Alk. Phos., AST/ALT	Infection Risk of DIC Pt. already has A. Fib., at risk for V. Fib. Fluid imbalance Liver problem Hypoxia, poor tissue perfusion Kidney problem

Urinalysis + UA Micro										
	Color:	Clarity:	Sp. Gr.	Protein	Nitrite	LET	RBCs	WBCs	Bacteria	Epithelial
Current:	Tea	Clear	1.050	NEG	NEG	NEG	<5	<5	NEG	None
Most Recent:	Yellow	Clear	1.025	NEG	NEG	NEG	<5	<5	NEG	None

What data from the Urinalysis results are Relevant and must be interpreted as clinically significant by the nurse?

RELEVANT lab data	What is the clinical significance of this data? What should you be looking for as the nurse?
Tea colored urine Increased Specific gravity	Dehydration Kidney problem

Lab Planning: Creating a Plan of Care with a PRIORITY Lab:

Which lab value would you be most concerned about at this point?

LAB Current Value	NORMAL VALUE	Clinical Significance	Nursing assessments and interventions required
WBC 18.5	5-10	Infection	Monitor temp., culture, contact HCP for antibiotics
PLT 250	150-450	Clotting, DIC	Monitor trends
GFR 45	>60	Kidney issues	Monitor & inform HCP, adjust fluids as needed

Clinical Reasoning Begins…

1. Interpreting relevant clinical data, what is the primary problem? What primary signs and symptoms does this primary problem represent? (Management of Care/Physiologic Adaptation)

Problem	Pathophysiology of Problem in your own words	What would you anticipate could happen and what s/s would you watch for?
MODS	Due to infection from stage IV coccyx ulcer, pts. entire body is showing signs of septic shock leading to MODS.	Pt. is facing possible death if left untreated, possible intubation, mechanical ventilation, dehydration, cultures, & antibiotics Worsening labs, skin temp. changes due to lack of perfusion, poor oxygenation, GCS < 6, & decreased urinary output

Collaborative Care: Medical Management

(Pharm and Parenteral Therapies)

Physician Orders	Rationale	Expected outcome
Fluid Bolus 0.9% Sodium Chloride 30 mL/kg	Fluid resuscitation	Improve MAP > 65 & help dehydration
Blood cultures X 2	Looking for sepsis/infection in blood	Sepsis +
Urine Culture	Looking for infection	Infection
Wound culture	Confirming infection & checking which antibiotic is best for treatment	Infection/osteomyelitis & proper antibiotic to use for treatment
Vancomycin 2 g IV after cultures collected	Broad spectrum antibiotic	Early start for infection treatment
Clindamycin 600 mg IV every 6 hours	Broad spectrum antibiotic	Early start for infection treatment
Cardiac Telemetry	Monitor changes or worsening condition Monitor A. fib., systolic, & irregular pulse	Ability to monitor & document changes
VS every 15 minutes	Monitor changes or worsening condition Monitor for BP to increase from fluid bolus & make changes as needed	Effectiveness of plan of care
Acetaminophen 1000mg PR every 6 hours PRN for temp >101	Fever reducer	Temperature control (< 101F)
If MAP remains <65 after 2250 mL fluid bolus, start norepinephrine 1-12 mcg/min to maintain MAP >65	Organ perfusion & prevent MODS	Improve MAP > 65
If MAP remains <65 after norepinephrine at 12 mcg/min start vasopressin 0.01-0.03 units/min to maintain map >65	Organ perfusion & prevent MODS	Improve MAP > 65

PRIORITY Setting: Which orders do you implement first and why?

Physician Orders	Order of priority	Rationale:
1. Fluid Bolus 0.9% Sodium Chloride 30 mL/kg	3	Increase MAP > 65 & fluid resuscitation
2. Blood cultures X 2	5	Discover if sepsis & infection in blood Be able to start antibiotics soon
3. Urine Culture	6	Discover infection in urine/kidneys Be able to start antibiotics soon
4. Wound culture	4	Find out proper antibiotics to treat & get proper treatment to stage IV wound
5. Vancomycin 2 g IV after cultures collected	7	Broad spectrum antibiotics until culture results return
6. Clindamycin 600 mg IV every 6 hours	6	Broad spectrum antibiotics until culture results return
7. Cardiac Telemetry	1	Due to pt. hx. & A. Fib will need to get on cardiac telemetry ASAP Be alert for cardiac arrest
8. VS every 15 minutes	2	Due to pt. having low systolic BP, high temp., & changes in LOC Monitor for improve throughout interventions
9. Acetaminophen 1000mg PR every 6 hours PRN for temp >101	9	Reduce fever
10. If MAP remains <65 after fluid bolus, start norepinephrine 1-12 mcg/ min to maintain MAP >65	10	Means it is a “pipe issue” not a “volume issue” First line of defense for sepsis, cardiogenic shock, & neurogenic shock
11. If MAP remains <65 after norepinephrine at 12 mcg/ min start vasopressin 0.01-0.03 units/min to	11	Second line of defense after norepinephrine to increase fluid absorption & BP

