

Mock Sepsis Alert Process

Goal of Mock Alert: Providing learning for staff and providers that care for patients with sepsis.

Pre-Planning

1. Plan mock alert with unit leadership
 - a. Identify with leadership the outcomes needed for staff. What skills and understanding should staff walk away with?
2. Find an appropriate time and place for mock sepsis alert
 - a. Will the exercise take place in a patient room, conference room, simulation area, etc.?
3. Identify a clinical presentation for the unit that provides targeted learning (e.g., common or misleading presentations)
4. Supplies needed
 - a. Sepsis checklist and screening tool
 - b. Create a mock patient account in the electronic health record (EHR) for documentation (optional)
 - c. Paper documentation for vital signs and sepsis screen (if not using EHR)
 - d. Handout for staff with vitals or diagnostic results (labs/x-rays) for each step of the process

Alert

1. Gather unit staff and leaders
 - a. Notify unit staff, house supervisor, operator, pharmacy, laboratory and physicians of exercise activities
 - b. Have primary RN log into EHR (if mock account created)
2. Share patient synopsis and vitals with the primary care team; refer to examples below (modify for unit-specific presentations)
3. During mock exercise identify the key stages (and prompt staff responding to alert [Alert Team*], if necessary)
 - a. Severe sepsis screening and identification of clinical triggers met
 - b. Activation of Alert Team and response of key members per facility protocol (pharmacy, physician, laboratory, respiratory, resource RN/house supervisor, etc.)
 - i. Activating the Alert Team creates a sense of urgency and brings more resources to the bedside, allowing the bundle to be completed quickly and facilitates movement of the patient to a higher level of care, if needed
 - c. Initiation of treatment:
 - i. Blood and other cultures as needed for suspected infection source
 - ii. Antibiotics
 - iii. Lactate level and other labs per suspected infection source
 - iv. 30 mL/kg bolus if SBP < 90 or MAP < 65 or lactate > 4
 - d. Reassessment and evaluation of effectiveness of interventions and continued monitoring

*Alert team may be specific to sepsis or may be rapid response or similar team

Sample Case Descriptions

The case descriptions below can be utilized as a starting point for a mock sepsis alert. The two cases with an asterisk (*) are fleshed out in detail in the appendices.

Emergency department presentations

- ***Altered mental status** – Patient J. Peabody is a 67-year-old male who presents to the emergency department (ED) with confusion after a visit to his primary care physician where he was diagnosed with left lower lobe pneumonia by chest x-ray. Past medical history: smoker for 50 years, COPD, 2L home O₂, hypertension treated with daily beta blocker, right total hip replacement 10 weeks ago. Weight 80 kg. (Refer to Appendix A)
- **Diabetic ketoacidosis** – Patient S.R. is a 21-year-old female who presents to the ED with a blood glucose level of 827 and is determined to have profound acidosis. She has a history of type 2 diabetes and is non-compliant with insulin administration due to financial constraints. She reports burning with urination. Her vital signs (VS) are: temp 36.7°C, BP 123/62, HR 118, RR 24, SpO₂ 94% on room air.

