

Shock

State of cellular and tissue hypoxia due to: reduced oxygen delivery, increased oxygen consumption, inadequate oxygen utilization, or a combination of these processes.

Stages

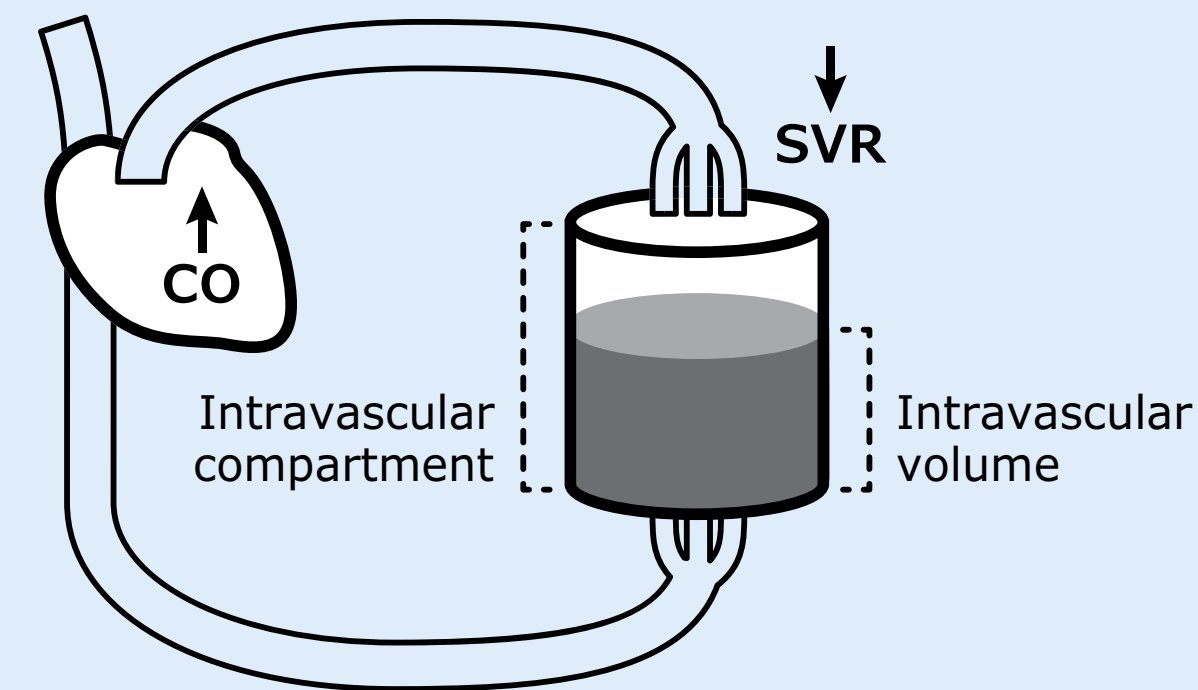
- 1. PRE-SHOCK** Compensated shock, cryptic shock. Compensatory responses to diminished tissue perfusion
- 2. SHOCK** Compensatory mechanisms become overwhelmed, symptomatic tachycardia, dyspnea, cold clammy skin, altered mentation
- 3. END-ORGAN DYSFUNCTION** Irreversible end-organ damage, multisystem organ failure, and death

DISTRIBUTIVE (Warm and Dry)

- Most common type (66% of shock)
- Septic ▶ dysregulated host response to infection
- Neurogenic ▶ in severe traumatic brain or spinal cord injury
- Anaphylactic ▶ severe IgE-mediated reaction
- Endocrine/Metabolic ▶ addisonian crisis, myxedema, beriberi

Management

- All types
 - Appropriate IV fluids
 - Vasopressors
- Sepsis
 - Antibiotics
 - Source control
- Anaphylactic: Epinephrine
- Adrenal: Steroids