maintain map >65		

Collaborative Care: Nursing

2. What nursing priority (ies) will guide your plan of care? (Management of Care)

Nursing Priority -what is the priority problem(s) the patient has that needs to be addressed?		
Nursing Interventions (priority – top 10)	**Rationale:**	**Expected outcome:**
Fluid resuscitation	Increase cardiac output, BP, tissue perfusion, & so body can compensate	Increase cardiac output, BP, tissue perfusion, & fluid volume
Administer meds depending on cardiac output, BP, MAP, & temp.	Meds will help regulate cardiac output, BP, tissue perfusion, & temp.	MAP > 65 indicates tissue perfusion, oxygenation, & decreases hypoxia
Administer antibiotic	Fight infection	No longer septic shock
VS, respiratory status, LOC, ABGs, labs, etc.	Early detection is key & allows evaluation for care plan	No longer progressive stage, instead compensatory or initial stage
Administer proper O2 (mechanical ventilation if necessary)	Promote tissue perfusion & lung function	O2 & lung function WNL
Monitor heart rhythm	High risk for V. Fib/V. Tach	Heart in stable rhythm
Administer insulin depending on glucose	Liver dysfunction causes poor glucose processing. Excess glucose can cause multi-system issues & stressing the body	Lower blood sugar
Aseptic techniques	Prevent more infections	Free of nosocomial infections
Assess/Monitor I & Os	Monitor kidney function & hydration	Proper kidney function & hydration
Assess IV/other accesses for infections & signs of DIC	Monitor progression of complications from septic shock	Pt. won't develop DIC

3. What body system(s) will you assess most thoroughly based on the primary/priority concern? (Reduction of Risk Potential/Physiologic Adaptation)

Priority Body System(s)	**Priority nursing assessments**
Circulatory/Cardiac Respiratory Neuro GI/GU (start of MODS, so ultimately all systems)	Meticulous monitoring of all systems

4. What is the worst possible/most likely complication to anticipated based on the primary problem of this patient? (Reduction of Risk Potential/Physiologic Adaptation)

Complication(s) to anticipate	Septic shock which is developing into the irreversible stage	
Nursing Interventions to prevent this complication	**Assessments to identify problem early**	**Nursing interventions to rescue if complications occur**
Fluid resuscitation	Is & Os & Cardiac output	Notify HCP for vasopressors
Administer meds depending on cardiac output, BP, MAP, & temp.	VS & cardiac telemetry	Rapid Response/CPR (if needed)
Administer antibiotic	Cultures	Stop/change antibiotics
VS, respiratory status, LOC, ABGs, labs, etc.	VS, respiratory status, LOC, ABGs, labs, etc.	Respond/Monitor for changes
Administer proper O2 (mechanical ventilation if necessary)	Oxygen status, color, cap. refill, & respiratory response	Increase O2 per HCP & change method of delivery
Monitor heart rhythm	Cardiac Telemetry & focused assessment	Ordered meds & ACLS intervention (if needed)
Administer insulin depending on glucose	Blood sugar	Administer insulin or Dextrose

5. What psychosocial/holistic care priorities need to be addressed for this patient? (Psychosocial Integrity/Basic Care and Comfort)

Psychosocial priorities	Communicate w/ pt. even under sedation	
Priority nursing interventions:	**Rationale:**	**Expected Outcome:**
CARE/COMFORT	Decrease pain, & discomfort	Improved pain, & discomfort Decrease risk of other pressure ulcers Promote wound healing
EMOTIONAL	Decrease anxiety, depression, & fear	Improved anxiety, depression, & fear Decrease distress & make pt. feel involved even w/ decreased LOC
CULTURAL CONSIDERATIONS	Create plan of care that matches pt. cultural preferences in mind	Respect cultural differences

Evaluation:

Evaluate the response of your patient to nursing and medical interventions during your shift. All physician orders that have been implemented are listed under medical management.