Inpatient presentations

- ***Surgical** – Susie is a 36-year-old female admitted to med/surg floor post-op from PACU for scheduled colon resection with colectomy. EBL 100 mL, 3000 mL crystalloids, 2000 mL colloids given, 1 G Ancef given inter-op. New diagnosis of colon CA. No previous hospitalizations or surgeries. Susie reports taking a daily vitamin, Tylenol and over-the-counter antihistamines when needed for seasonal allergies. Her vitals are: temp 37.6°C, BP 132/74, HR 76, RR 18, SpO₂ 97% on 2L nasal cannula (NC), Pain 4/10 with fentanyl PCA infusing. Weight: 70 kg. (Refer to Appendix B)
- **Neurologic** – Patient E.M. is an 87-year-old female admitted two weeks ago with a subarachnoid hemorrhage. She is post-op day (POD) 12 from a decompression craniotomy for hemorrhagic stroke. She was transferred from the neuro intensive care unit (ICU) to the neurology unit with a triple lumen PICC, tracheotomy, percutaneous endoscopic gastrostomy (PEG) tube and an indwelling urinary catheter. Since her stroke she has been alert, but recent disorientation is noted with right-sided weakness and restlessness. This morning she is lethargic and not responding to commands. Her VS are: temp 35.8°C, BP 114/76, HR 122, RR 10, SpO₂ 94% on 35% O₂ via tracheostomy collar.
- **Pulmonary** – Patient D.A. is a 63-year-old female with history of pulmonary hypertension admitted with a suspected line infection. The line was removed, blood cultures were sent and she was started on antibiotics. A PICC line was placed for medication administration. During night four of her hospital stay, she has these VS: temp 35.8°C, BP 114/76, HR 122, RR 10, SpO₂ 94% on 4L NC.
- **Orthopedic** – Patient S.W. is a 75-year-old female admitted last week with a left femoral neck fracture. She is POD five from an ORIF. She initially recovered in the surgical ICU secondary to respiratory and blood pressure issues post-surgery. She was transferred to the orthopedic unit on POD five with an indwelling urinary catheter and a triple lumen PICC. She has been alert and oriented to self and location but struggles with date and time. This morning she is confused, lethargic and not responding to directions. Her VS are: temp 35.8°C, HR 122, RR 10, BP 114/76, SpO₂ 94% on 3L NC.
- **ONC/BMT** – Patient M.L. is a 67-year-old female with a primary diagnosis of ovarian cancer. She is POD two from a hysterectomy with bilateral oophorectomy and has been complaining of increased pain at her incision site. The RN notes some redness around the incision in her morning assessment and notifies the MD. Vital signs are stable in the morning. Patient is on 1L NC O₂. A few hours later, the patient reports feeling chilly and asks for a blanket. The RN notes that she appears flushed and asks the CNA to take a set of VS. The VS are now: BP 96/60. HR 115. temp

Appendix A

ED AMS Scenario: Mr. Peabody

Objectives

1. Complete a nursing sepsis screen
2. Recognize patient condition changes as a positive screen for severe sepsis
3. Define the immediate actions a nurse should take when the patient has a positive screen for severe sepsis

Case Description

Admit	Mr. Peabody is a 67-year-old male who presents to the ED after a visit to his primary care physician where he was diagnosed with left lower lobe pneumonia by chest x-ray.
Pt. PMHx	Smoker for 50 years, COPD, 2L home O2, hypertension treated with daily beta blocker, right total hip replacement 10 weeks ago, weight 80 kg.
Triage VS	<ul style="list-style-type: none">• BP 136/70• HR 100 – sinus tachycardia• RR 20• Temp 37.5°C• SpO2 94% on 2L NC
Assessment	Awake, alert and oriented. Lungs have decreased sounds at the left base. Productive cough with yellow, thick sputum. Right hip incision is pink and closed.

Facilitator Notes

Questions to ask

- What are your initial thoughts about this patient?
- What has your assessment told you?
 - Expect staff to discuss the following:
 - Are SIRS present? Suspected infection? Organ dysfunction?
 - Is this sepsis, severe sepsis or septic shock?
- What are your next steps?
 - Actions required:
 - Monitor VS
 - Anticipate initiation of antibiotics
 - Initiate IV
 - Initiate telemetry and O2 monitoring
 - Draw labs
 - Chest x-ray

Two hours later – ED

VS	<ul style="list-style-type: none">• BP 105/62• HR 120 – sinus tachycardia• RR 30• Temp 38.7°C• SpO2 94% on 4L NC
----	--

Labs	WBC	13,000
	HGB/HCT	8.7/26.2
	Platelets	250,000
	Sodium	137
	Potassium	3.8
	Chloride	101
	CO2	25
	Calcium	9.1
	Glucose	90
	BUN	14
	Creatinine	2.5
Chest x-ray	Left lower lobe infiltrate	

Facilitator Notes

Questions to ask

- What’s going on now with this patient?
 - Expect staff to discuss the following:
 - Mr. Peabody has a positive screen for severe sepsis
 - SIRS criteria: HR > 90; RR > 20; temp > 38°C
 - Infection: pneumonia
 - Organ dysfunction: creatinine is elevated at 2.5 (with no renal hx), increased O2 requirements
 - Immediate concerns are: pneumonia; possible wound/post-operative infection
- What are your next steps?
 - Actions required:
 - The nurse must notify the physician immediately to begin treatment for severe sepsis
 - The nurse should anticipate the following treatments:
 - Administer antibiotics STAT, if not already started
 - Blood cultures x2
 - Serum lactate level (POC if possible)
 - Document positive severe sepsis screen in eMAR or on paper tool
 - Fluid bolus not indicated at this point per severe sepsis criteria

