Case study: An 81-year-old female was admitted to the cardiology unit following an acute ST-Elevation Myocardial Infarction (STEMI) 3 days ago. She was treated successfully with percutaneous coronary intervention and stent to the right coronary artery. She now has symptoms of mild confusion, lightheadedness, and generalized weakness. She vomited her medications this morning. You have a high suspicion of cardiogenic shock. Her blood pressure is 81/30; HR 112. Identify the medications (dose, route, frequency) you would prescribe for this patient. Explain your rationale for each agent prescribed.

Causes of cardiogenic shock (CS): MI, dysrhythmias, cardiac valve disease

Treatment and interventions for CS after PCI may include:

- IVF to help maintain blood volume
- Oxygen therapy to help the heart, lungs, and tissues for adequate perfusion
- Mechanical ventilation may be required to the protect the patient's airway and to provide additional oxygen
- Intra-aortic balloon pump (IABP) works by increasing diastolic perfusion and decreases left ventricular afterload
- Urgent coronary angiography with revascularization to decrease mortality
- Medications: Inotropes and vasopressors aid in increasing the heart's ability to pump sufficiently and also decrease risk of coagulation
- Antithrombotic treatment including glycoprotein IIb/IIIa inhibitors aid in improving patient outcomes and decreasing risk of recurrent MI. (Vahdatpour et al., 2021)

CS is a life-threatening, complex condition that is often a common result of mortality despite advanced therapeutic options. Management of CS can also be challenging. Causes of CS include severe impairment in myocardial performance resulting in decreased cardiac output (CO), hypoxia, and hypoperfusion to vital organs leading to multi organ failure. Acute MI represents 81% of CS cases (Vahdatpour et al, 2019).

Shock is normally associated with altered mental status, hypotension, metabolic acidosis, and oliguria. Prompt treatment is necessary, otherwise CS can progress to an incontrollable deteriorating state or death. Volume replacement along with treatment of underlying issues are considered the mainstays in the treatment of CS. If vasopressors are indicated, adrenergic agonists including α and p actions are preferred. p-adrenergic stimulation causes an increase in blood flow however, it can also increase risk of ischemia. With α-adrenergic stimulation, there is increase in blood pressure along with vascular tone, but this can also result in a decrease in CO and impaired tissue perfusion. Norepinephrine (Levophed) is a vasopressor that provides a sufficient balance of α-adrenergic and p-adrenergic properties in