

Pneumonia and Septic Shock – RTVS SIM Case

Section 1: Case Summary

Scenario Title:	Pneumonia and Septic Shock - RTVS
Keywords:	Septic shock, cardiogenic shock, acute CHF, pneumonia, vasopressor
Brief Description of Case:	<p>Elderly patient with a complex medical history significant for coronary artery disease burden presented to ED with SOB and ALOC. Initial clinical picture was suspicious for CHF. With further investigations, patient was found to have community acquired pneumonia.</p> <p>Case occurred in a rural community (Dawson Creek) where the hospital was staffed by one resident and two nurses in house. Lab and X-ray were available on a call-in basis. The staff physician is at home, 10 mins away.</p> <p>A RTVS (RUDI) physician was called to support the case virtually.</p>

Goals and Objectives	
Educational Goal:	<ol style="list-style-type: none"> Use RTVS support in the management of undifferentiated, medically complex elderly patient in resource limited setting. Approach to undifferentiated Altered LOC and SOB.
Objectives: (Medical and CRM)	<ol style="list-style-type: none"> In a limited resources setting with limited initial information, communicate effectively with team members in the care of a complex, critically ill patient. Prioritize orders, medication administration, and airway management among team members appropriately
EPAs Assessed:	<ol style="list-style-type: none"> Recognize, diagnose and appropriately manage shock. Communicate and coordinate urgent consultation while managing complex patient. Coordinating transfer to higher level of care.

Learners, Setting and Personnel	
Target Learners:	<input checked="" type="checkbox"/> Junior Learners <input checked="" type="checkbox"/> Senior Learners <input type="checkbox"/> Staff <input type="checkbox"/> Physicians <input type="checkbox"/> Nurses <input type="checkbox"/> RTs <input type="checkbox"/> Inter-professional <input type="checkbox"/> Other Learners:
	Location: <input checked="" type="checkbox"/> Sim Lab <input type="checkbox"/> In Situ <input type="checkbox"/> Other:
	Recommended Number of Facilitators:
	Instructors:
	Sim Actors:
	Sim Techs:

Scenario Development	
Date of Development:	June 2021
Scenario Developer(s):	Rachel Chen



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Revised By:	Dr Brydon Blacklaws, Dr. Scot Mountain
Version Number:	

Section 2A: Initial Patient Information

A. Patient Chart					
Patient Name: John		Age: 63	Gender: M	Weight: 77 kg	
Presenting complaint: altered LOC					
Temp: 38.0	HR: 55-65 irreg.	BP: 100/40	RR: 25	O ₂ Sat: 60%	FiO ₂ : Room air
Cap glucose: 6.8			GCS: (E V M) 3, 3, 5 (11/15)		
Triage note: You are a resident on rural elective in Dawson Creek. There is an elderly male patient with one-week history of feeling unwell with cough, some sputum, who developed significant weakness and SOB this morning. Wife called 911. When EHS arrived, patient was moaning, found to be breathing with accessory muscles and appeared to be confused. GCS 11. When patient arrived in ED, he was cool and mottled. BP was manually determined to be at 100/40. It's just you and one nurse in house. Your preceptor is 10 minutes away; you decide to reach out to the RUDI physician for support.					
Allergies: NKDA					
Past Medical History: <ol style="list-style-type: none">1. Recent NSTEMI 2 months ago. Medically optimized.2. CHF with most recent LVEF at 35%.3. AFib on warfarin.4. Hypertension5. Post-CVA expressive aphasia and ataxia (10 years ago)6. Query seizure			Current Medications: <ol style="list-style-type: none">1. Warfarin 3 mg p.o. once daily2. Spironolactone 25 mg p.o. once daily3. Ramipril 5 mg p.o. once daily4. Metoprolol 75 mg p.o. t.i.d.5. Clopidogrel 75 mg p.o. once daily6. Atorvastatin 80 mg p.o. once daily7. Phenytoin 300 mg p.o. b.i.d.		

Section 2B: Extra Patient Information

A. Further History



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Include any relevant history not included in triage note above. What information will only be given to learners if they ask? Who will provide this information (mannequin's voice, sim actors, SP, etc.)?

