KidSIM Scenario

Polytrauma Face, Chest, Pelvis, Liver & Extremity Injury Pediatric

(SD0037)

CASE: Polytrauma Face, Chest, Pelvis, Liver & Extremity Injury
Pediatric

TARGET AUDIENCE

Senior Emergency Residents and ED Nurses

LEARNING OBJECTIVES

Knowledge:

By the end of the session the participants will:

1. Recognize the importance of pre-arrival preparation for a trauma patient
2. Recognize and understand the indications for spinal immobilization
3. Recognize potential sites of blood loss in a trauma patient
4. Recognize clinical signs of compensated and decompensated (hypotensive) shock in a trauma patient
5. Recognize the indications for rapid fluid administration and use of blood products
6. Recognize the need for a definitive airway

Skills:

By the end of the session the participants will demonstrate:

1. An appropriate primary and secondary survey of a pediatric trauma patient, including maintaining spinal immobilization
2. Appropriate use of oxygen delivery devices, bag valve mask ventilation, laryngoscopy and intubation techniques
3. Appropriate utilization of resources when selecting drugs, dosages, giving fluid boluses and interpreting vital signs
4. Complete documentation on a trauma record

Attitudes / Behaviours:

By the end of this session the participants will:

1. Demonstrate inclusive leadership by
    a. Establishing self as a clear event manager
    b. Being assertive but respective
    c. Showing support for all team members
2. Identify their own role and role of others
    a. Does each team member have a role?
    b. Do all team members contribute?
    c. Do team members help each other?
    d. Do team members seek clarification?
    e. Was there adaptability in roles to meet pt changing needs?
3. Demonstrate effective communication
    a. Were team members communicating respectfully with each other?
    b. Was there evidence of closed loop communication?
    c. Did team members call attention to critical information?
    d. Were team members comfortable speaking up if there was unsafe practice or actions?
4. Discuss the importance of situational awareness

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a. Were frequent situation summaries provided?
b. Were all team members aware of the big picture?
c. Did team members think out loud?
d. Were there fixation errors?
e. Were team members able to effectively prioritize patient care?

5. Use resources effectively and efficiently
    a. Did they call for help early and utilize consultants?

SCENARIO ENVIRONMENT

Location *(Scenario scene)*

- Emergency Department (In-patient unit may be substituted if necessary for learners)

Monitors:

- Cardiorespiratory monitor including oxygen saturation

Physical props / Equipment:

- Gomard Child
- Standard Airway Equipment
    - O2 delivery devices
    - BVM
    - OPA
    - Laryngoscope with curved and straight blades
    - Various sized ETT
    - CO2 detection device
    - Bougie, LMA
- Standard IV Equipment
    - Pressure bags, IV pump
    - IV catheters
    - IV tubing
    - IV fluids: NS
    - Simulated blood and tubing
- Medications
    - Standard PALS medications
    - RSI Kit
    - Inotropes: dopamine, norepinephrine, epinephrine
    - Medication references
- Documentation records (trauma pack)
- Standard Trauma Pack
    - Foley catheter equipment

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- NG / OG tube
- C-spine collar
- IO kit

Make up /Moulage

- Blood on face
- Contusions to lower chest / upper abd left side

Multi media

- CXR – Post intubation
- C-spine x-ray – Right lung contusion with small pneumothorax
- Pelvis x-ray – Right pubic bone #
- POCUS images – positive abd, minimal right lung slide, neg pericardial effusion
- CT head – Brain contusion
- CT facial bones – Mandible and facial #'s
- CT abdomen – Liver laceration
- Labs – CBC, serum electrolyte panel, blood gas

Personnel:

1. Bedside nurses
2. Documenting nurse(s)
3. ED Residents

SCENARIO

Case Introduction: *(Scenario given to participants)*

EMS is bringing in a 3 yr old female after falling out of a 5-storey screen window. Found by bystanders in grass. Upon EMS arrival patient only responding to painful stimuli. 15 kg

- *+ Facial blood but maintaining own airway*
- *IV est*
- *Full spinal motion restriction with collar*
- *ETA 5 minutes*

Past medical history:

Healthy / NKA

Scenario Transitions / Evolution	Effective Management	Ineffective Management	Notes
1. Patient arrival and primary assessment of trauma patient • **Airway:** Blood in mouth • **Breathing: RR** 26 **SAO2** 97 % on 100% NRB	- Trauma Team Activation PTA - Primary survey - Establish a definitive airway - Establish second IV/IO line – large bore - IV NS bolus	- Not recognizing the need for urgent intubation	- May have discussion for OR Activation as well as TTA - MTP activation at any time would be beneficial. May want to call for 2 units Oneg to be sent via tube system

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• **Circulation: HR** 141, **Bp** 108/50. **CRT** 3 secs, pale, cool to touch. • **Disability: GCS** 13 (4 - eyes open spontaneously, 4 – confused verbal, 5 – localizes to pain) PERL 4 mm • **Exposure: T** 35.6	- Cut clothing: expose and keep warm - Documentation		- + Blood in mouth even with suctioning - logroll should be done at end of primary survey
2. Secondary assessment of a trauma patient • **Head / Neck:** Right side of face and mandible feel unstable. No step deformity to c-spines • **Chest:** Decreased air entry to right lung. Contusion to lower right side. • **Abdomen:** Upper right side contusion. Softly distended. Tender • **Pelvis:** ?Stability. Tender • **Extremities:** ?Deformity to right lower leg	- Systematic secondary survey - Give pRBC(s) - Give Tranexamic Acid - Adjuncts: labs, x-rays (chest, pelvic, c-spines), foley, OG - POCUS performed if able - Consider putting on pelvic binder /sheet - Splint lower leg if able	- Contraindication for NG placement	- POCUS results: - abdomen positive - Minimal right lung sliding. Normal left - No pericardial effusion - TXA 15 mg/kg over 10 mins, followed by 5 mg/kg/hr for 8 hours (not needed to start in the ED)
3. Deterioration: uncompensated shock • **HR** 165 • **Bp** 80 /40 • **RR** bagged easily • **SAO2** 97% • **CRT** 3 secs, pale, cool to touch • **GCS** 3 – intubated. PERL • **T** 35.9	- Activate and give MTP if not already done		MTP Ratio*: 20 mL/kg pRBC 10 mL/kg FFP 5 mL/kg Platelets *Consensus for blood product ratio *Daniel Lindberg, MD: reviewing Trappey AF 3rd et al. J Trauma Acute Care Surg 2019 Jul 9*
4. Improvement: • **HR** 142 • **Bp** 110/60 • **RR** bagged easily • **SAO2** 97% • **CRT** 2-3 secs, pink, warm • **T** 36.6	- Have managed airway - Have given only one 20 mL/kg NS - Have given blood products to improve hypotension		- Judicious fluids with lung contusion and pneumothorax - Did not need chest tube as pneumothorax only small

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