Planned Adult Cardioversion Procedure

1. Purpose

The purpose of this procedure is to establish minimum practice standards for the care and management of patients requiring planned cardioversion for tachyarrhythmias, including atrial fibrillation, atrial flutter and ventricular tachycardia with a pulse, throughout the WA Country Health Service (WACHS). Planned cardioversion implies there is time available during which the cardioversion can be delayed without impacting patient outcome.

This procedure does not cover urgent cardioversion although similar principles may apply.

For paediatrics or neonates advice may be sought from a Fellowship of Australian College Emergency Medicine (FACEM) (including via Emergency Telehealth Service), Perth Children's Hospital or a cardiologist.

2. Procedure

Where a supraventricular arrhythmia has been present for longer than 48 hours and the patient is not already anticoagulated, the risks of cardioversion are likely to outweigh the benefits. Potential risks and benefits need to be considered if the patient is unstable.

ATTENTION

Patients with implantable devices should be booked for elective cardioversion at a centre where technicians and programmers for implantable devices are available.

Scientific officer (technician) and/or programmer will need to be booked prior to elective cardioversion as appropriate. Their role is to ensure these devices are reviewed and adjustments made to optimise success of cardioversion and minimise risk of device damage.

Where possible discuss with cardiologist when unsure.

Cardioversion is only performed by or under the direction of a medical officer (MO).

Defibrillator operator must be manual defibrillation competent and be familiar with the specific defibrillator being used.

2.1 Staffing levels, procedural environment and equipment

Follow the guidance provided in the Australian and New Zealand College of Anaesthetists (ANZCA) PG09(G) Guideline on Procedural Sedation 2023 for staffing levels, procedural environment and equipment.

Where cardioversion is taking place in the emergency department (ED) staff must use the WACHS Procedural Sedation – Emergency Department Clinical Practice Standard (this information is based from the ANZCA guideline) and MR12 WACHS Emergency Department Procedural Sedation Record.

The procedural environment for planned adult cardioversion includes operating theatres or day procedure units, inpatient critical care areas or resuscitation bays in the ED.

Equipment requirements for the cardioversion procedure itself include:
- a defibrillator with capacity for electrocardiograph (ECG) print-out, pacing controls and synchronising
- a spare set of Zoll OneStep Resuscitation Electrodes available
- a 12 Lead ECG machine available (the 12 lead ECG machine should not be attached to the patient during cardioversion).

2.2 Consent

Consent requirements as per the WACHS Consent to Treatment Policy. Document consent on the MR30A WACHS Patient Consent to Treatment or Investigation – Adult or Mature Minor.

Written information available to support the informed consent process includes Procedure Specific Information Sheets (PSIS) – CA05 External Cardioversion.

As part of consent discussion, explain to the patient/carer/family:
- the requirement for observations and 12 Lead ECG pre and post procedure
- the requirement to report pain or nausea post procedure
- the patient should not drive or operate machinery or sign any important documents for 24 hours after receiving an anaesthetic/sedation and to be in the company of a responsible adult (for patients who are discharged post cardioversion).

2.3 Pre Procedure

Before beginning the procedure ensure:
- a responsible adult is available to drive patient home post procedure
- as a minimum, a reliable patent intravenous (IV) access device to be insitu (consider two points of IV access). Insertion and management as per the WACHS Peripheral Intravenous Cannula (PIVC) Guideline and MR179 WACHS Peripheral Intravenous Cannula Observation Record.
- continuous cardiac monitoring in place.
- avoid placing pads over implantable devices. If there is an implantable medical device the defibrillator pad should be placed at least 8cm from the device.
- resuscitation drugs and airway management equipment are available.
- ECG, non-invasive blood pressure, SpO_2 and CO_2 monitoring are applied as per ANZCA PG09(G) Guideline on Procedural Sedation 2023.
- sign In (perioperative setting) or Team Timeout (other settings) is undertaken to confirm readiness to proceed.
- preoxygenation occurs, prior to delivery of sedation/anaesthesia.