Wife: patient has been feeling SOB and fatigued for the past week. He has a cough with occasional sputum. Denies fever, chill, or productive cough. Patient does not complain of dysuria. Urine is clear and yellow. There is no chest discomfort or worsening of his chronic pedal edema. There is no nausea, vomiting, diarrhea, melena or any witnessed bleeding. Patient has been bedbound. There is no witnessed fall. He was at baseline cognition up till this morning.

B. Physical Exam

List any pertinent positive and negative findings

Cardio: irregular and slow S1/S2. Cold and mottled on extremities. Bilateral chronic pedal edema. Wife says it's about the same as usual. Bilateral radial and pedal pulses present and equal.

Neuro: Bilateral pupils equal and reactive to light at 3 mm. Eyes open to verbal command. Speech is discernible and inappropriate. Withdraw limbs to painful stimuli.

Resp: Shallow breaths with decreased air entry bilaterally, more on the left than right. There are some crackles to left lower lobe.

Head and Neck:
Neck is supple.

Abdo: Soft and mildly distended. No guarding on palpation. No rebound tenderness.

MSK/skin: Mottled and cold peripherally.

Other:



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Section 3: Technical Requirements/Room Vision

A. Patient
<input checked="" type="checkbox"/> Mannequin (<i>specify type and whether infant/child/adult</i>)
<input type="checkbox"/> Standardized Patient
<input type="checkbox"/> Task Trainer
<input type="checkbox"/> Hybrid
B. Special Equipment Required
POCUS machine for FAST scan Central line kit +/- Ultrasound guidance
C. Required Medications
Pressor support. Choose from the following: <ul style="list-style-type: none">Norepinephrine 5 - 12 mcg/min initial infusion, maintenance at 2 to 80 mcg/minute. Max 250 mcg/min (can be given peripherally for a temporary amount of time if central line not accessible) or Phenylephrine 100 mcg/mL, bolus 100-200 mcg IV up to q 5-10 minutes if needed. Broad-spectrum antibiotics: <ul style="list-style-type: none">Ceftriaxone 2g IV daily
D. Moulage
Elderly male patient dressed in casual clothing, looks unwell
E. Monitors at Case Onset
<input type="checkbox"/> Patient on monitor with vitals displayed <input checked="" type="checkbox"/> Patient not yet on monitor
F. Patient Reactions and Exam
Moaning, inappropriate words, limbs withdraw to painful stimuli. Shallow breath sounds. There are some crackles to left lower lobe on auscultation. Peripheral skin is cool and mottled. No central cyanosis. Abdomen is soft, non-tender. Bilateral pitting pedal edema.



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Section 4: Sim Actor and Standardized Patients

Sim Actor and Standardized Patient Roles and Scripts	
<i>Role</i>	<i>Description of role, expected behavior, and key moments to intervene/prompt learners. Include any script required (including conveying patient information if patient is unable)</i>
Wife	Initial history: unwell for one week. Called EHS today because patient is not himself, cannot get out of bed today and complains of not being able to breathe. He had a “small heart attack” 2 months ago. Can provide laymen’s answer to most questions: husband has heart failure. No infectious symptoms. No frank bleeding etc.
EHS	Patient appeared altered and SOB. Hypotensive and tachypneic on scene. The hospital is just around the corner so they took the patient to ED “as soon as possible” without starting any intervention.



