

Pneumosepsis

Section 1: Case Summary

Scenario Title:	Pneumosepsis
Keywords:	Septic Shock. Pneumonia
Brief Description of Case:	Devon Travis is a 77 year old retired plumber who over the past week has had increased fatigue, dyspnea, fever and nausea and vomiting. Presentation consistent with septic shock. Requires aggressive early sepsis management and intubation after hemodynamic optimization.

Goals and Objectives	
Educational Goal:	Develop an approach to management of septic shock
Objectives: (Medical and CRM)	Recognition and stabilization of septic shock. Understand importance of hemodynamic optimization prior to intubation ("resuscitate before intubate") Demonstrate clear closed loop communication and shared mental model for airway management with focus on optimization of hemodynamics before, during, and after intubation.
EPAs Assessed:	

Learners, Setting and Personnel				
Target Learners:	<input type="checkbox"/> Junior Learners		<input checked="" type="checkbox"/> Senior Learners	
	<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: 1			
	Confederates: 0			
	Sim Techs: 1			

Scenario Development	
Date of Development:	2018
Scenario Developer(s):	Drew Delany
Affiliations/Institutions(s):	UBC
Contact E-mail:	ddelany@alumni.ubc.ca
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Revised By:	Drew Delany
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Section 2A: Initial Patient Information

A. Patient Chart					
Patient Name: Devon Travis		Age: 77		Gender: Male	Weight: 90kg
Presenting complaint: Cough, Fever and shortness of breath					
Temp: 38.6C	HR: 125	BP: 90/70	RR: 30	O ₂ Sat: 88%	FiO ₂ : room air
Cap glucose: 4.5			GCS: 14 (E4 V4 M6)		
Triage note: Devon has been feeling increasingly unwell for past week. Increasing cough, dyspnea and persistent fevers. Started having nausea and vomiting as well yesterday.					
Allergies: NKA					
Past Medical History: Hypertension Social drinker (3 beer/day)			Current Medications: Hydrochlorothiazide Atorvastatin		

Section 2B: Extra Patient Information

A. Further History	
<i>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, confederate, SP, etc.)?</i>	
None	

B. Physical Exam	
<i>List any pertinent positive and negative findings</i>	
Cardio: Tachycardic. Normal heart sounds	Neuro: Confused. No focal deficits.
Resp: Coarse breath sounds with crackles. Tachypnic.	Head & Neck: Normal
Abdo: Soft. Non-tender	MSK/skin: Mottled, cool in extremities.
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
None
C. Required Medications
IVF, Broad Spectrum Antibiotics, Vasopressors, Intubation drugs, Sedation drugs
D. Moulage
None
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
<i>Include any relevant physical exam findings that require mannequin programming or cues from patient (e.g. – abnormal breath sounds, moaning when RUQ palpated, etc.) May be helpful to frame in ABCDE format.</i>
Respiratory distress (cough, tachypnic, hypoxia) GCS decreased. GC 14 E4V4M6

Section 4: Confederates and Standardized Patients

Confederate and Standardized Patient Roles and Scripts	
Role	Description of role, expected behavior, and key moments to intervene/prompt learners. Include any script required (including conveying patient information if patient is unable)
	N/A

