GUIDELINE

Resuscitation in NICU: Cardiac Arrest and Arrhythmia Treatment Algorithms

Scope (Staff):	Nursing and Medical Staff
Scope (Area):	NICU KEMH, NICU PCH, NETS WA

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations

Read the full statement here:
CAHS Child Safe Organisation Commitment Statement

This document should be read in conjunction with this disclaimer

Contents

Aim 2
Risk 2
Key Points 2
Evaluation and Assessment 2
Allocation of roles during a cardiac arrest 3
Who to call in the event of an arrhythmia or cardiac arrest: 5
Cardiac arrest algorithm for NICU: 6
SVT algorithm for NICU: 7
VT algorithm for NICU: 8

Aim

This policy provides treatment algorithms for neonates in the NICU who in a cardiac arrhythmia or cardiac arrest.

Risk

Failure to identify and respond to cardiac arrest and arrhythmias have the potential for poor patient outcomes. Arrhythmia treatment and cardioversion are both high risk treatment options and should only be performed when deemed necessary.

Key Points

- **The following algorithms are to be used for neonates in the NICU, not for resuscitation at birth when the ANZCOR guidelines are appropriate.** See Newborn-Life-Support-August-2023-1-v4.pdf

Evaluation and Assessment

In the event of an arrhythmia or cardiac arrest on NICU consider:

- **ABC**
  - Ensure adequate FiO_2.
  - Consider intubation and ventilation.
  - Vascular access – antecubital cannula preferred (if difficult consider emergency UVC / intraosseous).
  - Adequate technique of cardiac compressions/ mask ventilation.
  - If no intra-arterial BP monitoring, then cycle BP cuff every 2 minutes.
- **Reversible underlying causes – identify and correct:**
  - 4Hs and 4Ts *(APLS 2024)*
    - Hypoxia
    - Hypokalaemia
    - Hypothermia/ hyperthermia
    - Hypovolaemia
    - Tension pneumothorax
    - Tamponade
    - Thrombosis
    - Toxins

  - Respiratory
    - Pneumothorax/ accidental extubation/ ETT blockage/ pulmonary haemorrhage.
  - Cardiovascular collapse
    - Blood loss or hypovolaemia/ sepsis/ cardiac tamponade (PICC/ UVC tip in heart and extravasated – stop infusion).
    - Arrhythmia
    - Underlying congenital cardiac abnormality.
  - Metabolic
    - Hypo/ hyperkalaemia, hypocalcaemia, hypoglycaemia.
  - Neurological
    - Intracranial haemorrhage, seizures.
- Other equipment required e.g. defibrillator. If required for use, see Cardioversion and Defibrillation Guideline.
- In PCH, out of hours, consider initiating a CODE Blue to ensure adequate staff and clinical support.

Allocation of roles during a cardiac arrest

Refer to Recognising and Responding to Clinical Deterioration

- The most experienced person in attendance should lead the resuscitation. This is generally the NICU registrar or senior registrar until the NICU or PCC consultant arrives
  - If a more experienced person arrives on scene, changes in roles must be clearly communicated
  - Roles may need to change to assist with intubation or to obtain vascular access
  - A registrar or senior registrar may continue to lead the resuscitation under direct supervision of the NICU or PCC consultant