2.4 Cardioversion

Key points for the procedure itself include:
- the amount of energy used to cardiovert a patient should be determined by the MO
- ensure correct preparation of the defibrillator for direct current (DC) cardioversion including synchronising cardioversion with **every** shock by:

  - switching power on
  - setting defib to manual mode
  - pressing ‘sync’ button and checking for marker above each QRS complex.
- confirmation is given by MO that patient is adequately sedated and prepared for procedure.
- ensure free flowing oxygen is removed and everyone is clear of the patient prior to charging the defibrillator.
- once charged, reconfirm the rhythm and, if appropriate, press and hold the shock button until energy is delivered.
- confirm the rhythm after shock has been delivered and record rhythm strip.
- if sinus rhythm is restored the procedure is concluded.
- administer further DC shocks as required or prescribed by the MO to a maximum of three ensuring the synchronise button is selected prior to every subsequent shock.
- if the patient deteriorates, follow ALS guidelines.
- if the patient suffers cardiac arrest, follow the ALS algorithm for adults.

2.5 Post Procedure

The MO managing the patient’s airway should remain on site until patient recovers from procedural sedation.

Documentation, at a minimum, to include:
- diagnosis and indications for cardioversion
- position of pads/paddles on chest
- time and energy (joules) of each synchronised shock
- time and doses of the medications given during the procedure
- electrophysiological response to cardioversion
- pre and post procedure ECGs performed
- condition of patient post procedure
- condition of the skin following cardioversion
- any unexpected events which occurred during the cardioversion.

Observations include:
- ECG post procedure – compare with pre procedure ECG by MO.
- cardiac monitoring – continue until advised by MO
- monitor for evidence of any skin burns
- vital signs (excluding temperature)
- cardiac rhythm
- neurological observations.

Frequency of observations:
- 5 minutely until patient alert
- then at least 15 minutely for 30 minutes
- 30 minutely for 2 hours
- then as clinically indicated.

Diet and fluids once fully awake and as patient’s condition allows.

Where insitu, ensure implantable device or permanent pacemaker is functioning appropriately. Scientific officer (technician) or programmer may need to review device settings.

2.6 Discharge

Give consideration to the patient being discharged on an oral anticoagulant or being referred to their regular GP for consideration of anticoagulation.

Length of stay for post procedural patient will be dependent on clinical condition post cardioversion:

- for ED discharge criteria refer to WACHS Procedural Sedation – Emergency Department Clinical Practice Standard.
- perioperative areas (including day procedure unit) will be required to follow local processes in line with ACORN Standards

Refer to: ANZCA PG09(G) Guideline on Procedural Sedation 2023.

Written discharge information available: Emergency Discharge Information Sheet WA Health - Adult Cardioversion.

3. Roles and Responsibilities

Medical officers and nurses are to work within their scope of practice, level of education and experience and job role.

All staff are required to comply with the directions in WACHS policies and procedures as per their roles and responsibilities. If staff are unsure which policies, procedures and guidelines apply to their role or scope of practice, and/or are unsure of the application of directions they should consult their manager in the first instance.

4. Monitoring and Evaluation

Compliance against this policy will be evaluated by relevant Nurse Unit Managers and Clinical Nurse Specialists through routine clinical incident investigation processes.

This procedure will be reviewed as required to confirm its effectiveness, relevance, and currency, facilitated by the specified review contact at a minimum every five years or unless otherwise indicated by emergent clinical risk or best practice changes occur.

5. References

1. Australian and New Zealand College of Anaesthetists. PG09(G) Guideline on Procedural Sedation 2023. Melbourne, VIC: ANZCA and the Faculty of Pain Medicine; 2023 [Accessed: 02 July 2024]

2. Australian Resuscitation Council and New Zealand Resuscitation Council. Guideline 11.4 – Electrical Therapy for Adult Advanced Life Support (anzcor.org). Australian Resuscitation Council Guidelines. Melbourne, VIC: ARC; 2023 [Accessed: 02 July 2024]

3. Australian Resuscitation Council and New Zealand Resuscitation Council. Guideline 7 – Automated External Defibrillation in Basic Life Support (anzcor.org). Australian Resuscitation Council Guidelines. Melbourne, VIC: ARC; 2023 [Accessed: 09 Sept 2024]

4. Australian Resuscitation Council. Advanced life support manual. Melbourne, VIC: ARC; 2016
5. Australian Resuscitation Council. Guideline 11.9 - Managing Acute Dysrhythmias (anzcor.org). Melbourne, VIC: ARC; 2023 [Accessed: 02 July 2024]

6. Link MSA, D.L.; Passman, R.S.; Halperin, H.R.; Samson, R.A.; White, R.D.; Cudnik, M.T.; Berg, M.D.; Kudenchuk, P.J.; Kerber, R.E. Part 6: Electrical therapies : Automated external defibrillators, defibrillation, cardioversion, and pacing. 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Dallas, TX: American Heart Association; 2010.