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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
1. Baseline State Rhythm: Sinus tach HR: 125 BP: 90/70 RR: 32 O ₂ SAT: 88% T:38.6 °C GCS: 14 (E4V4M6)	<i>Patient is confused, coughing and tachypnic</i>	<u>Expected Learner Actions</u> <input type="checkbox"/> Identify team leader <input type="checkbox"/> Delegate roles <input type="checkbox"/> IV, O ₂ , Monitors, glucometer <input type="checkbox"/> Primary assessment <input type="checkbox"/> 1L IV fluid bolus <input type="checkbox"/> EFAST Ultrasound <input type="checkbox"/> Call for labwork (septic labs, lactate, VBG, blood cultures)	<u>Modifiers</u> <i>Changes to patient condition based on learner action</i> - No obvious change to vitals with bolus <u>Triggers</u> <i>For progression to next state</i> -Completion of expected learner actions → Phase 2	
2. Hemodynamic support / optimization Rhythm: Sinus tach HR: 120 BP: 95/55 RR: 32 O ₂ SAT: 92% with 10L NRB mask T:38.6 °C GCS: 8 (E2V2M4) Gluc 4.0	<i>Patient becomes less responsive</i>	<u>Expected Learner Actions</u> <input type="checkbox"/> 2 nd IVF bolus – pressure bag <input type="checkbox"/> Emperic broad spectrum abx <input type="checkbox"/> Interpret VBG <input type="checkbox"/> Prepare vasopressor support (could be push dose or infusion) <input type="checkbox"/> Recognize / verbalize declining GCS and need for intubation <input type="checkbox"/> Call for help if not done (ICU?) <input type="checkbox"/> Pre-oxygenation with NP, BVM at 15L with PEEP valve <input type="checkbox"/> Treat borderline hypoglycemia <input type="checkbox"/> Consider /give calcium gluconate	<u>Modifiers</u> -If no second bolus or pressor given BP drops to 75/60 -US findings if done (flat IVC, hyperdynamic LV, No FF, B-lines right lung/consolidation) <u>Triggers</u> - Completion of expected learner actions → Phase 3	



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3. Airway management Rhythm: Sinus tach HR: 115 BP: 100/60 RR: (vent setting) O ₂ SAT: 94% GCS: 3T		<u>Expected Learner Actions</u> <input type="checkbox"/> Push-dose pressor available <input type="checkbox"/> RSI intubation with clear airway plan of backup <input type="checkbox"/> Apnic oxygenation during intubation <input type="checkbox"/> Post-intubation sedation <input type="checkbox"/> Start Norepinephrine infusion <input type="checkbox"/> Call for Post intubation xray	<u>Modifiers</u> - Can increase challenge by having peri-intubation hypotension that requires push dose pressor to temporize <u>Triggers</u> -completion of expected learner actions → Phase 4	
4. Resolution HR: 110 BP: 105/70 RR: 32 (vent setting should match pre-intubation rate) O ₂ SAT: 98% GCS: 3T	<i>Patient intubated and sedated</i>	<u>Expected Learner Actions</u> <input type="checkbox"/> Optimize IVF based on fluid assessment (can be US directed) <input type="checkbox"/> Review lab results <input type="checkbox"/> Continue Norepi infusion <input type="checkbox"/> Consider central line insertion <input type="checkbox"/> Consider arterial line insertion <input type="checkbox"/> Review 2 nd VBG result <input type="checkbox"/> Review differential <input type="checkbox"/> Handover to ICU	<u>Triggers</u> -completion of expected learner actions → END CASE	