Workflows and algorithms

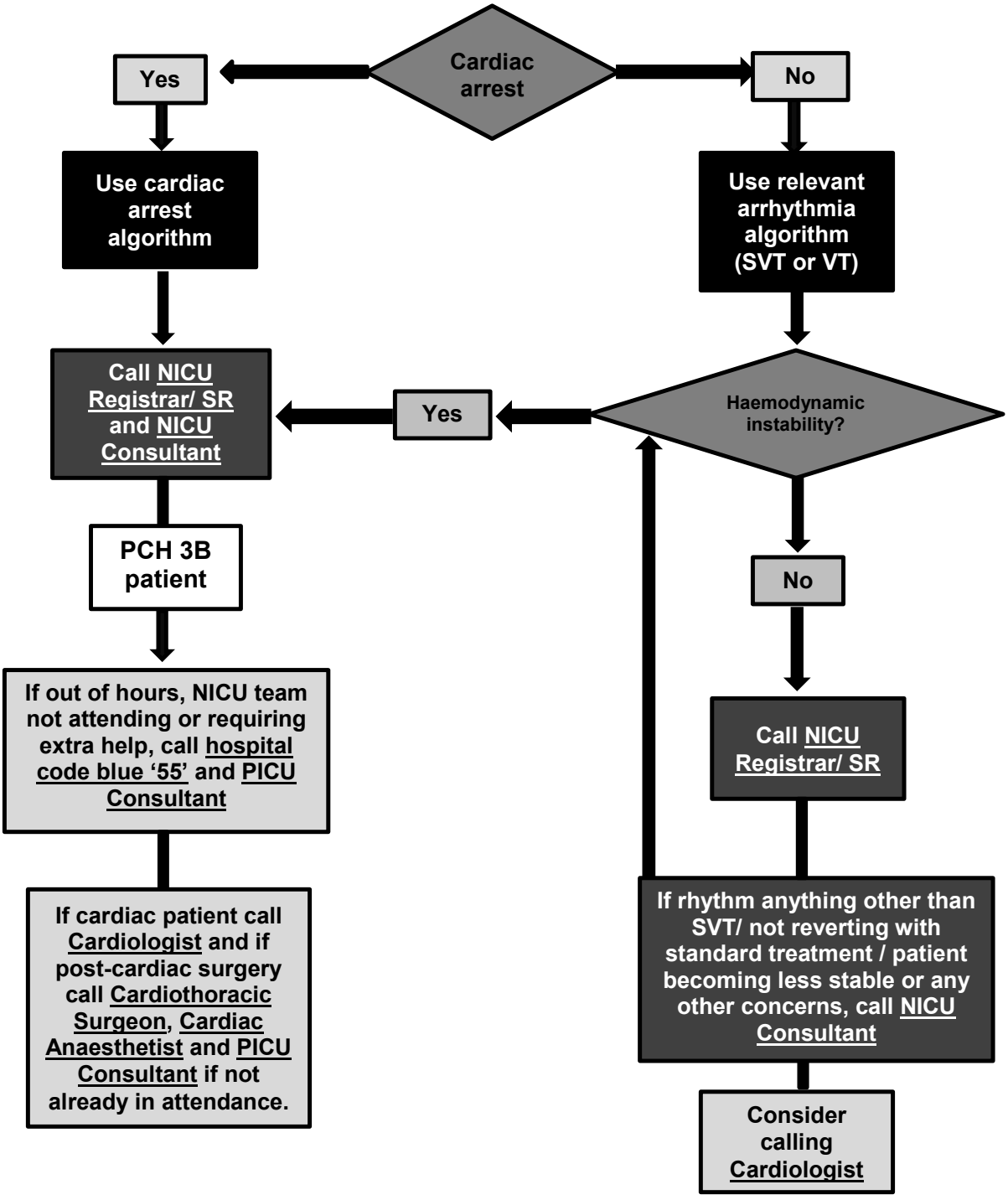
- Who to call in the event of an arrythmia or cardiac arrest
- Cardiac Arrest algorithm in the neonatal unit
- SVT algorithm in the neonatal unit
- VT algorithm in the neonatal unit

