# Clinical Practice Procedures:
## Cardiac/Synchronised cardioversion

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| **Policy code** | CPP_CA_SC_1222 |
| **Date** | December, 2022 |
| **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 |
| **Review date** | December, 2025 |
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| **URL** | https://ambulance.qld.gov.au/clinical.html |

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# Synchronised cardioversion

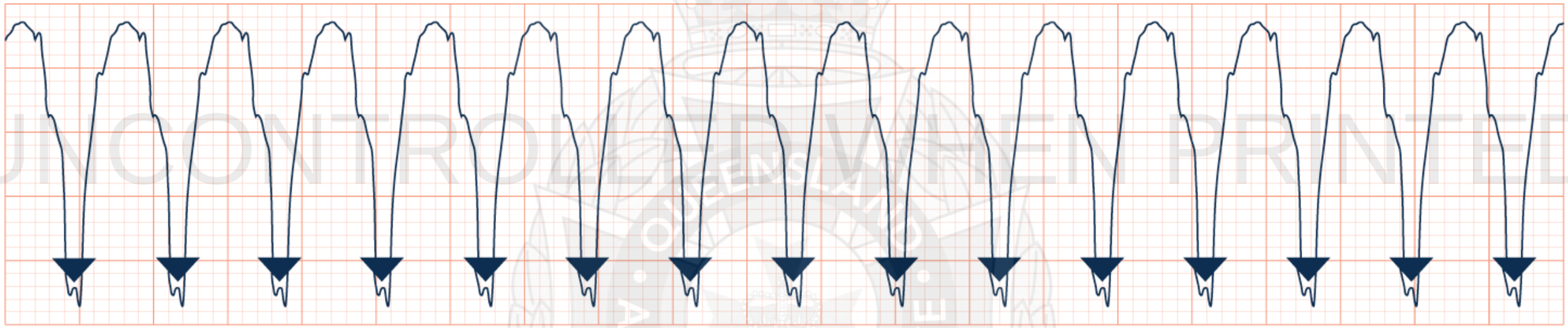
December, 2022

**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]

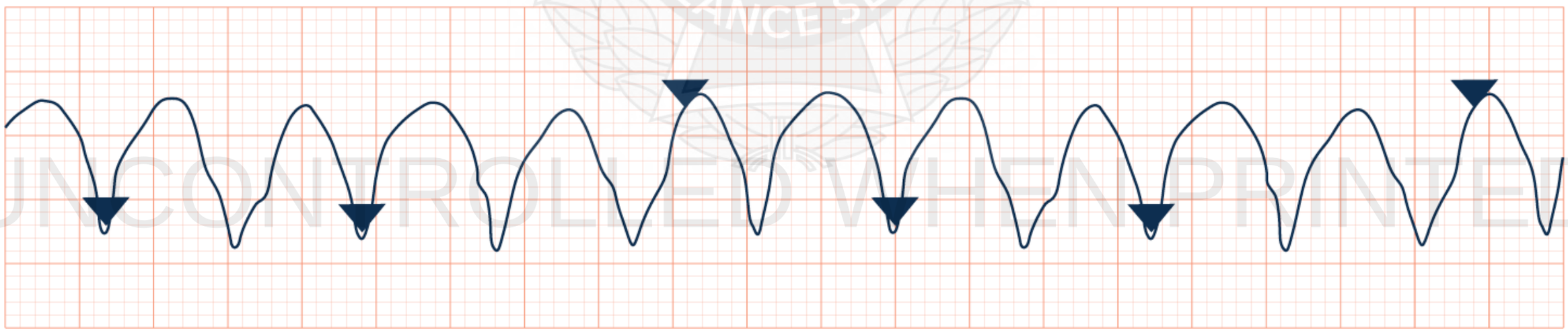


## Synchronised



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

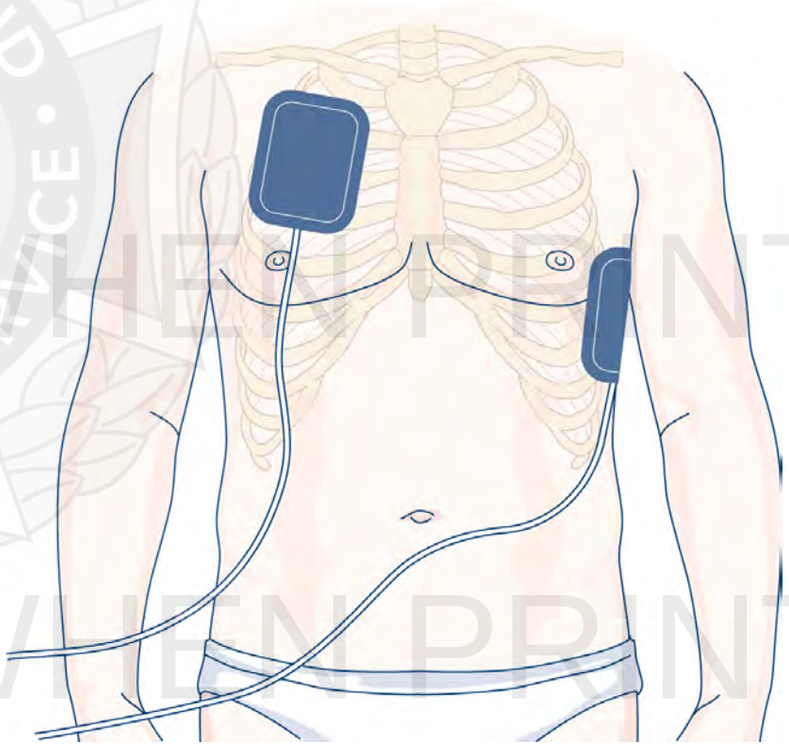
- VF/pulseless VT
- Dysrhythmias where the patient is adequately perfused

