### H’s and T’s of PALS

<table>
<thead>
<tr>
<th><strong>H</strong></th>
<th><strong>T</strong></th>
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<tbody>
<tr>
<td>H</td>
<td>Tension Pneumothorax</td>
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<tr>
<td>Hypovolemia</td>
<td>Hypoxia</td>
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<td>Loss of fluid volume in the circulatory system.</td>
<td>Deprivation of an adequate oxygen supply can be a significant contributing cause of cardiac arrest.</td>
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<td>Look for obvious blood loss.</td>
<td>Ensure that the airway is open.</td>
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<td>Most important intervention is to obtain IV access and administer IV fluids.</td>
<td>Ensure adequate ventilation, and bilateral breath sounds.</td>
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<td>Use a fluid challenge to determine if the arrest is related to hypovolemia.</td>
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### Tension Pneumothorax
- Tension pneumothorax shifts in the intrathoracic structure and can rapidly lead to cardiovascular collapse and death.
- ECG signs: Narrow QRS complexes and slow heart rate.
- Physical signs: JVD, tracheal deviation, unequal breath sounds, difficulty with ventilation, and no pulse felt with CPR.
- Treatment: Needle decompression.

### Tamponade
- Fluid build-up in the pericardium results in ineffective pumping of the blood which can lead to pulseless arrest.
- ECG symptoms: Narrow QRS complex and rapid heart rate.
- Physical signs: jugular vein distention (JVD), no pulse or difficulty palpating a pulse, and muffled heart sounds.
- Perform: pericardiocentesis to reverse.

### Toxins
- Accidental overdose: Some of the most common include: narcotics, tricyclics, digoxin, betablockers, and calcium channel blockers.
- Cocaine is the most common street drug that increases incidence of pulseless arrest.
- Physical signs include bradycardia, pupil symptoms, and other neurological changes.
- Poison control can be utilized to obtain information about toxins and reversing agents.

### Thrombosis (heart: acute, massive MI)
- Causes acute myocardial infarction.
- ECG signs: 12 lead ECG with ST-segment changes, T-wave inversions, and/or Q waves.
- Physical signs: elevated cardiac markers on lab tests, and chest pain/pressure.
- Treatments: use of fibrinolytic therapy, PCI (percutaneous coronary intervention).
- The most common PCI procedure is coronary angioplasty with or without stent placement.

### Thrombosis (lungs: massive PE)
- Can rapidly lead to respiratory collapse and sudden death.
- ECG signs of PE: Narrow QRS Complex and rapid heart rate.
- Physical signs: No pulse felt with CPR, distended neck veins, positive d-dimer test, prior positive test for DVT or PE.
- Treatment: surgical intervention (pulmonary thrombectomy) and fibrinolytic therapy.