Clinical Practice Procedures:
Cardiac/Synchronised cardioversion

Policy code	CPP_CA_SC_1224
Date	December, 2024
Purpose	To ensure a consistent procedural approach to synchronised cardioversion.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
Source of funding	Internal – 100%
Author	Clinical Quality & Patient Safety Unit, QAS
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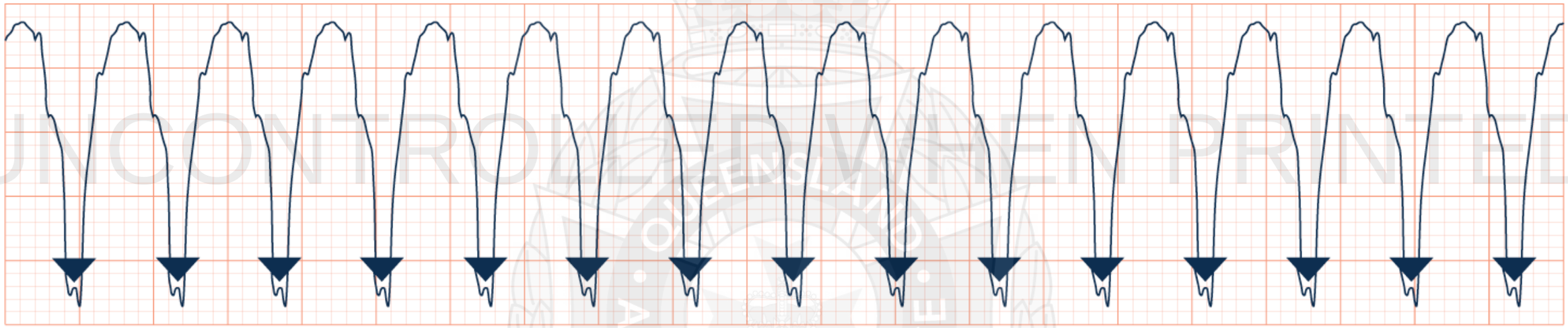
Synchronised cardioversion

December, 2024

Synchronised cardioversion is a method of restoring the normal rhythm of the heart in patients presenting with a rapid ventricular rate associated with severely compromised cardiac output (e.g. ALOC, SBP < 90 mmHg, chest pain, heart failure).[1–4]

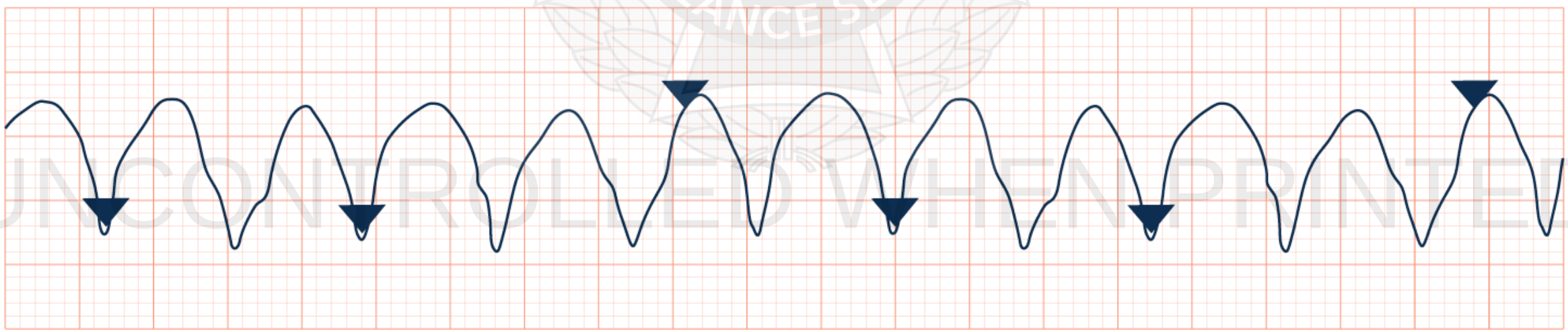
This is achieved using a purpose modified defibrillator capable of delivering a direct current countershock, synchronised on the R-wave of the ECG.[5]

Synchronised



x1.0 25mm/sec

Not synchronised



x2.0 25mm/sec

Indications

Rapid ventricular rate with severely compromised cardiac output, in the following cardiac rhythms:[2]

- Pulsatile ventricular tachycardia
- Supra-ventricular tachycardia
- Atrial fibrillation
- Atrial flutter

CAUTION: *Cardioversion of SVT including Atrial Fibrillation and Atrial Flutter is rarely required in the pre-hospital setting.*

