Shock – Summary

Learning Objectives

- 1. Define shock.
- 2. Know stages, classifications of shock.
- 3. Know the initial management of shock.

Definition, stages of shock

- **Shock**: Inadequate perfusion to meet tissue demands.
  - Eventually cell death; eventually organ failure, cardiac arrest, death.
- **Compensated shock**:
  - Cardiac output (HR x SV) and systemic vascular resistance keep BP WNL.
    - Signs: Tachycardia, pulses, cool extremities, oliguria, lactic acidosis
- **Hypotensive (uncompensated) shock**:
  - Compensatory mechanisms are overwhelmed.
    - Signs: Hypotension, altered mental status, increased lactic acidosis
- **Irreversible shock**:
  - Irreversible organ damage, death occur.

Classifications of shock

- **Hypovolemic Shock**: Decreased preload due to internal or external losses.
  - **Etiologies**: Dehydration (diarrhea, burns, nephrotic syndrome), hemorrhage
- **Distributive Shock**: Decrease in SVR, with abnormal distribution of blood flow → functional hypovolemia, decreased preload. Typically, NL or ↑ CO.
  - **Etiologies**: Sepsis, anaphylaxis, CO/cyanide poisoning, neurogenic, mitochondrial
- **Cardiogenic Shock**: “Pump failure.” ↓ CO, systolic function.
  - **Etiologies**: Cardiomyopathies, ischemia, dysrhythmias, CHD
- **Obstructive Shock**: Outflow from left or right side of heart physically obstructed.
  - **Etiologies**: Large PE, critical coarctation, tamponade, tension pneumothorax

Initial management of shock: Goal to normalize BP, perfusion.

- ABCDs. Attach cardiovascular-respiratory monitor, change vital sign measurements to appropriate interval (q 15 min), alert nurses of concerns, ensure sufficient access: 2 large bore PIVs if possible; ensure established lines are working.
  - If insufficient IV access and uncompensated, PALS says obtain I/O immediately.
  - Does the patient emergently need a higher level of care?
- **General management algorithm**¹,²
  - May initially be applied to any patient in shock. Search for exact etiology.

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<tr>
<th>Continually</th>
<th>First 5-15 min</th>
<th>First 15-30 min</th>
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<tr>
<td>Monitor ABCDs.</td>
<td>Identify life-threatening conditions</td>
<td>Identify and start to correct abnormal glucose, lytes</td>
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<td>Monitor physiologic goals (BP, skin perfusion, pulses, mental status, UOP) pre and post interventions</td>
<td>Establish access</td>
<td>Give antibiotics in suspected septic shock (broad coverage)</td>
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<td>Consider advanced airway</td>
<td>20 ml/kg crystalloid over 5-10 min (10 ml/kg if DKA, cardiogenic shock)</td>
<td>Give ionotropes if cardiogenic shock</td>
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<td>Give IM epinephrine (0.01 mg/kg of 1:1,000 solution) if anaphylaxis (max 0.5 mg)</td>
<td>Continue 20 ml/kg boluses up to 60 ml/kg; consider PRBCs</td>
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