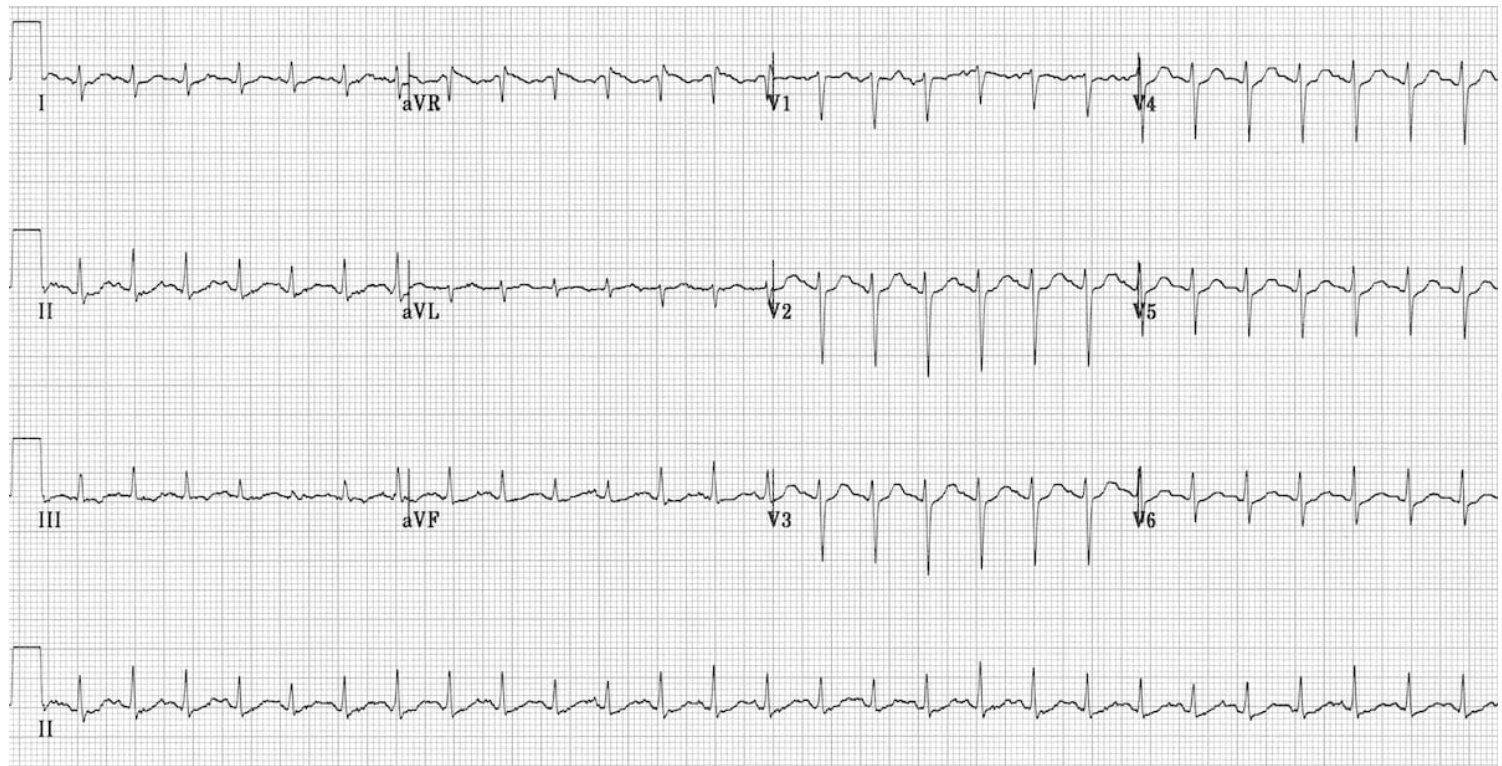
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Appendix A: Laboratory Results

VENOUS BLOOD GAS	TIME : A	TIME : B
pH	7.22 (L)	7.29 (L)
PCO2	50	45
PO2	43 (L)	60
Bicarbonate calculated	20	20
Lactate	5.0 (H)	3.8 (H)
Sodium	133 (L)	135
Potassium	4.1	3.9
Chloride	106 (L)	110
Glucose	4.3	6.7

<u>CBC</u> WBC 19.4 (H) Hgb 114 Plt 226 Neutrophils 13.85 (H) <u>Lytes</u> Na 133 (L) K 4.1 Cl 106 (L) HCO ₃ 20 GFR 90 Cr 60 Glucose 33 (H)	<u>Cardiac/Coags</u> Trop <4 INR 1.0 <u>Biliary</u> AST 18 (14-20 U/L) ALT 19 (10 - 55U/L) GGT 30 (0-50 U/L) Alk Phos 79 (25-100 U/L) Bili 10 (2- 20mcm/L) Albumin 40 (38 -53 g/L) <u>Tox</u> EtOH <2 ASA <0.1 Tylenol <4
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Appendix B: ECGs, X-rays, Ultrasounds and Pictures



<https://litfl.com/sinus-tachycardia-ecg-library/>

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<https://radiopaedia.org/cases/pneumonia-right-middle-lobe-1?lang=us>

Appendix C: Facilitator Cheat Sheet & Debriefing Tips

References

1. Emcrit.org
2. Initial Management of Sepsis. C. Nickson. <https://litfl.com/initial-management-of-sepsis/>
3. Sepsis. Emrap.org Corependium