



Patient Simulation

TOXICOLOGICAL EMERGENCIES: CHILD MALTREATMENT/ NONACCIDENTAL TRAUMA

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 6-month-old male with nonaccidental trauma.

Patient Information and Dispatch

Position: Lying on his back in his crib

Moulage: Skin pale

Props/additional personnel: Infant and mother, three other children

Dispatch: You are dispatched to a residence for a sick child. Dispatch states this is a 6-month-old male who is fussy, and mom thinks he might have a virus because his older siblings were ill last week. It is a fall afternoon with a temperature of 76°F (24°C).

Or

Hospital hand-off: A 6-month-old male is brought into the ED by his mother. Mom believes he may have a virus because his older siblings were ill last week. It is a fall afternoon with a temperature of 76°F (24°C).

Initial Observations

SCENE ASSESSMENT

You arrive on scene to a home with four cars parked in the driveway. There are multiple children's bikes in the front yard. Upon ringing the doorbell, you hear two large dogs barking inside the home. A small child comes to the door. The home is cluttered with dog's and children's toys. There are food containers and half-empty cups on the coffee table, along with several ashtrays that are overflowing.

Medical devices: None

WMD/odors/fumes: None

Cultural/social: Lives at home with parents and siblings

Communication: Unable to communicate due to the child's age

CARDINAL PRESENTATION/CHIEF COMPLAINT: Fussy, thinks he has what his siblings had last week

PEDIATRIC ASSESSMENT TRIANGLE

Appearance: Alert with occasional fussing or crying

Work of Breathing: Appears unlabored, but note intercostal retractions

Circulation: Skin is warm and pale.



PRIMARY SURVEY

X (eXsanguinating hemorrhage): No bleeding noted.

A (Airway management and cervical spine stabilization): Patent

B (Breathing): Slow, regular, and unlabored

C (Circulation): Brachial pulse is rapid and regular. Capillary refill is < 2 seconds. Skin is warm and pale.

D (Disability): Child responds to touch by crying/fussing; GCS = 13 (E3, V4, M6).

E (Expose/environment): Lying on his back, relatively quiet, only occasionally fussing or crying. Child has small bruises in various stages of healing on the chest and abdomen.

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

LIFE THREATS

Life threats identified: Not responding within baseline, pale skin

Life threat management: Maintain patent airway, oxygen, ventilatory support

Generate differential diagnosis: Viral illness, bacterial infection, hemorrhage, trauma, toxic ingestion

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.
- Identify transportation options. Are there pediatric facilities nearby or will aeromedical resources be requested?
- Ensure that the students assessed scene hazards. What are they in this case?

VITAL SIGNS

HR: 181

SpO₂: 97% on room air. Decreases to 90% during further assessment.

RR: 12. Decreases to 10 and becomes irregular during further assessment.

BP: 88/44. Reaches 82/50 during further assessment.

Temp: 98.8°F (37.1°C)

ETCO₂ waveform: Not obtained

4-lead ECG: Sinus tachycardia rhythm with no ectopy

Detailed Assessment

HISTORY

Onset: Sudden

Palliation/provocation: Initially responds to painful stimuli, then becomes unresponsive during further assessment.

Quality: Unknown

Radiation: Unknown

Severity: Unknown

Time: 6 hours

Signs and symptoms: Not responding within baseline. Skin warm and pale. During reassessment, infant begins to look mottled.

Allergies: NKDA

Medications: None.

Past medical history: Preterm infant (36 weeks)

Last meal: Took his bottle this morning at 0800 hours.

Events preceding: Per mom, had a quiet night, woke to eat, had some tummy time this morning in the living room while siblings were eating breakfast. Normally much more active and quite a loud, fussy child, now more quiet than usual.

Risk factors: Preterm, siblings were sick last week

SECONDARY SURVEY

Head: Unremarkable, fontanelle full

Eyes: Pupils are pinpoint.

Ears: Unremarkable

Nose: Unremarkable

Throat: Unremarkable, small linear bruise on side of neck

Chest: Lung sounds are clear with intercostal retractions present bilaterally. **Heart sounds:** no murmur.

Abdomen: Initially tender, then appears distended during reassessment with bruises in different stages.

Extremities: No obvious deformities noted.

Other: During further reassessment the infant becomes more lethargic and has stopped responding to touch. He is now responsive only to painful stimuli.

DIAGNOSTICS

Blood glucose: 80 mg/dL (4.4 mmol/L)

Weight: 15.4 lbs (7 kg)

Labs: N/A

Potential Diagnosis by Body System

Respiratory: Respiratory Infection

Cardiovascular: Hypovolemia

Gastrointestinal: GI Infection: gastritis, gastroenteritis, enteritis; nonaccidental trauma: lacerated liver

Renal/Urinary: Negative

Reproductive: Negative

Endocrine/Metabolic: Hypoglycemia, sepsis

Environmental: Negative

Musculoskeletal/Integumentary: Negative

Neurologic: Abusive head trauma, meningitis

Toxicology: Toxic ingestion

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.

Refine diagnosis: Discuss with students.

Modify treatment: Discuss treatment options with students.

Patient disposition: Transport; treat in ED.

TREATMENTS/CRITICAL ACTIONS

Airway/breathing: Oral adjunct, oxygen, ventilatory support

Circulation: Cardiac monitor, IV therapy, IV fluid bolus

Life threats managed: Discuss with students.

- Basic: Oral adjunct, oxygen, ventilatory support (nasopharyngeal airway, support with positive pressure ventilation)

- Advanced: Cardiac monitor, IV therapy, IV fluid bolus

Transport decision (for prehospital): Discuss options with students

- Emergent or nonemergent?
- Air or ground?

Destination: Transport to closest appropriate facility. Consider appropriate pediatric 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 any “red flags” that indicated the patient’s condition was deteriorating and discuss.
3. Ask the students to identify the greatest life threat for this patient.
4. Ask the students to discuss the potential risks and benefits of their treatment alternatives.
5. Recognize and discuss multiple diagnoses and note that more than one can be accurate for a given patient.
 - a. Child maltreatment may not be immediately apparent and often goes unrecognized.
 - b. Once suspicion has been established, the provider becomes a mandated reporter and needs to report this suspicion to the child protective agency, law enforcement, hospital social work, or supporting staff.
 - c. Hotlines for abused/maltreated children are available, and this may aid in temporary separation from mom and the children during the investigation process.
 - d. Discuss TEN-4 (Trunk, Ears, Neck, 4 and younger/any bruising on a child under 4 months), sentinel injuries, FACES-P (Frenulum, Auricular area, Cheek, Eyes, Sclera, Patterned bruising), “kids that don’t bruise, rarely bruise.”
6. Disposition
 - a. A full-body scan revealed a lacerated liver, and a skeletal survey showed numerous healing rib fractures as well as a healing left femur fracture.
 - b. Upon recovery the child was released into the care of his grandparents, where his siblings have been since the day of the incident.

Take-Home Points/Critical Actions

- Ensure adequate O₂.
- Monitor airway and breathing status.
- Recognize and treat for toxic ingestion.
- Recognize signs of shock and internal hemorrhage.
- Recognize and treat for hypovolemia.