Post-resuscitation care

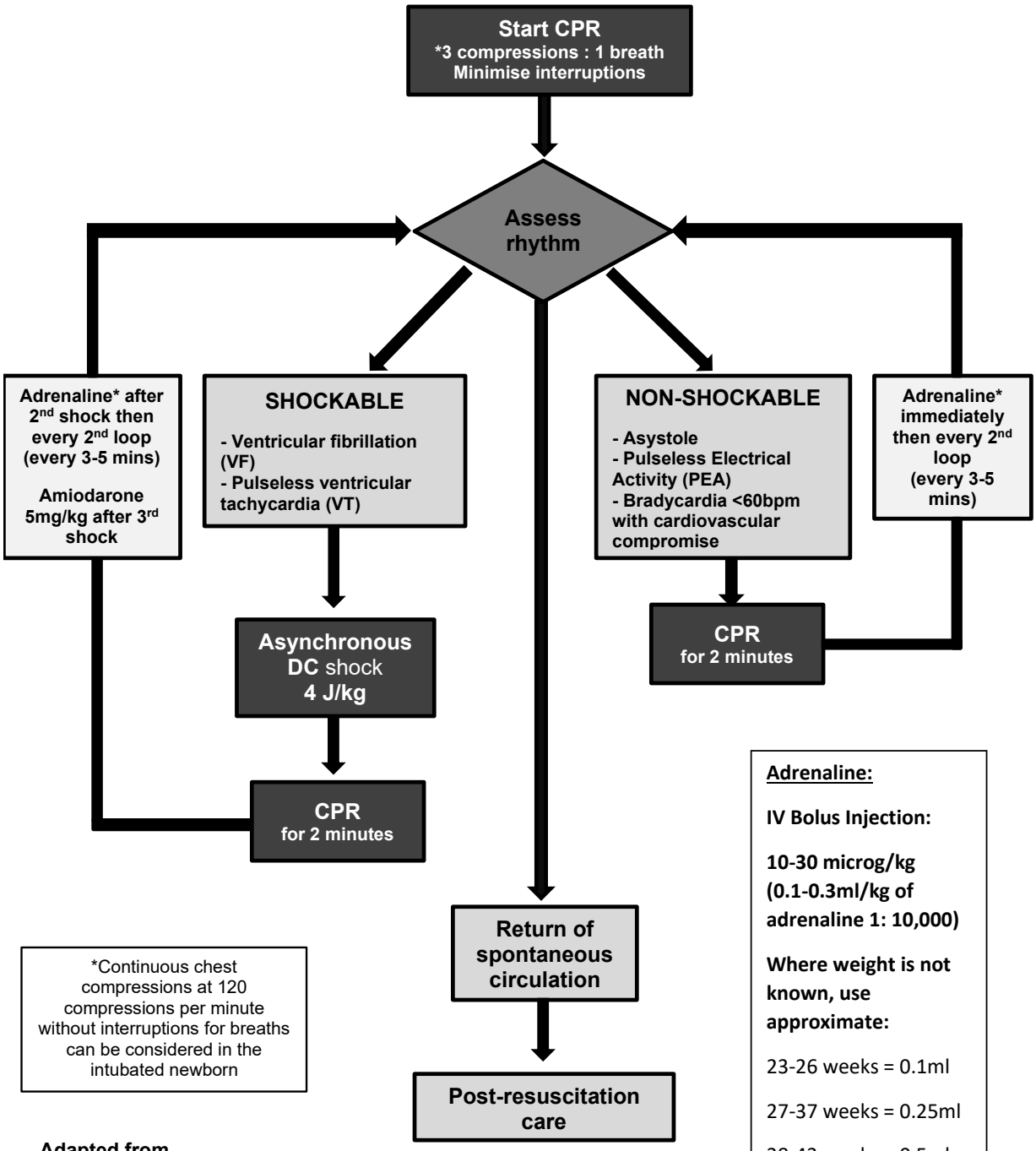
- Re-evaluate ABCDE.

- Re-evaluate oxygenation and ventilation.
- Identify and treat precipitating causes.
- Consider 12-lead ECG.
- Temperature management – if full cardiac arrest, discussion re: cooling.
- Clearly document events and post resuscitation care.
- Consultant to contact parents/caregivers of the event and post-resuscitation care plan.
- Make sure all treating specialties and relevant support services are aware of the event.
- Provide support to the family.

Who to call in the event of an arrhythmia or cardiac arrest:



Cardiac arrest algorithm for NICU:



*Continuous chest compressions at 120 compressions per minute without interruptions for breaths can be considered in the intubated newborn

Adapted from ANZCOR 2026

Adrenaline:

IV Bolus Injection:

10-30 microg/kg (0.1-0.3ml/kg of adrenaline 1: 10,000)