One hour later – ED

VS	<ul style="list-style-type: none"> • BP 86/42 • HR 125 – sinus tachycardia • RR 28 • Temp 38.5°C • SpO2 95% on 4L NC
Labs	Lactate 4.6

Facilitator Notes

Questions to ask

- What’s going on now with this patient?
 - Expect staff to discuss the following:

- Mr. Peabody has a positive screen for septic shock
 - SIRS criteria: HR > 90; RR > 20; temp > 38°C
 - Infection: pneumonia
 - Organ dysfunction: Lactate ≥ 4, SBP < 90, creatinine is elevated at 2.5 (with no renal hx), increased O2 requirements
- Immediate concerns are: pneumonia; possible wound/post-operative infection
- What are your next steps?
 - Actions required:
 - The nurse must notify the physician immediately to begin treatment for septic shock
 - Initiate sepsis alert
 - The nurse should anticipate the following treatments:
 - Fluid bolus 30 mL/kg over 30-60 minutes (2400 mL)
 - Repeat lactate once fluids are complete

30 minutes later – ED

VS (2 hours post admission)	<ul style="list-style-type: none"> • BP 98/55 • HR 100 – sinus tachycardia • RR 25 • Temp 38°C • SpO2 93% on 4L NC
Labs	Lactate 2.7
Reassessment by Provider	Completed and documented

Facilitator Notes

Key topics for discussion

- Meaning of lactate and its values
- Fluids or no fluids – when to administer
- Close monitoring of VS
- Admission to med/surg unit or ICU (or transfer to outside facility) – discuss the rationale for each level of care and what continued treatment will look like for each.

Summarize – What are the key take-aways from this situation?

Early diagnosis and appropriate treatment of severe sepsis is important in improving patient outcomes and preventing progression to septic shock. The nurse must diligently perform screening for sepsis and communicate findings indicative of SIRS/severe sepsis immediately to the physician. The severe sepsis bundle is the same as shock, without the fluids. Antibiotic administration is essential to reduce mortality.

The pages that follow may be used to communicate changing vital signs.

Peabody – Set 1 (Triage)

- **BP** 136/70
- **HR** 100 – Sinus tachycardia
- **RR** 20
- **Temp** 37.5°C
- **SpO2** 94% 2L NC

Nursing assessment: Alert and oriented x3. Lungs – decreased sounds at the left base. Productive cough, yellow thick sputum. Right hip incision is pink and closed.

Peabody – Set 2

- **BP** 105/62
- **HR** 120 – Sinus tachycardia
- **RR** 30
- **Temp** 38.7°C
- **SpO2** 94% 4L NC

Nursing assessment: Alert and oriented x3. Lungs – decreased sounds at the left base. Productive cough, yellow thick sputum.

Labs – CBC

- WBC 13,000
- HBG/HCT 8.7/26.2
- Platelets 250,000

Labs – BMP

- Sodium 137
- Potassium 3.8
- Chloride 101
- CO2 25
- Calcium 9.1
- Glucose 90
- BUN 14
- Creatinine 2.5

Chest x-ray: left lower lobe infiltrate

Peabody – Set 3

- **BP** 86/42
- **HR** 125 – Sinus tachycardia
- **RR** 28
- **Temp** 38.5°C
- **SpO2** 95% 4L NC

POC Lactate 4.6

Peabody – Set 4

- **BP** 98/55
- **HR** 100 – Sinus tachycardia
- **RR** 25
- **Temp** 38.0°C
- **SpO2** 93% 4L NC

POC Lactate 2.7

Appendix B

Inpatient Surgical Scenario: Ms. Susie Q

Objectives

1. Complete a nursing sepsis screen
2. Recognize patient condition changes as a positive screen for severe sepsis and progression to septic shock
3. Define the immediate actions a nurse should take when the patient has a positive screen for septic shock

