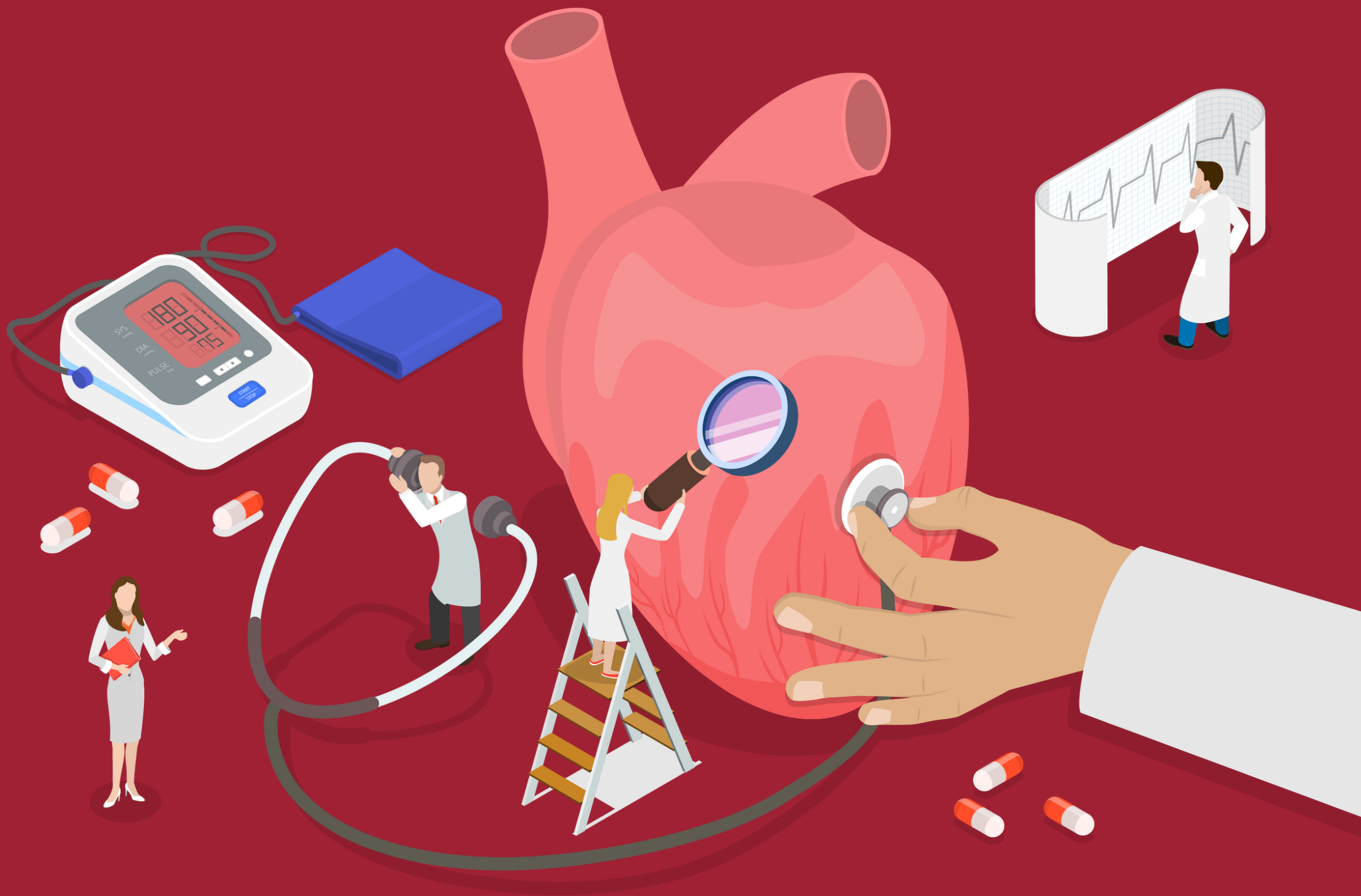




MUMIM'S

>>>>>>

ADULT CARDIAC ARREST ALGORITHM

Cardiac Arrest



“Cardiac arrest is the sudden cessation of cardiac activity such that the victim becomes unresponsive, with either persisting gasping respirations or absence of any respiratory movements, and no signs of circulation as manifest by the absence of a perceptible pulse. If corrective measures are not taken rapidly, this condition progresses to sudden cardiac death.”

