H's and T's of Cardiac Arrest

The "H's and T's" mnemonic is a crucial tool in Advanced Cardiac Life Support (ACLS) for identifying reversible causes of cardiac arrest, particularly in cases of pulseless electrical activity (PEA), asystole, ventricular fibrillation (VF), and ventricular tachycardia (VT). Prompt recognition and treatment of these conditions can significantly improve patient outcomes.[b]

? The H’s (Reversible Causes Starting with 'H')

1. **Hypovolemia**: A significant loss of blood or fluids, often due to trauma, severe dehydration, or gastrointestinal bleeding.
   Treatment: Rapid intravenous fluid replacement with crystalloids or blood products, and control of bleeding sources.
2. **Hypoxia**: Insufficient oxygen delivery to tissues, which can result from airway obstruction, respiratory diseases, or drowning.
   Treatment: Ensure airway patency, provide supplemental oxygen, and support ventilation as needed.
3. **Hydrogen Ion (Acidosis)**: An abnormal increase in hydrogen ions leading to acidosis, often due to prolonged hypoxia, diabetic ketoacidosis, or renal failure.
   Treatment: Address underlying causes, provide adequate ventilation, and consider administration of sodium bicarbonate in severe cases.
4. **Hyperkalemia or Hypokalemia**: Abnormal potassium levels can disrupt cardiac electrical activity.
   - **Hyperkalemia**: May result from renal failure or certain medications.
     Treatment: Administer calcium gluconate, insulin with glucose, sodium bicarbonate, or perform dialysis.
   - **Hypokalemia**: Can be due to diuretics or gastrointestinal losses.
     Treatment: Administer potassium supplements and address underlying causes.
5. **Hypothermia**: A drop in core body temperature below 35°C (95°F), which can slow metabolic processes and cardiac function.
   Treatment: Gradual rewarming using external warming devices or warmed intravenous fluids.

? The T’s (Reversible Causes Starting with 'T')

1. **Tension Pneumothorax**: Air accumulation in the pleural space causing lung collapse and impaired venous return to the heart.
   Treatment: Immediate needle decompression followed by chest tube placement.
2. **Tamponade (Cardiac)**: Accumulation of fluid in the pericardial sac, compressing the heart and hindering its ability to pump effectively.
   Treatment: Emergency pericardiocentesis to remove the fluid.
3. **Toxins**: Overdose or poisoning from substances like tricyclic antidepressants, digoxin, or beta-blockers.
   Treatment: Administer appropriate antidotes, perform decontamination, and provide supportive care.
4. **Thrombosis (Pulmonary)**: Pulmonary embolism obstructing blood flow in the lungs.

Treatment: Administer thrombolytics or perform surgical embolectomy.

5. **Thrombosis (Coronary)**: Myocardial infarction due to blockage in coronary arteries.
   Treatment: Provide reperfusion therapy through percutaneous coronary intervention (PCI) or thrombolytics.