Contraindications

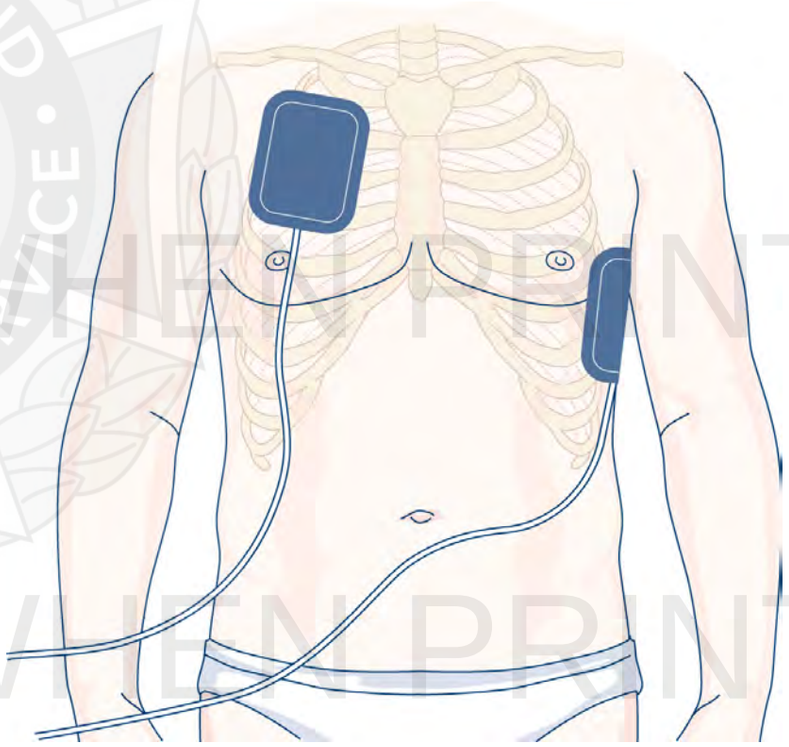
- VF/pulseless VT
- Dysrhythmias where the patient is adequately perfused

Complications

- Pain and discomfort
- Paradoxical asystole or VF

Procedure – Synchronised cardioversion

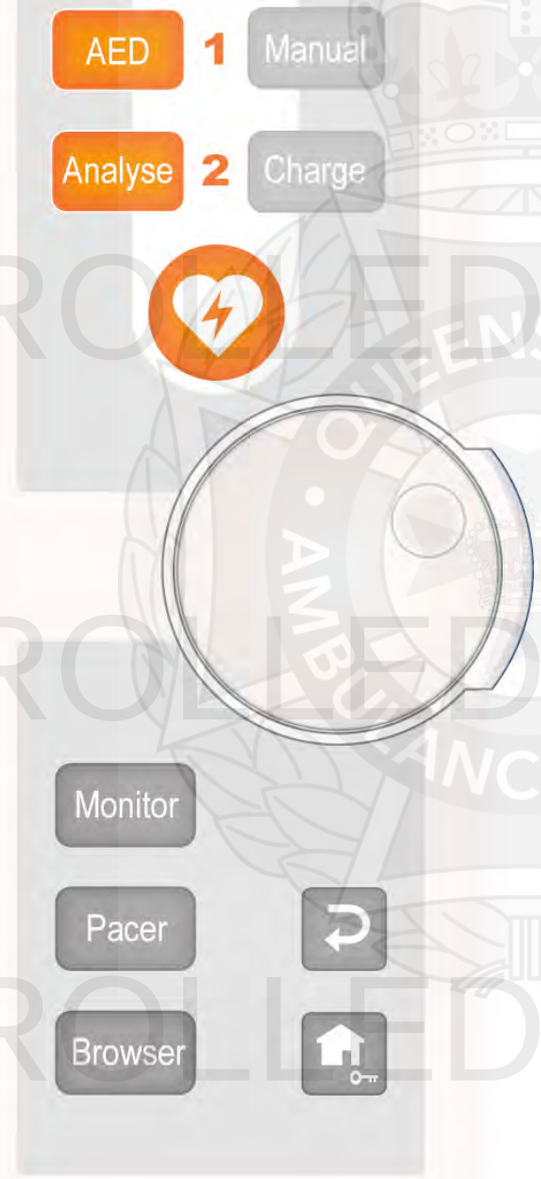
1. Explain the procedure to the patient.
2. Establish IV access with a sodium chloride 0.9% running line.
3. Ensure resuscitative drugs are available.
4. Prepare airway, suction and ventilation equipment.
5. Consider sedation as per *CPG: Procedural sedation*, ensuring the patient is well oxygenated prior to and following sedation and cardioversion.
6. Position ECG electrodes (refer to *CPP: Cardiac monitoring*).
7. Position defibrillation electrodes in the anterior-lateral position (all patient ages).