(2017 AHA/ACC/HRS Guideline for Management of Patients with Ventricular Arrhythmias and the Prevention of Sudden Cardiac Death)



Cardiac arrest may be associated with the following ECG patterns:

- **Ventricular fibrillation**
- **Pulseless ventricular tachycardia**
- **Pulseless electrical activity**
- **Asystole**



Rhythm Recognition in Cardiac Arrest

Heart rhythms associated with cardiac arrest are divided into
two groups



Shockable Rhythm

- Responsive to defibrillation
- Successful resuscitation requires excellent CPR and rapid defibrillation

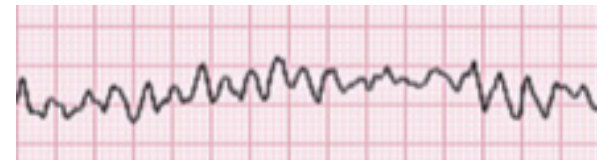
Pulseless ventricular tachycardia (pVT)

Wide complex regular tachycardia associated with no clinically detectable cardiac output



Ventricular fibrillation (VF)

Asynchronous chaotic ventricular activity that produces no cardiac output



*Patients with VT may present with or without a pulse.
These two entities are treated differently!*



Because there's nothing to reset!



Non-shockable Rhythm

- Unresponsive to defibrillation
- Successful management requires excellent CPR and rapid reversal of underlying causes
- Much less favourable prognosis than VF or pVT

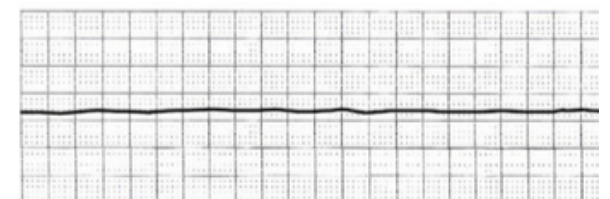
Pulseless electrical activity (PEA)

Coordinated electrical rhythm without a detectable cardiac output



Asystole

Complete absence of electrical and mechanical cardiac activity



Reversible Causes of Cardiac Arrest

5
H

Hypoxia

Airway obstruction, anaemia, COPD, drowning, tension pneumothorax

Hypovolemia

Haemorrhage, severe diarrhoea and vomiting, severe burns

Hypothermia

Core body temperature < 35°C

Hyperkalemia

Hypokalemia

HyperK: renal failure, drugs (ACEIs, ARBs), metabolic acidosis, endocrine disorders (Addison's disease)

HypoK: GI loss, drugs (diuretics, laxatives), metabolic alkalosis, endocrine disorders (Cushing's syndrome)

H⁺ ion excess

Metabolic acidosis, respiratory acidosis

5
T

Tension pneumothorax

Haemodynamic compromise + signs of pneumothorax + mediastinal shift

Tamponade (cardiac)

Beck's triad: hypotension, jugular venous distension, muffled heart sounds

Toxins

BZDs, opioids, TCAs, local anaesthetics, beta-blockers, CCBs

Thrombosis (pulmonary)

Sudden onset dyspnoea, pleuritic chest pain, cough, haemoptysis, syncope, signs of DVT

Thrombosis (coronary)

Coronary heart disease

Defibrillation vs Cardioversion

Defibrillation

The passage of an electrical current across the myocardium to depolarize a critical mass of myocardium and enable restoration of coordinated electrical activity

The heart is stunned and hopefully the SA node will take over

UNSYNCHRONIZED

Higher energy joules

Indications

- Ventricular fibrillation
- Pulseless ventricular tachycardia



Defibrillation should be done without delay when a defibrillator is immediately available