Two hours later …

The patient received the fluid bolus of 0.9%NS, and a right internal jugular central line was placed in the ED. He has required norepinephrine 6 mcg/min to maintain a MAP >65. He was transferred to the ICU an hour ago and appears to be resting comfortably. He is now responding to commands. He has received both antibiotics and acetaminophen. His lactate level was repeated and is now 4.8 mmol/L.

Vital Signs	**Previous VS**	**PQRST Pain Assessment**	
T 101.4F P 124 (irregular) R 24 (regular, shallow) BP 86/56 MAP 66 O2 93% 2 LNC	T 103.4 F P 135 (irregular) R 32 (regular, shallow) BP 76/39 MAP 51 O2 91% 2L NC Weight 242 lbs	Provoking/Palliative Quality Region/Radiation Severity Timing	Denies pain

Current Assessment:	
General Appearance	Calm, body relaxed, no grimacing, appears to be resting comfortably
Respirations	Breath sounds diminished with crackles in lower lobes bilat, remains tachypneic but breathing is not as labored
Cardiac	Pale, warm and dry, edema to BLE 2%, heart sounds irregular with murmur, pulses weak and equal, cap refill 2 sec
Neuro	Opens eyes to voice, obeys simple commands, oriented to person only, thought he was at the nursing home and has no idea what year it is
GI	Distended abdomen, firm/nontender, bowel sounds hypoactive in all quadrants
GU	Foley catheter with 30 mL tea colored urine last two hours
Skin	Dressing on coccyx replaced in ED, no drainage present on dressing

Determine current Glasgow Coma Scale score based on the current neurological assessment data:

Eye opening	
Spontaneous	4
To Sound	3
To Pain	2
No response	1
Motor Response	
Obeys Commands	6
Localizes Pain	5

Normal flexion (withdrawal)	4
Abnormal flexion	3
Extension	2
None	1
Verbal Response	
Oriented	5
Confused conversation	4
Inappropriate words	3
Incomprehensible sounds	2
None	1
Total	13

1. What data is relevant for the assessment and vital signs and must be interpreted as clinically significant by the nurse? (Reduction of Risk Potential/Health Promotion and Maintenance)

Relevant Vital sign data	Clinical Significance
Increased HR, respiratory rate, & O2 sat MAP 66, systolic almost 90 Temp. 101.4 F	+ reaction to fluid resuscitation & antibiotics Better tissue perfusion Increased vascular fluid & cardiac output Body is trying to compensate
Relevant assessment data	**Clinical significance**
Comfortable & relaxed Eyes opening to voice, LOC improved Improved breathing, still crackles on lower part though Warm & dry skin, pale, & cap refill < 2 sec. Tea colored urine 30 mL/2 hrs. GI still hypoactive No drainage on wound dressing	Pt. gradually improving GI & kidney slowly working Body is trying to increase fluid volume to maintain BP & cardiac output Dressing is dry, wound seems to be healing

2. Has the status of the patient improved or not as expected at this point? Does your nursing priority or plan of care need to be modified in any way after this evaluation assessment? (Management of Care, Physiological Adaptation?

Patient Status	Improving
Nursing Plan of Care	Plan is working as anticipated Continue to monitor LOC, VS, lab work, respiratory status, & output

3. Based on your current evaluation, what are your CURRENT nursing priorities and plan of care?

Nursing Priority -what is the priority problem(s) the patient has that needs to be addressed?	Reduce infection & improve tissue perfusion	
Nursing Interventions (priority – top 10)	**Rationale:**	**Expected outcome:**
Fluid therapy (if needed) Monitor BP, MAP, LOC, & output Administer meds as ordered Provide adequate sedation & analgesia Supplemental O2 PRBCs if Hgb is < 7 Control glucose w/ Insulin Monitor & document labs Aseptic technique	Maintain MAP > 65 Monitor for changes Continue to fight infection & improve pt. outcome Comfort Prevent hypoxia & promote tissue perfusion Prevent DIC Maintain proper glucose level for healing Monitor for changes/trends Prevent nosocomial	MAP > 65 Increased systolic BP, improved LOC & MAP Decrease in infection Improved comfort & anxiety Decreased hypoxia & improved tissue perfusion Improved Hgb Glucose w/in 70-110 Communicate w/ healthcare team

Document weight (daily)	infections Fluid retention	Prevent further infection Proper Is & Os

It is now the end of your shift. You have done an excellent job with this patient.