Facilitator Notes

- Do not hand out case description to participants to allow flexibility, if needed
- Post vitals and labs on board/wall as they change
- Have participants write nursing actions, with times, on flip charts at each step, to allow them to follow their critical thinking path

Case Description

Admit	Susie is a 36-year-old female admitted to med/surg floor post-op from PACU for scheduled colon resection with colectomy. EBL 100 mL, 3000 mL crystalloids, 2000 mL colloids given, 1 G Ancef given inter-op.
Pt. PMHx	New dx colon CA. No previous hospitalizations or surgeries. Susie reports taking a daily vitamin, Tylenol and over-the-counter antihistamines when needed for seasonal allergies. Weight: 70 kg.
VS on arrival to unit	<ul style="list-style-type: none">• BP 132/74• HR 76 – sinus rhythm• RR 18• Temp 37.6°C• SpO2 97% on 2L NC• Pain 4/10 with fentanyl PCA infusing
Labs from pre-op	WBC 8,000 HGB/HCT 11/46 Platelets 250,000 Sodium 140 Potassium 4.1 Creatinine 0.6 Glucose 126
Assessment	Alert and oriented x3, no ostomy drainage, 100 mL urine output per indwelling urinary catheter, ostomy site pink

Facilitator Notes

Questions to ask

- What are your initial thoughts about this patient? What has your assessment told you?
 - Expect staff to discuss the following:
 - Was the patient hypotensive?
 - What is the time frame and location for the fluids?
 - What time period is the urine collected over?
 - Did the clock start in post-op or pre-op? What does that make the fluid balance +/-?
 - Why would a person this young have postop O2 needs?

- What are your next steps?
 - Actions required on admission:
 - Monitor VS and urine output
 - Monitor ostomy
 - Pain management

Two hours later

VS	<ul style="list-style-type: none"> • BP 145/77 • HR 101 – sinus tachycardia • RR 18 • Temp 37.8°C • SpO2 94% on 2L NC • Pain 8/10 with fentanyl PCA infusing
Assessment	<ul style="list-style-type: none"> • Alert and oriented x3, 20 mL serosanguinous drainage from ostomy, 125 mL urine output

Facilitator Notes

Questions to ask

- What's going on now with this patient?
 - Does the patient screen positive for sepsis by SIRS criteria? (no)
 - Is there a suspected infection? (post-op abdominal surgery is a risk factor for infection, temp at 100, monitor)
- What are your next steps?
 - Actions required:
 - Assess for signs and symptoms of low fluid volume
 - Encourage incentive spirometer
 - Monitor ostomy
 - Pain management

Three hours later

VS	<ul style="list-style-type: none"> • BP 141/69 • HR 106 – sinus tachycardia • RR 22 • Temp 38.1°C • SpO2 91% on 2L NC • Pain 10/10 with fentanyl PCA infusing
Assessment	<ul style="list-style-type: none"> • Alert and oriented x3, agitated and states she just wants to go to sleep, no ostomy drainage, 25 mcg fentanyl bolus given per PCA, 90 mL urine output, ostomy site is dusky

Facilitator Notes

Questions to ask

- What's going on now with this patient?
 - Does the patient screen positive for sepsis by SIRS criteria? (yes – HR > 20, Temp > 38°C)
 - Is there a suspected infection? Post-op abdominal surgical site infection
 - Does the patient screen positive for severe sepsis by SIRS, infection and organ dysfunction? (yes – AMS, decreased SpO₂, decreased urine output)
- What are your next steps?
 - Actions required:
 - Notify physician immediately to begin treatment with the three-hour bundle for severe sepsis
 - Anticipate the following orders:
 - Blood cultures x2
 - Lactate
 - Administration of antibiotics after blood cultures drawn
 - Document positive severe sepsis screen and physician notification
 - Alert charge RN, sepsis champion or sepsis coordinator, if available

Interventions provided:

- Lactate drawn
- CBC and BMP sent
- Blood cultures x2 drawn
- IV antibiotics given
- UA sent
- 500 mL fluid bolus given

Three hours later

VS	<ul style="list-style-type: none">• BP 90/51• HR 110 – sinus tachycardia• RR 22• Temp 38.3°C• SpO₂ 90% on 3L NC• Pain 10/10 with fentanyl PCA infusing
Labs	Lactate 1.8 WBC 15,000 HGB/HCT 9.5/42 Platelets 200,000 Sodium 135 Potassium 3.8 Creatinine 1.6 Glucose 90