Cardioversion

A shock delivery that is timed to occur with the R wave of the electrocardiogram

SYNCHRONIZED



Lower energy joules

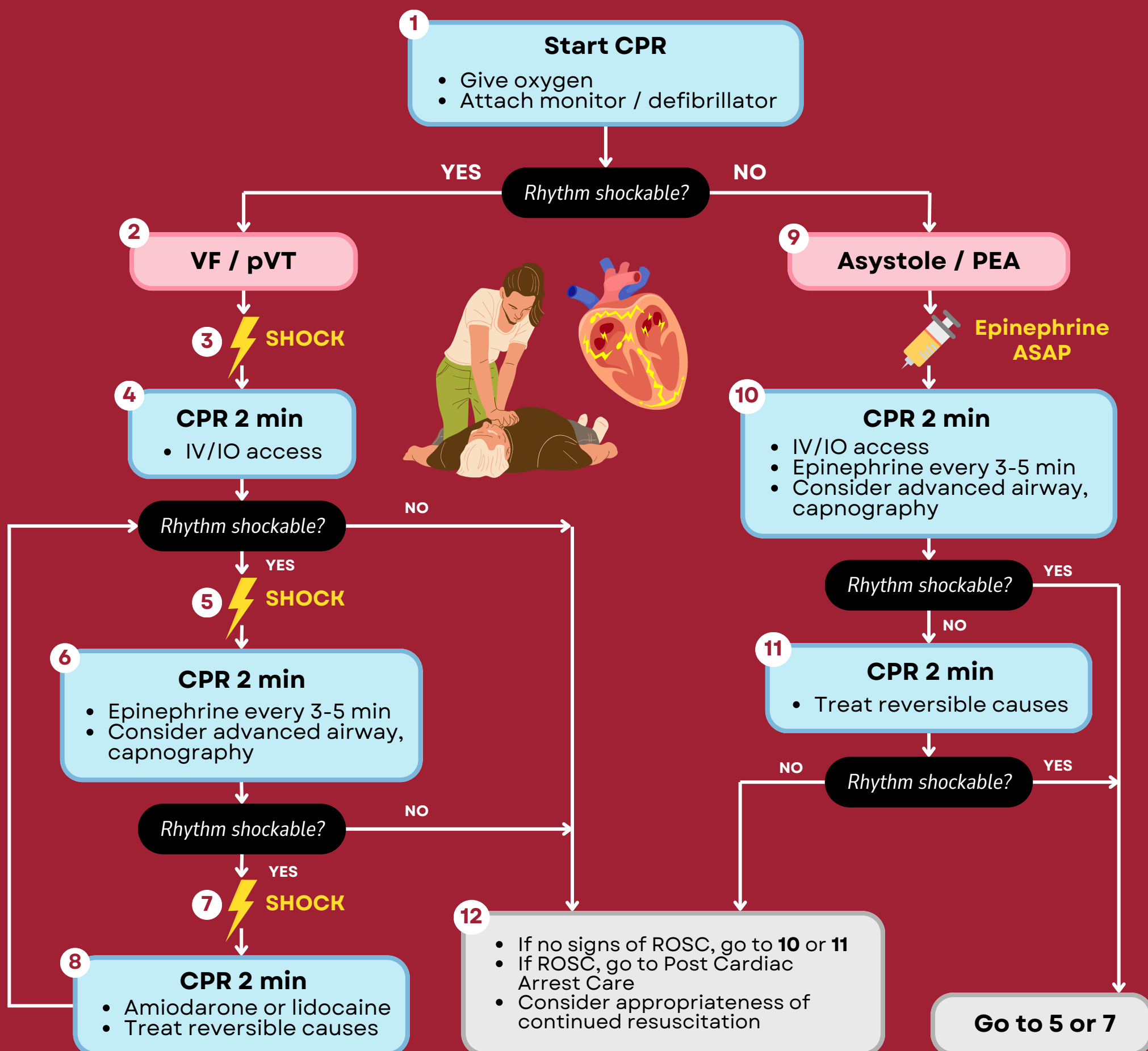
Indications

Haemodynamically unstable patients with a perfusing rhythm (pulse present)

- SVT
- Atrial fibrillation
- Atrial flutter
- Monomorphic VT with pulse

Conscious patients require anaesthesia or sedation before attempting synchronized cardioversion

Adult Cardiac Arrest Algorithm



References

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