



FOUNDATIONS
of Emergency Medicine

Foundations Frameworks

Approach to Undifferentiated Shock

Author: Matthew Klein, MD; Andrew Ketterer, MD, MA

Editors: Emilie Powell, MD, MS, MBA; Kristen Grabow Moore, MD, MEd

What is shock?

- Tissue and cellular ischemia due to insufficient perfusion, with subsequent multisystem dysfunction
- Management includes identifying the type of shock, providing appropriate support, and treating the underlying cause

What are common causes of shock?

- Pump: problems with the heart
 - Acute myocardial infarction, arrhythmia, CHF
 - Acute valvular insufficiency
 - Mechanical obstruction: massive pulmonary embolism
- Pipes: problems with the blood vessels
 - Distributive shock: anaphylaxis, sepsis, neurogenic
 - Endocrine: adrenal crisis, myxedema coma
 - Vascular catastrophe: ruptured aortic aneurysm, aortic dissection, vascular trauma
- Tank: problems with volume/preload
 - Hemorrhage, hypovolemia
 - Tension pneumothorax, tamponade (both cause impaired venous return to the heart)
 - Abdominal compartment syndrome

What are some hallmarks of shock?

- Tachypnea, tachycardia, hypotension, oliguria, altered mental status, EKG changes, AKI

What workup do I need to perform?

- Obtain vital signs (including rectal temperature), place on the monitor, address ABCs, defibrillator pads as appropriate, establish IV access with 2 large bore IVs or a central line
- VBG with Hgb and lytes, lactate, CBC/chem/Mg, troponin/BNP, coags, type & screen, hCG, UA/UCx
- EKG, portable CXR
- RUSH exam (Rapid Ultrasound for Shock and Hypotension): “HI-MAP”
 - Heart: evaluate for effusion/tamponade, RV failure or strain, LV function
 - IVC: can provide information on volume status
 - Morison’s pouch (FAST exam): evaluate for intra-abdominal free fluid
 - Aorta: evaluate for abdominal aortic aneurysm
 - Pneumothorax

What treatments do I need to administer?

- Supportive care and directed therapies based on the suspected underlying cause
- General principles
 - Address airway, breathing, circulation
 - Fluid resuscitation (if adequate cardiac contractility), blood transfusion if necessary
 - Keep the patient warm to help prevent coagulopathy

- Early broad-spectrum antibiotics if suspected infectious etiology
- Vasopressors/inotropes as needed, targeted to “pipes” etiologies
- Consider intubation as a means to decrease metabolic demands of breathing, but be careful in “tank” etiologies as increased intrathoracic pressure will decrease preload and worsen the shock state
- Always remember that shock states overlap (e.g., sepsis may be accompanied by cardiomyopathy and a mixed shock state) so reassess the patient early and often

References:

Wacker, D. and Winters, M. Shock. *Emergency Medicine Clinics of North America*. 2014;32:747-58.
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