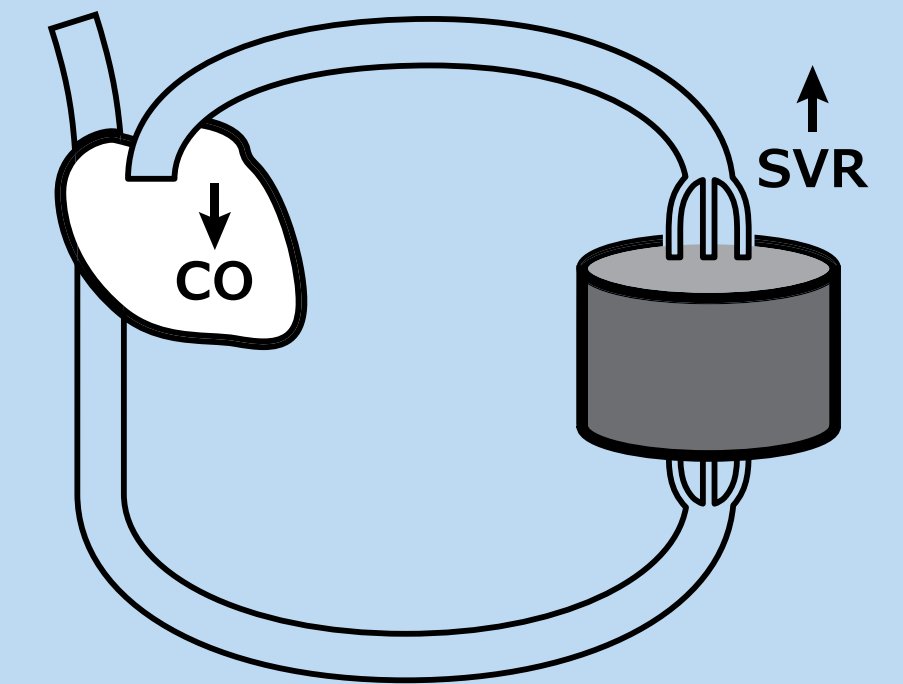


CARDIOGENIC (Cold and Wet)

- Cardiomyopathic ▶ myocardial infarction, following cardiac arrest or decompensated heart failure, thyrotoxicosis
- Arrhythmic ▶ tachyarrhythmias or bradyarrhythmias
- Mechanical ▶ severe aortic or mitral insufficiency, acute valvular rupture, dissection of ascending aorta into valve ring

Management

- Coronary revascularization
- Cardiac surgery for structural etiologies
- Volume removal
- Inotropic support
- Mechanical circulatory support

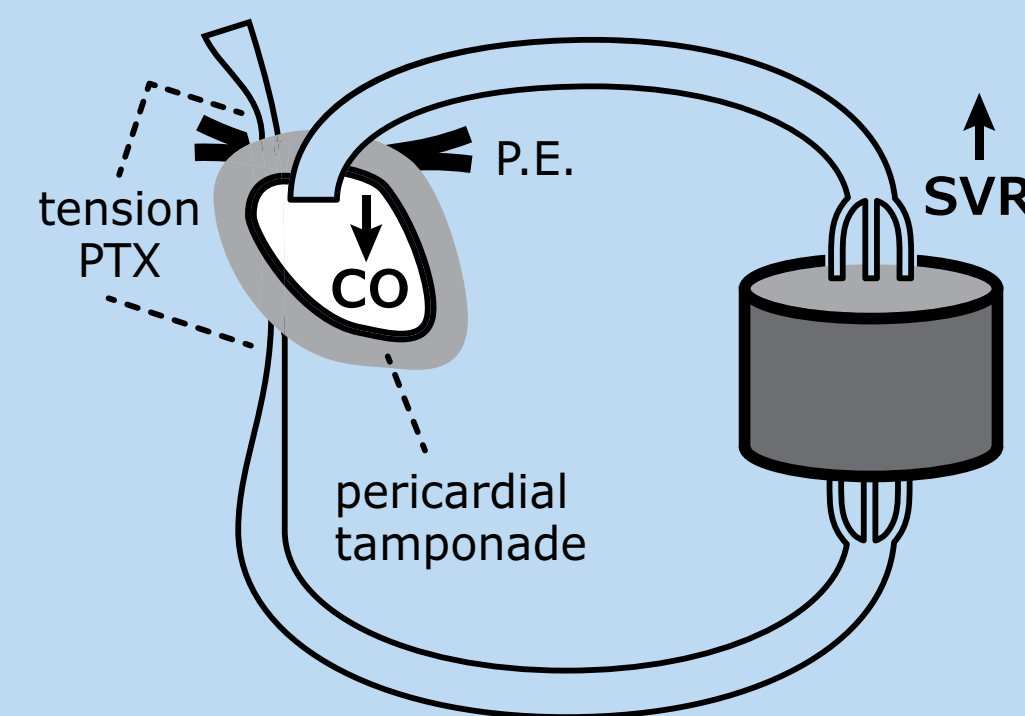


OBSTRUCTIVE (Cold and Dry)

- Pulmonary vascular ▶ RV failure from massive pulmonary embolism or severe pulmonary hypertension
- Mechanical (impaired venous return/ventricular filling) ▶ tension pneumothorax, cardiac tamponade, constrictive pericarditis, restrictive cardiomyopathy

Management

- PE
 - Thrombolysis or surgical embolectomy
 - +/- Mechanical circulatory support
- Tension pneumothorax: Needle and/or tube thoracostomy
- Cardiac tamponade: pericardiocentesis



HYPOVOLEMIC (Cold and Dry)

- Hemorrhagic ▶ leading to reduced intravascular volume. Most commonly due to trauma or gastrointestinal bleeding
- Nonhemorrhagic ▶ volume depletion due to loss of sodium and water

Management

- Adequate IV access
- Rapid volume repletion
- Control hemorrhage if present