Anterior-lateral defibrillation pad placement

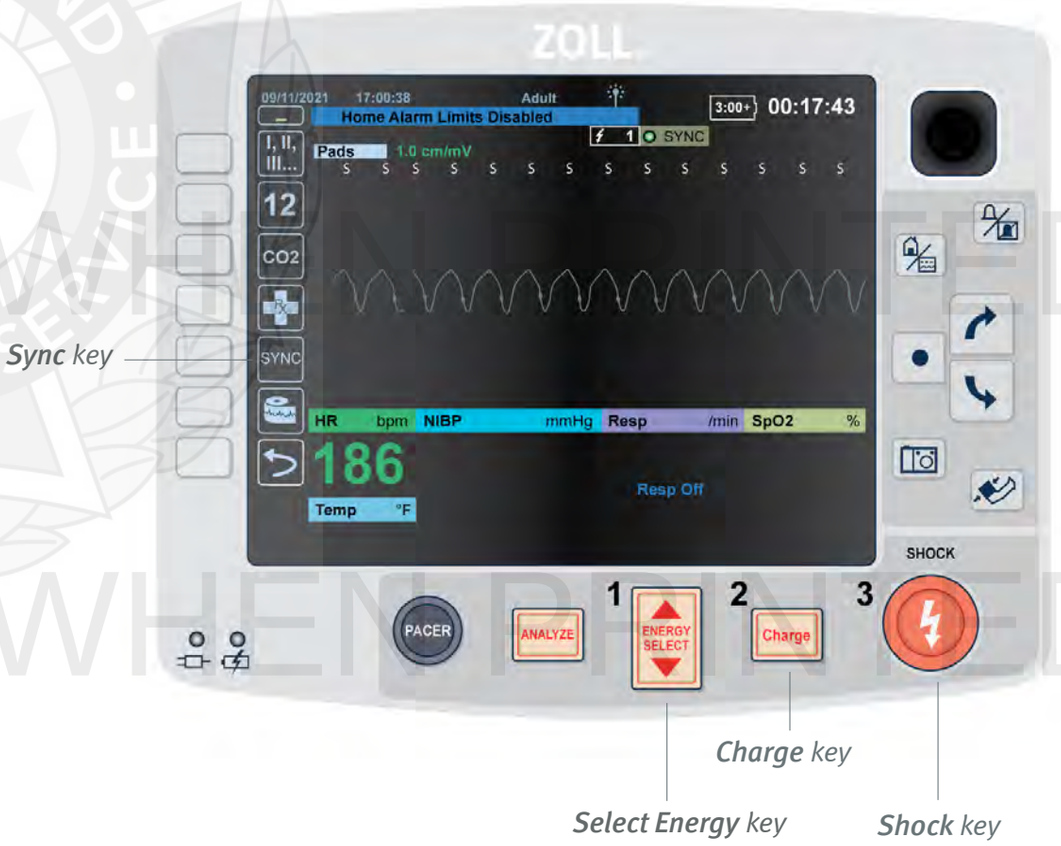
corpusl[3]: ***For comprehensive instruction refer to the corpuls[3] operating instructions.***

1. Ensure the defibrillator is in manual mode. If not, press the **Manual** key.
2. Observe the ECG rhythm, ensure appropriate location of the sense markers.
3. Select the required energy level with the jog dial or via the soft keys.
4. Press the **Charge** key to charge the defibrillator.
5. Once charged, hold the key to deliver the synchronised cardioversion to the patient.
6. Confirm that the synchronised cardioversion has occurred by SHOCK PERFORMED being displayed on the screen.
7. Assess the patient, if further sychronised cardioversion is required, return to step 1. If VF or asystole occurs immediately manage as per *CPG: Cardiac arrest*.
8. Perform a maximum of three attempted synchronised cardioversions.



ZOLL X Series® and X Series Advanced®: ***For comprehensive instruction refer to the ZOLL X Series® or X Series Advanced® operating instructions.***

1. Press **Sync**. Observe the ECG rhythm, ensure appropriate location of the sense markers.
2. Select the required energy level with the **Select Energy** key.
3. Confirm 'SYNC ACTIVATED' and press the **Charge** key.
4. Once charged, hold the **Shock** key to deliver the synchronised cardioversion to the patient.
5. Assess the patient, if further synchronised cardioversion is required, return to step 1. If VF or asystole occurs immediately manage as per *CPG: Cardiac arrest*.
6. Perform a maximum of three attempted synchronised cardioversions.



Additional information

- The recommended corpuls3 joule settings for synchronised cardioversion in adults:
  - Shock 1 100 J
  - Shock 2 150 J
  - Shock 3 200 J
- The recommended ZOLL X Series® and X Series Advanced® joule settings for synchronised cardioversion in adults:
  - Shock 1 100 J
  - Shock 2 150 J
  - Shock 3 200 J
- Consultation with the *QAS Clinical Consultation and Advice Line* is required in all circumstances of paediatric synchronised cardioversion. The requirement for pre-hospital synchronised cardioversion in the paediatric patient is extremely rare. If deemed necessary a recommended sequence at 0.5–1 J/kg increasing to 2 J/kg if required.
- Always consider other possible causes of the tachyarrhythmia such as hypovolaemia.
- Should synchronised cardioversion be unsuccessful, confirm monitoring electrodes and pads are appropriately placed, ensure the synchroniser is on and the R-wave is being sensed, and consider alternative pad placement.
- When using the X Series® or X Series Advanced®, consider changing the displayed lead to assist the monitor in identifying the R-wave.