Facilitator Notes

Questions to ask

- What's going on now with this patient?
 - Does patient screen positive for septic shock?
 - No: lactate < 4, fluid resuscitation not yet complete
- What are your next steps?
 - Actions required:
 - Notify physician and ask for remaining 30 mL/kg fluid bolus, administer using pressure bag
 - Frequent monitoring of VS
 - Notify charge RN for support

30 minutes later

VS	<ul style="list-style-type: none">• BP 87/50• HR 108 – sinus tachycardia• RR 24• Temp 38.2°C• SpO2 90% on 3L NC• Pain 10/10 with fentanyl PCA infusing
Assessment	Alert and oriented x3, remains agitated and states just wants to go to sleep, no ostomy drainage

Facilitator Notes

Questions to ask

- What's going on now with this patient?
 - The patient now screens positive for septic shock which is a medical emergency
- What are your next steps?
 - Actions required:
 - Notify physician immediately to begin treatment for septic shock, with six-hour bundle
 - Anticipate the following orders:
 - Repeat lactate level (second after fluid bolus if > 2)
 - Vasopressor
 - Alert charge RN, sepsis champion or sepsis coordinator, if available
 - Document positive septic shock screen and physician notification
 - Frequent monitoring of VS
 - Transfer to higher level of care

Summarize – What are the key take-aways from this situation?

Early diagnosis and appropriate treatment of sepsis are important in improving patient outcomes and preventing progression to septic shock, regardless of the patient's age and presenting signs and symptoms. The RN must diligently perform screening for sepsis and communicate (using SBAR) findings indicative of severe sepsis/shock immediately to the physician and notify sepsis support system of need for rapid support for patient care.

The pages that follow may be used to communicate changing vital signs.

Susie Q – Set 1 (arrival to unit from surgery)

- **BP** 132/74
- **HR** 76 – Sinus rhythm
- **RR** 18
- **Temp** 37.6°C
- **SpO2** 97% on 2L NC
- **Pain** 4/10 with fentanyl PCA infusing

Nursing assessment: Alert and oriented x3, no ostomy drainage, 100 mL urine output per indwelling urinary catheter, ostomy site pink

Preop

Labs – CBC

- WBC 8,000
- HBG/HCT 11/46
- Platelets 250,000

Labs – BMP

- Sodium 140
- Potassium 4.1
- Creatinine 0.6
- Glucose 126

Susie Q – Set 2

- **BP** 145/77
- **HR** 101 – Sinus tachycardia
- **RR** 18
- **Temp** 37.8°C
- **SpO2** 94% on 2L NC
- **Pain** 8/10 with fentanyl PCA infusing

Nursing assessment: Alert and oriented x3, 20 mL serosanguinous drainage from ostomy, 125 mL urine output

Susie Q – Set 3

- **BP** 141/69
- **HR** 106 – Sinus tachycardia
- **RR** 22
- **Temp** 38.1°C
- **SpO2** 91% on 2L NC
- **Pain** 10/10 with fentanyl PCA infusing

Nursing assessment: Alert and oriented x3, agitated and states she just wants to go to sleep, no ostomy drainage, 25 mcg fentanyl bolus given per PCA, 90 mL urine output, ostomy site is dusky

Susie Q – Set 4

- **BP** 90/51
- **HR** 110 – Sinus tachycardia
- **RR** 22
- **Temp** 38.3°C
- **SpO2** 90% on 3L NC
- **Pain** 10/10 with fentanyl PCA infusing

Labs – CBC

- **WBC** 15,000
- **HGB/HCT** 9.5/42
- **Platelets** 200,000

Labs – BMP

- **Sodium** 135
- **Potassium** 3.8
- **Creatinine** 1.6
- **Glucose** 90

Lactate 1.8

UA clean

Susie Q – Set 5

- **BP** 87/50
- **HR** 108 – Sinus tachycardia
- **RR** 24
- **Temp** 38.2°C
- **SpO2** 90% on 3L NC
- **Pain** 10/10 with fentanyl PCA infusing

Nursing assessment: Alert and oriented x3, remains agitated and states just wants to go to sleep, no ostomy drainage