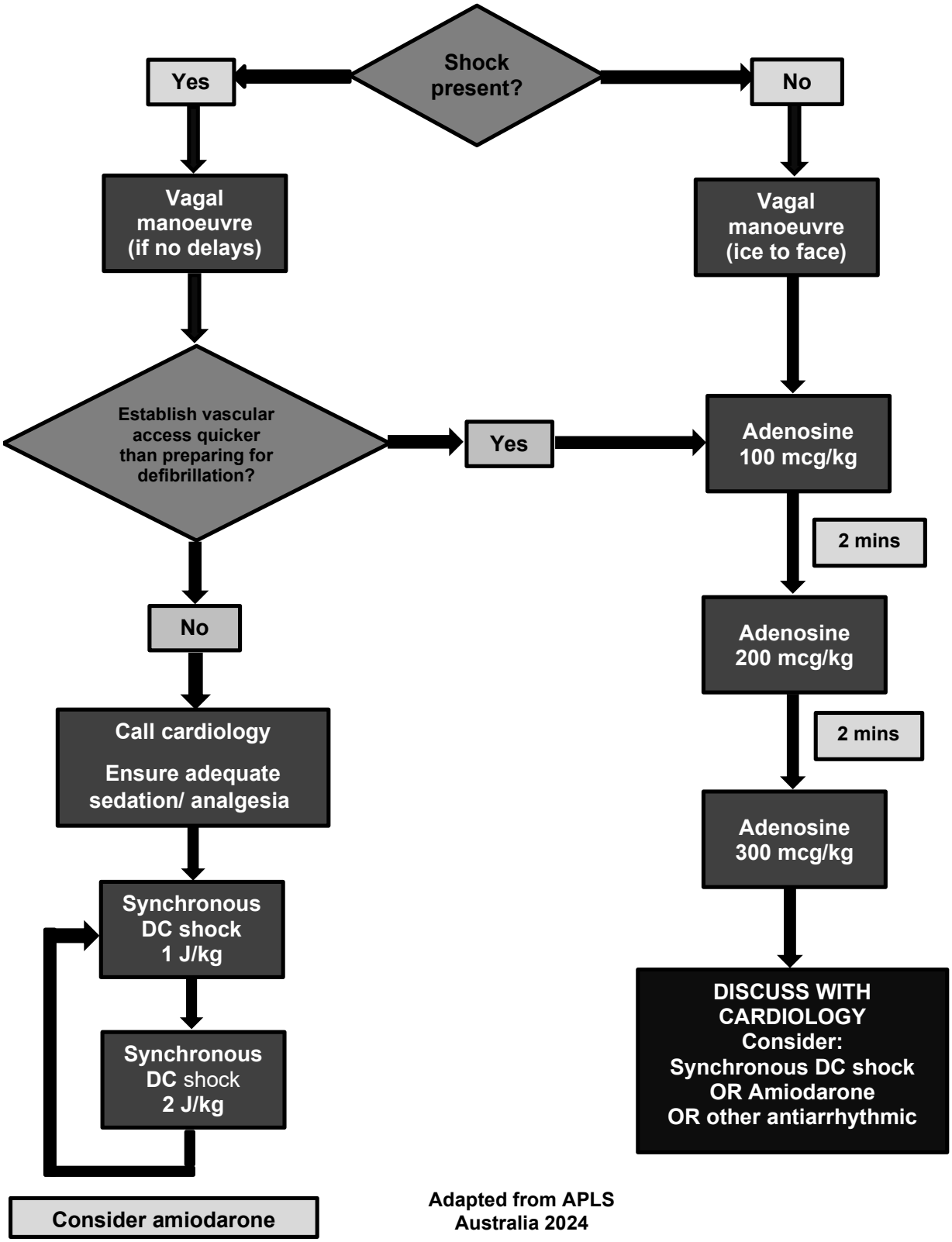
Where weight is not known, use approximate:

23-26 weeks = 0.1ml

27-37 weeks = 0.25ml

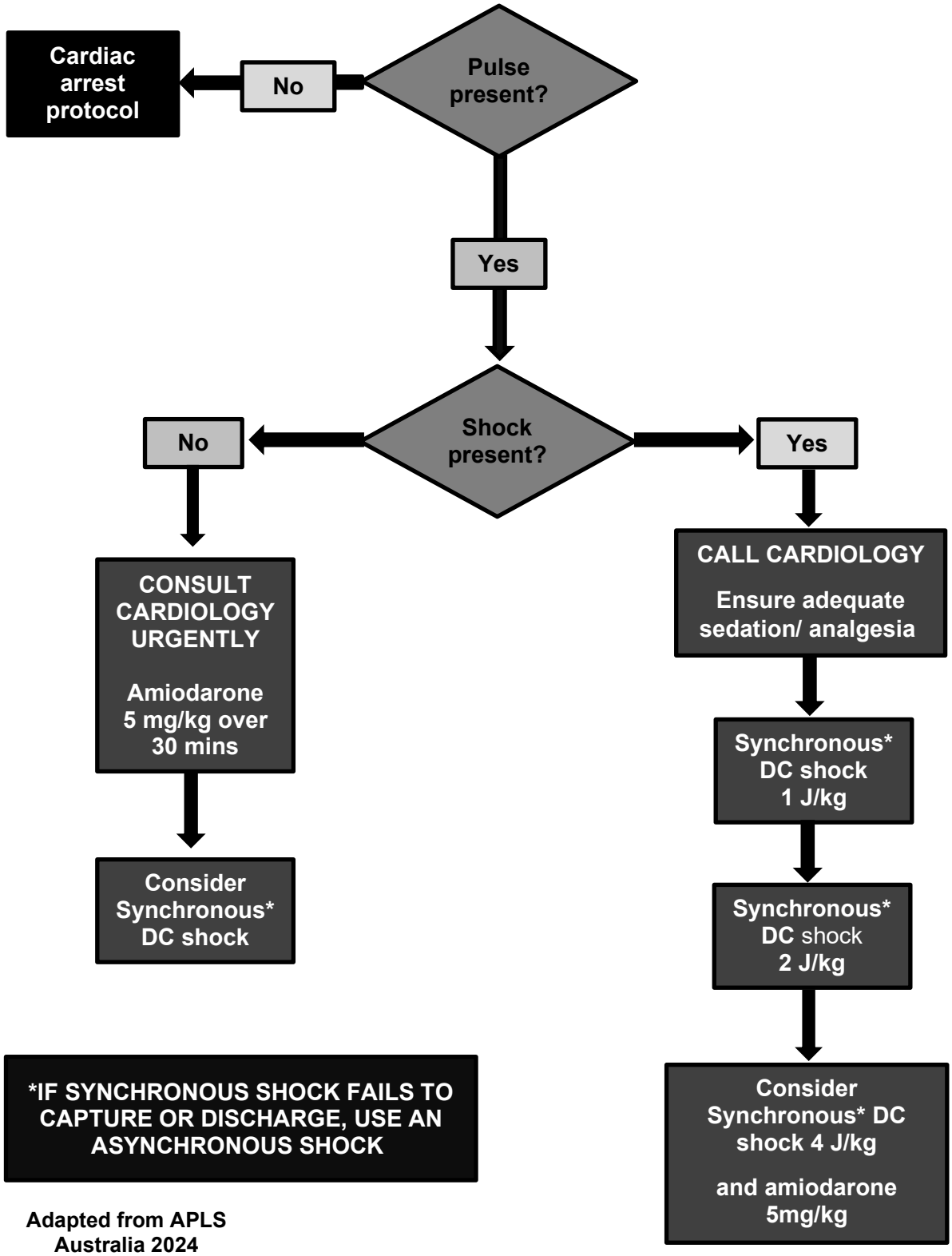
38-43 weeks = 0.5ml

SVT algorithm for NICU:



Adapted from APLS Australia 2024

VT algorithm for NICU:



Adapted from APLS Australia 2024

Related CAHS internal policies, procedures and guidelines *(if required)*
Neonatology Guidelines • Cardioversion and Defibrillation • Recognising and Responding to Clinical Deterioration • Resuscitation Algorithm for the Newborn

References and related external legislation, policies, and guidelines
1. ANZCOR 2026, Guideline 12.2, accessed 4 September 2026, ANZCOR guidelines 2. Advance Paediatric Life Support: The Practical Approach (Australia & New Zealand 7th Edition), published 2024

This document can be made available in alternative formats on request.

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