



Patient Simulation

MEDICAL EMERGENCIES: SEPSIS

Instructor Information

Review the scenario with the patient or set up appropriate actions using a simulation system. Instructors may use each checkbox to indicate that the learner has requested an informational item regarding a given scene or patient feature. This simulation involves a 4-year-old male with sepsis.

Patient Information and Dispatch

Position: Lying on the couch

Moulage: N/A

Props/additional personnel: His mother is sitting beside him.

Dispatch: You are responding for a 4-year-old male with a fever and cough for 5 days. It is a cold winter morning; outside temperature is 34°F (1.1°C).

Or

Hospital hand-off: A mother brings in her 4-year-old son who is presenting with a fever and cough for 5 days. It is a cold winter morning; outside temperature is 34°F (1.1°C).

Initial Observations

SCENE ASSESSMENT

Upon arrival, you find that the patient is lethargic and lying on the couch. The mother states the child has been ill for days with a fever and cough. She notes that he tested positive for the flu 5 days ago in his doctor's office.

Medical devices: None

WMD/odors/fumes: None

Cultural/social: Lives with parents

Communication: Responsive to verbal stimuli, otherwise asleep

CARDINAL PRESENTATION/CHIEF COMPLAINT: Fever, cough, respiratory distress

PEDIATRIC ASSESSMENT TRIANGLE

Appearance: Lethargic

Work of breathing: Tachypnea with increased work of breathing

Circulation: Pallor



PRIMARY SURVEY

X (eXsanguinating hemorrhage): None noted.

A (Airway management and cervical spine stabilization): Patent and productive cough

B (Breathing): Tachypnea and regular with increased work of breathing. Lung sounds reveal rales bilaterally.

C (Circulation): Radial pulses are rapid, weak, and regular. Capillary refill time is delayed. Skin is hot and mottled.

D (Disability): Responsive to verbal stimuli, otherwise asleep, GCS = 14 (E3, V5, M6)

E (Expose/environment): Lying on the couch

FIRST IMPRESSION: QUICK OR NOT QUICK (circle or underline one)

LIFE THREATS

Life threats identified: Weak peripheral pulses, decreased mental status

Life threat management: Maintain airway and ventilation. Improve perfusion.

Transport decision/disposition: Transport to closest appropriate facility; treat in ED.

Discussion Points

- Discuss the findings and physiologic effects of your primary assessment and how they relate to the patient's condition.
- Define treatment options for the patient presentation.
 - Focus should be on airway and ventilatory support and improving cardiac output.
- Identify transportation options. Are there pediatric facilities nearby or will aeromedical resources be requested?
- Ensure that the students assessed scene hazards, including whether anyone else in the home has been sick.

VITAL SIGNS

HR: 173, regular

SpO₂: 92% on room air

RR: 38

BP: 110/65

Temp: 102.4°F (39.1°C)

ETCO₂ waveform: 22 mm Hg

4-lead ECG: Sinus tachycardia without ectopy

Detailed Assessment

HISTORY

Onset: Gradual

Palliation/provocation: None

Quality: None

Radiation: None

Severity: Unknown

Time: 5 days

Signs and symptoms: Respiratory distress, lethargic, productive cough, fever

Allergies: None

Medications: Acetaminophen, and albuterol since the day prior (timing of last dose). No home medications.

Past medical history: None, immunizations are up to date.

Last meal: Soup the night previous, nothing today

Events preceding: Patient has been complaining of a “stuffy nose” for the previous 10 days and a positive flu test 5 days ago. Recent flu diagnosis 5 days ago.

Risk factors: Infectious disease, age

SECONDARY SURVEY

Head: Dry mucous membranes

Eyes: PERRL, sunken

Ears: Unremarkable

Nose: Dried mucus

Throat: Unremarkable

Chest: Intercostal retractions. Lung sounds reveal rales bilaterally. Heart sounds are normal, no murmur.

Abdomen: Unremarkable, soft and nontender

Extremities: Unremarkable, PMS intact, radial pulse weak, and capillary refill 4 seconds

Other: Skin is hot and mottled.

DIAGNOSTICS

Blood glucose: 160 mg/dL (8.9 mmol/L)

Weight: 35 lbs (16 kg)

Labs: N/A

Potential Diagnosis by Body System

Respiratory: Influenza, pneumonia, URI

Cardiovascular: Shock (compensated), sepsis

Gastrointestinal: Negative

Renal/Urinary: Negative

Reproductive: Negative

Endocrine/Metabolic: Juvenile-onset diabetes

Environmental: Negative

Musculoskeletal/Integumentary: Negative

Neurologic: Negative

Toxicology: Negative

REFINE DIFFERENTIAL DIAGNOSIS

Life threatening: Yes

Critical: Yes

Nonemergent: No

ONGOING MANAGEMENT: Discuss with students.

Reassess: Discuss what reassessment measures will be performed and how often. Provide fluid bolus and monitor for response.

Refine diagnosis: Discuss with students. Multiple diagnoses are possible, including pneumonia with sepsis.

Modify treatment: Discuss treatment options with students.

Patient disposition: Transport to nearest appropriate facility; treat in ED.

TREATMENTS/CRITICAL ACTIONS

Airway/breathing: Position of comfort, maintain airway, ventilatory support

Circulation: Cardiac monitor, IV therapy, IV fluid bolus

Life threats managed: Discuss with students.

- Basic: Position of comfort, maintain airway, ventilatory support. Obtain glucose.
- Advanced: Cardiac monitor, IV therapy, IV fluid bolus (20 mL/kg) × 3, antipyretics. Consider vasopressors.

Transport decision (for prehospital): Consider transport with parent/caregiver for psychosocial support.

- Emergent or nonemergent?
- Air or ground?

Destination: Transport to the closest appropriate facility.

Teaching Points

1. Ask the students to discuss their physiologic goals for this patient and how they achieved them.
2. Ask the students to identify the “red flags” that indicated the patient’s condition was deteriorating and discuss. Signs of shock include tachycardia, weak peripheral pulses, and poor capillary refill.
3. Ask students to identify the greatest life threat for this patient. Discuss compensated and decompensated shock.
4. Ask the students to discuss the potential risks and benefits of their treatment alternatives. If they provide fluid resuscitation via bolus administration, they should assess lungs and liver after each bolus, monitoring for fluid overload.
5. Recognize and discuss multiple diagnoses and note that more than one can be accurate for a given patient (pneumonia and sepsis).
6. Disposition
 - a. Admitted to pediatric unit for monitoring
 - b. Discharged with full recovery

Take-Home Points/Critical Actions

- Clinical presentation of shock in children may be present despite having vital signs that appear in normal ranges.
- Ensure adequate O₂.
- Monitor airway and breathing status.
- Treat hypoperfusion.
- Be aware that the patient may deteriorate rapidly.