## 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).



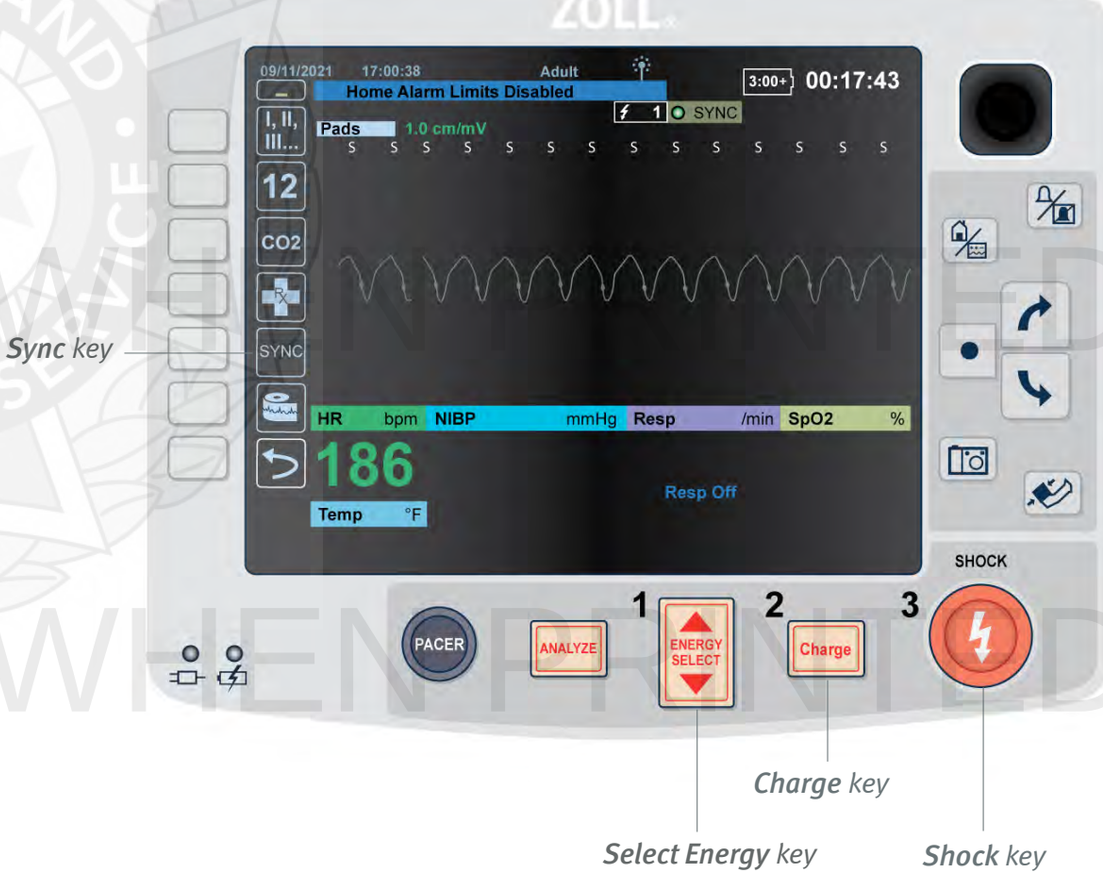
**Anterior-lateral defibrillation pad placement**

**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 patient following cardioversion attempt. If VF or asystole occurs immediately manage as per *CPG: Cardiac arrest*.
8. Perform a maximum of three attempted synchronised cardioversions.


**ZOLL® X Series®:** ***For comprehensive instruction refer to the ZOLL® X Series® 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. Press the **Charge** key.
4. Once charged, hold the **Shock** key to deliver the synchronised cardioversion to the patient.
5. Assess patient following cardioversion attempt. If VF or asystole occurs immediately manage as per *CPG: Cardiac arrest*.



## Additional information

- The recommended corpuls3 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.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