

# DISTRIBUTIVE SHOCK

## MASTERING THE ABCs

- **Distributive shock occurs when blood vessels inappropriately dilate and capillaries become leaky, both of which contribute to hypoperfusion of vital organs**
- **The most likely causes of distributive shock that patrollers will encounter are neurogenic and anaphylactic shock**
- **Anaphylaxis was covered in the July 2020 Monthly Medical Tip, so here we will focus primarily on neurogenic shock**

Distributive shock is a problem with the pipes. It results from inappropriately dilated blood vessels and leaky capillaries, both of which prevent the circulatory system from perfusing vital organs.



Examples of distributive shock include neurogenic shock, anaphylactic shock, septic shock, and some shock states caused by overdoses of certain medications. The most likely types of distributive shock that patrollers will encounter are neurogenic and anaphylactic shock. As anaphylaxis has been previously covered, this will focus on neurogenic shock.

Neurogenic shock can be caused by a traumatic spinal cord injury. The sympathetic nervous system is responsible for maintaining the tone of muscles in the blood vessels. When the sympathetic nervous system is injured in a high spinal cord injury, these smooth muscles cannot keep the blood vessels constricted. When the vessels then have unopposed parasympathetic tone resulting in dilation, the capacity of the blood vessels becomes significantly larger than the available volume of blood inside the vessels. Clinically, this will manifest in hypotension and hypoperfusion of end organs (altered mental status, etc.) Because the sympathetic nervous system is also in part responsible for the hearts ability to beat faster, sometimes a patient in neurogenic shock will be bradycardic or inappropriately normocardic (you would expect them to be tachycardic in a shock state).

### Physical Exam Pearl:

Distributive shock can be differentiated from hypovolemic shock by examination of the extremities. In distributive shock, blood vessels are dilated and leaky and the extremities will feel warm. In hemorrhagic shock, the peripheral vasculature clamps down and the extremities will feel cool and clammy. That being said, the usefulness of differentiating these shock states is unlikely to be helpful or practical in the immediate management of either (they can also coexist) and ALS transport should be called as soon as a severe injury is suspected.

Full spinal motion restriction is particularly important in neurogenic shock as the shock state itself implies the patient has an unstable spinal cord injury. As with all shock states, attention should be paid to airway patency and assisting in oxygenation and ventilation if needed – innervation to the diaphragm comes from the high spine. Call ALS as soon as the shock state is suspected for transport to a trauma center as the definitive circulatory treatment will involve treating the spinal cord injury, giving the patient medications to constrict their blood vessels, and giving the patient IV fluids to fill the pipes which have been left empty due to lack of sympathetic tone.