Simulation Scenario Template

Section 5: Scenario Progression

Scenario States, Modifiers and Triggers				
Patient State/Vitals	Patient Status	Learner Actions, Modifiers & Triggers to Move to Next State	Facilitator Notes	
<p>1. Baseline State Rhythm: irregular HR: 55-65 irreg. BP: 100/40 RR: 25 O₂SAT: 60 % room air T: 38 °C GCS: 11</p>	<p><i>Patient is alert but confused. He moans, cannot verbalize clearly but does not appear to be in pain.</i></p> <p><i>When he breathes, accessory muscles are involved. His periphery is cold and mottled.</i></p>	<p><u>Expected Learner Actions</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Call RTVS - RUDI <input type="checkbox"/> Focused history and physical exam <input type="checkbox"/> place appropriate monitor probes <input type="checkbox"/> obtain 12-lead ECG (self applied) <input type="checkbox"/> Max O₂ via NP <input type="checkbox"/> obtain large bore IV access x2 <input type="checkbox"/> trial of 250 cc NS bolus <input type="checkbox"/> Call in labs and CXR technicians 	<p><u>Modifiers</u></p> <ul style="list-style-type: none"> - bolus given -> BP 110/50, HR 55-65 irreg. - O₂ given -> SpO₂ increases to 91 % <p><u>Triggers</u></p> <ul style="list-style-type: none"> - Further BP deterioration BP 100/40 -> 80/40 	<p>Provide pertinent HPI and Physical exam findings.</p>
<p>2. Identify etiology of SOB and ALOC. R/O CHF/ pulmonary fluid overload</p> <p>BP 100/40 HR 55-65 irreg.</p>		<p><u>Expected Learner Actions</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> (inc. VBG, coronary and septic workup) <input type="checkbox"/> insert Foley catheter <input type="checkbox"/> order CXR <input type="checkbox"/> POCUS -> assessing for LV contractility, pulmonary volume status 	<p><u>Modifiers</u></p> <ul style="list-style-type: none"> - POCUS -> no significant pericardial or pulmonary fluid. Good LV contractility (approx. 50% by visual estimation). <p><u>Triggers</u></p> <ul style="list-style-type: none"> -CXR -> patchy focal consolidation LLL - elevated WBC of 22.5 with left shift - worsening hypotension 	



Simulation Scenario Template

<p>3. worsening hypotension, new rapid afib.</p> <p>BP 80/50 HR 125 irreg.</p>		<p><u>Expected Learner Actions</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> IV access if not initiated in stage 1 <input type="checkbox"/> trial of 500 cc NS bolus <input type="checkbox"/> start broad-spectrum antibiotics <input type="checkbox"/> Start peripheral vasopressor support <input type="checkbox"/> Plan for central line insertion and transfer to higher level of care 	<p><u>Modifiers</u></p> <ul style="list-style-type: none"> - bolus given -> BP increase to 110/50 HR slows down to 100 - Pressors given -> BP increases to 112/55 <p><u>Triggers</u></p> <ul style="list-style-type: none"> - initiate central line insertion and patient transfer system -> SIM facilitator 	<p>Patient has 2 large bore IV for peripheral vasopressor administration while prepping for central line insertion.</p> <p><i>In alternative scenario: If patient does not have IV access, cannot proceed to this stage 3. After 10 minutes, patient enters cardiac arrest.</i></p>
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Simulation Scenario Template

Appendix A: Laboratory Results

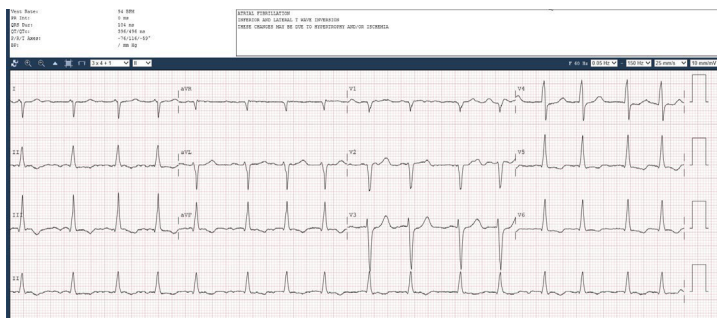
<p><u>CBC</u> WBC 22.5 with elevated neutrophil Hgb 165 Plt 261</p> <p><u>Lytes</u> Na 137 K 5.4 Cl 102 HCO₃ 15 AG 25 Urea 24.7 Cr 97 Glucose 8.6</p> <p><u>Extended Lytes</u> Ca 2.15 Mg 1 PO₄ 1.31 Albumin N/A TSH N/A</p> <p><u>VBG</u> pH 7.25 pCO₂ 19 pO₂ 55 HCO₃ 8.3 Lactate 1.5</p>	<p><u>Cardiac/Coags</u> Trop 18 (comparable to baseline Trop) D-dimer negative INR 1.5 aPTT 34</p> <p><u>Biliary</u> AST 107 ALT 219 GGT 266 ALP 97 Bili 9 Lipase N/A</p> <p><u>Tox</u> N/A EtOH ASA Tylenol Dig level Osmols</p> <p><u>Other</u> pBNP 370 COVID swab negative</p>
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Simulation Scenario Template

