

Shock

Assumption

The student understands basic cardiac, pulmonary and renal physiology.

Goal

The student will be able to define shock, differentiate between the types and manage shock.

Objectives

By the end of the clerkship, the student will be able to:

1. Determine the type of shock, indicate the mechanisms, methods of compensation, differential diagnosis, and treatment of:
 - a. Cardiogenic shock (acute coronary syndrome, valve failure, dysrhythmias)
 - b. Hypovolemic (hemorrhage, fluid loss) and classes of hypovolemic shock
 - c. Distributive shock (sepsis, anaphylaxis, neurogenic)
 - d. Obstructive shock (non-cardiac obstruction including: pulmonary embolism, tension pneumothorax, tension hemothorax and cardiac tamponade)
 - e. Neurogenic shock
2. Utilize laboratory values complete blood count (CBC), chemistry panel, lactate, arterial blood gas (ABG), SvO₂ to help guide management.
3. Understand factors that affect oxygen delivery, consumption, and extraction.

Problems

1. A 68-year-old male is admitted to the Emergency Department after a motor vehicle crash in which he was a restrained driver. He was reported to have had a blood pressure of 90/60 mm Hg at the scene after a prolonged extrication. The windshield was reportedly broken and he has a large head laceration, as well as, an obvious right hip dislocation. He complains of chest and abdominal pain.
 - How would you rule in/out:
 - Hemorrhagic shock
 - Cardiogenic shock
 - Cardiac tamponade
 - Neurogenic shock
 - Describe your management and endpoints of resuscitation
2. An 18-year-old female, who presented after a motorcycle crash, becomes hypotensive and unresponsive in the x-ray suite during a computerized axial tomography (CT) scan. The CT scan is being performed to evaluate pelvic pain.
 - Describe your management strategy

Skills

1. Conduct a focused physical examination looking for signs of shock (i.e., hypovolemia, distended neck veins, tracheal deviation, etc.).

Shock (continued)

Skills (continued)

2. Demonstrate the ability to:
 - a. Place appropriate IV access
**Refer to the [ACS/ASE Medical Student Simulation-based Surgical Skills Curriculum](#) (Year 1 - Module 7; Year 2 – Modules 3, 4 and 7).*
 - b. Draw venous blood from an antecubital vein
**Refer to the [ACS/ASE Medical Student Simulation-based Surgical Skills Curriculum](#) (Year 1- Module 7)*
 - c. Interpret arterial blood gas results
**Refer to the [ACS/ASE Medical Student Simulation-based Surgical Skills Curriculum](#) (Year 3 - Module 1)*
 - d. Interpret straightforward diagnostics (EKG) and imaging (CXR with tension pneumothorax)
 - e. Interpretation of invasive monitors (PA catheter and central venous pressure)

Teaching Hints

Stress priorities during evaluation (ABC's) and goals of resuscitation.

Prevention

Stress early recognition and management of shock.

Special Considerations

- Adrenal insufficiency in steroid dependent patients
- Consider pediatric weight based nomogram for resuscitation strategies
- Consider physiologic changes associated with pregnancy