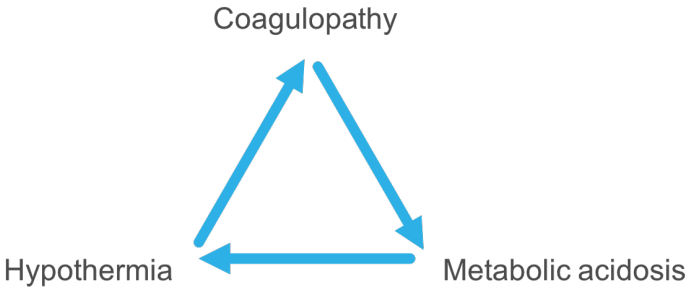
Special situations

MANAGING TRAUMATIC ARREST

Hemorrhage is a common cause for cardiac arrest after severe trauma. Any life-threatening sources of bleeding should be addressed immediately, even before addressing circulation or airway in some cases. Tourniquets are extremely useful in temporizing bleeding in the extremities, and endovascular devices have been developed for similar use internally. Ultimately, surgical intervention may be required, so early involvement of the surgical team is important.

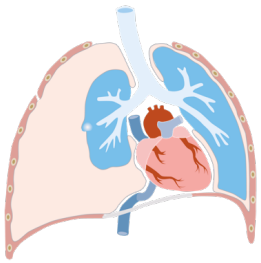
During resuscitation, a normal blood pressure is not required and may actually work against you by increasing bleeding. **Permissive hypotension** or **hypotensive resuscitation** are concepts that have become mainstream for trauma resuscitation.

The use of non-blood products should be minimized to avoid causing a dilutional coagulopathy, and contributing to hypothermia and acidosis, the so-called **lethal triad**:



Obstructive shock

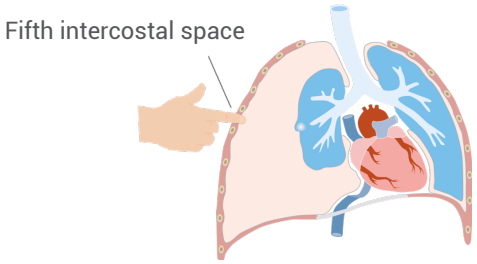
Obstructive physiology may develop after traumatic injuries, most commonly through a tension pneumothorax, or a hematoma compressing blood flow, including within the pericardium.



Tension pneumothorax

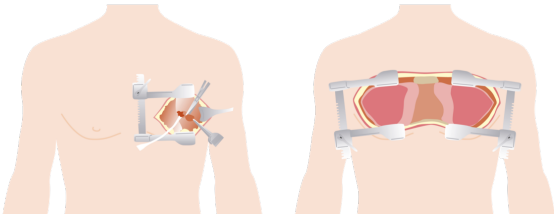
If a tension pneumothorax is suspected, immediate pleural decompression should be performed, even in the absence of confirmatory imaging. This is performed in the midaxillary line, usually near the fourth or fifth intercostal space, with an incision and blunt dissection down into the pleural space with an instrument or finger.

It may be necessary to perform this bilaterally if the hypotension does not resolve. Finger thoracostomy can be performed in just a few seconds, and is superior to needle decompression. A thorocostomy tube can be placed later if still needed. In the event that a scalpel is not immediately available, needle decompression may be considered, which should also be performed at the midaxillary line near the fifth intercostal space (not the midclavicular line, as previously taught).



Cardiac tamponade

A hematoma causing tamponade must be evacuated to relieve obstructive physiology. In the pericardium, this can be accessed through an emergency thoracotomy, either through the left chest, or via bilateral clamshell approach.



There is no role for needle decompression of an acute traumatic cardiac tamponade, because any blood relieved will immediately reaccumulate or clot.

Distributive shock

Neurogenic distributive shock may result from interruption of the sympathetic pathway in the spinal cord, generally above the sixth thoracic vertebra. It may be managed similar to other forms of distributive shock, with volume repletion and vasopressors. Inappropriate bradycardia may be noted, which may require chronotropes like epinephrine or dopamine, or parasympatholytic agents like atropine.

Cardiogenic shock

Cardiogenic shock may occur as a result of dysrhythmias from direct cardiac trauma, which is called commotio cordis. Myocardial depression may also result from a severe myocardial contusion. These should be managed similar to non-traumatic causes, including by using defibrillation, if necessary.

Secondary causes

Cardiac arrest in the setting of trauma may be attributable to any of these secondary causes. It is also important to consider any underlying medical issues, which may have contributed to the traumatic injury, for example, a myocardial infarction causing a driver to crash a car.