7. Beinart SC. Synchronized electrical cardioversion. eMedicine. New York: Medscape; 2011.

8. Brieger, David et al. National Heart Foundation of Australia and the Cardiac Society of Australia and New Zealand: Australian Clinical Guidelines for the Diagnosis and Management of Atrial Fibrillation 2018. Heart, Lung and Circulation [Internet]. 2018 Oct [cited 2024 Nov 04]; 27(10):1209 – 1266 [Accessed: 04 November 2024]

6. Definitions

Term	Definition
Cardioversion	Cardioversion is a procedure used to correct tachyarrhythmias such as atrial tachycardia, atrial flutter, atrial fibrillation, and conscious ventricular tachycardia (VT)
Implantable devices	Implantable devices in the context of cardioversion include: • permanent pacemaker (PPM) • Internal cardiac defibrillator (ICD) • loop recorders e.g. Reveal™ devices* *a Reveal™ device is a programmable device which continuously monitors a patient's ECG. It is designed to automatically record the occurrence of arrhythmias.
Synchronised cardioversion	Synchronised cardioversion is the delivery of a synchronised shock timed with the QRS complex to avoid inducing ventricular fibrillation (VF) during the relative refractory period of the cardiac cycle. Delivery of the shock causes depolarisation of cardiac cells allowing the sinus node to resume normal pacemaker activity.

7. Document Summary

Coverage	WACHS wide
Audience	Medical officers and nurses working at sites where cardioversion is undertaken
Records Management	Health Record Management Policy
Related Legislation	*Health Services Act 2016* (WA)
Related Mandatory Policies / Frameworks	• MP 0175/22 Consent to Treatment Policy • MP 0175/22 Consent to Treatment Procedure • MP 0095/18 Clinical Handover Policy • MP 0171/22 Recognising and Responding to Acute Deterioration Policy
Related WACHS Policy Documents	• Clinical Observations and Assessment Clinical Practice Standard (physiological, neurovascular, neurological and fluid balance) • Consent to Treatment Policy • Clinical Documentation Policy • Infection Prevention and Control Policy • Peripheral Intravenous Cannula (PIVC) Guideline • Pre and Post Procedural Management Clinical Practice Standard • Procedural Sedation Emergency Department Clinical Practice Standard • Recognising and Responding to Acute Deterioration (RRAD) Policy • Recognising and Responding to Acute Deterioration Procedure
Other Related Documents	ANZCA – PG09(G) Guideline on Procedural Sedation 2023
Related Forms	• MR00H.1 State Goals of Care Summary • MR12 WACHS Emergency Department Procedural Sedation Record • MR30A WACHS Patient Consent to Treatment or Investigation • MR140A Adult Observation and Response Chart (A-ORC) • MR147 WACHS Adult Neurological Observation Chart
Related Training Packages	Nil
Aboriginal Health Impact Statement Declaration (ISD)	ISD Record ID: 3543
National Safety and Quality Health Service (NSQHS) Standards	8.10, 8.03, 8.04, 8.08, 8.09, 8.10, 8.11, 8.13

Aged Care Quality Standards	Nil
Chief Psychiatrist's Standards for Clinical Care	Nil
Other Standards	Nil

8. Document Control

Version	Published date	Current from	Summary of changes
4.00	24 December 2024	24 December 2024	• Removal of educational elements and duplication. • Moved to procedure format. • Title updated to indicate scope.
4.01	03 January 2025	24 December 2024	• Correction of MP 0171/22 Recognising and Responding to Acute Deterioration Policy.

9. Approval

Policy Owner	Executive Director Clinical Excellence
Co-approver	Executive Director Nursing and Midwifery Services
Contact	Clinical Director Emergency Medicine
Business Unit	Clinical Excellence and Medical Services
EDRMS #	ED-CO-15-92677

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