

0 min

Recognize decreased mental status and perfusion.  
Begin high flow O<sub>2</sub>. Establish IV/IO access.

5 min

**Initial resuscitation:** Push boluses of 20 cc/kg isotonic saline or colloid up to & over 60 cc/kg until perfusion improves or unless rales or hepatomegaly develop.  
Correct hypoglycemia & hypocalcemia. Begin antibiotics.

If 2nd PIV start inotrope.

*shock not reversed?*

15 min

**Fluid refractory shock:** Begin inotrope IV/IO. use atropine/ketamine IV/IO/IM to obtain central access & airway if needed.  
*Reverse cold shock* by titrating central dopamine or, if resistant, titrate central epinephrine  
*Reverse warm shock* by titrating central norepinephrine.

dose range:  
dopamine up to 10 mcg/kg/min,  
epinephrine 0.05 to 0.3 mcg/kg/min

*shock not reversed?*

60 min

**Catecholamine resistant shock:** Begin hydrocortisone if at risk for absolute adrenal insufficiency

Monitor CVP in PICU, attain normal MAP-CVP & ScvO<sub>2</sub> > 70%

**Cold shock with normal blood pressure:**  
1. Titrate fluid & epinephrine, ScvO<sub>2</sub> > 70%, Hgb > 10g/dL  
2. If ScvO<sub>2</sub> still < 70%  
Add vasodilator with volume loading (nitrovasodilators, milrinone, imrinone, & others)  
Consider levosimendan

**Cold shock with low blood pressure:**  
1. Titrate fluid & epinephrine, ScvO<sub>2</sub> > 70%, Hgb > 10 g/dL  
2. If still hypotensive consider norepinephrine  
3. If ScvO<sub>2</sub> still < 70% consider dobutamine, milrinone, enoximone or levosimendan

**Warm shock with low blood pressure:**  
1. Titrate fluid & norepinephrine, ScvO<sub>2</sub> > 70%,  
2. If still hypotensive consider vasopressin, terlipressin or angiotensin  
3. If ScvO<sub>2</sub> still < 70% consider low dose epinephrine

*shock not reversed?*

**Persistent catecholamine resistant shock:** Rule out and correct pericardial effusion, pneumothorax, & intra-abdominal pressure > 12 mm/Hg.  
Consider pulmonary artery, PICCO, or FATD catheter, &/or doppler ultrasound to guide fluid, inotrope, vasopressor, vasodilator and hormonal therapies.  
Goal C.I. > 3.3 & < 6.0 L/min/m<sup>2</sup>

*shock not reversed?*

**Refractory shock: ECMO**