Appendix B: ECGs, X-rays, Ultrasounds and Pictures

1. ECG showing AFib



2. CXR showing evidence of CHF with patchy LLL consolidation query acute pneumonia.



3. POCUS showing normal LV systolic contractility by visual estimation.

Simulation Scenario Template



Simulation Scenario Template

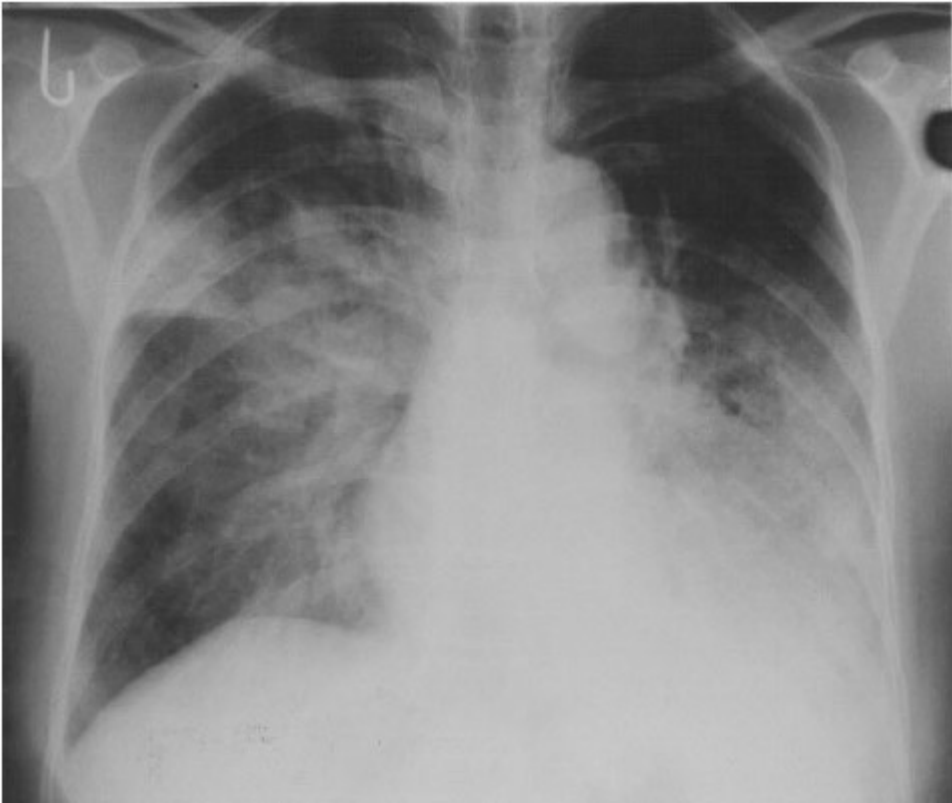
Appendix C: Facilitator Cheat Sheet & Debriefing Tips

Include key errors to watch for and common challenges with the case. List issues expected to be part of the debriefing discussion. Supplemental information regarding any relevant pathophysiology, guidelines, or management information that may be reviewed during debriefing should be provided for facilitators to have as a reference.

References

- 1.
- 2.
- 3.





Rate: 94 BPH
PR Int: 0ms
QRS Dur: 104 ms
QT/QTc: 396/496 ms
P/R/T Axes: -76/116/-59°
BP: / mm Hg

ATRIAL FIBRILLATION
INFERIOR AND LATERAL I W.I.VE INVERSION
THESE CHANGES MAY BE DUE TO HYPERTROPHY AND/OR ISCHEMIA

