The following algorithms are to be used for neonates on the NICU, not for resuscitation at birth when the NRP guidelines are appropriate. See Resuscitation Algorithm for the Newborn

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

- **ABC**
  - Ensure adequate FiO₂.
  - Consider intubation and ventilation.
  - Vascular access – antecubital cannula preferred (if difficult consider intraosseous).
  - Adequate technique of cardiac compressions/ mask ventilation.
  - If no intra-arterial BP monitoring, then cycle BP cuff every 2 minutes.
- **Underlying causes – identify and correct:**
  - Respiratory
    - Pneumothorax/ accidental extubation/ ETT blockage/ pulmonary haemorrhage.
  - Cardiovascular collapse
    - Blood loss/ sepsis/ cardiac tamponade (PICC/ UVC tip in heart and extravasated – stop infusion).
    - Underlying congenital cardiac abnormality.
  - Metabolic
    - Hypo/ hyperkalaemia, hypocalcaemia, hypoglycaemia.
  - Neurological
    - Intracranial haemorrhage, seizures.
- **Who to call** – see algorithm below.
- Other equipment required eg. Defibrillator. If required for use, see ‘Cardioversion and Defibrillation Guideline’.

Who to call algorithm
Cardiac arrest algorithm for NICU
SVT algorithm for NICU
VT algorithm for NICU
**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.
- Make sure all relevant personnel and teams aware.
- Are the parents aware?

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

- If cardiac arrest:
  - Use cardiac arrest algorithm
  - Call NICU Registrar/ SR and NICU Consultant
  - If PCH 3B patient:
    - If out of hours, NICU team not attending or requiring extra help, call hospital code blue '55' and PICU Consultant
    - If cardiac patient call Cardiologist and if post-cardiac surgery call Cardiothoracic Surgeon, Cardiac Anaesthetist and PICU Consultant if not already in attendance.

- If haemodynamic instability:
  - Use relevant arrhythmia algorithm (SVT or VT)
  - Call NICU Registrar/ SR
  - If rhythm anything other than SVT/ not reverting with standard treatment / patient becoming less stable or any other concerns, call NICU Consultant
  - Consider calling Cardiologist
Guideline as to who should lead an arrest on NICU 3B PCH:

- In general, the most experienced person in attendance.
- The resuscitation lead should be made clear to all staff at the resus.
- If the lead is handed over at any time during the resus, this should be made clear to all staff at the resus.
- Before a consultant arrives, the NICU registrar/ SR should be the lead.
- If a PICU registrar arrives, the resus should continue to be led by the NICU registrar/ SR unless the NICU registrar/ SR is required to be hands on eg. Intubate/ get vascular access.
- Once the NICU consultant arrives, they should usually take over leadership, unless discussed that the trainee will continue to lead with supervision.
- If the PICU consultant has arrived before the NICU consultant and has taken over as leader, when the NICU consultant arrives there will be a discussion between both consultants as to whether the PICU consultant continues or whether the NICU consultant takes over.
Cardiac arrest algorithm for NICU:

Start CPR
*3 compressions : 1 breath
Minimise interruptions

Assess rhythm

- **SHOCKABLE**
  - Ventricular fibrillation (VF)
  - Pulseless ventricular tachycardia (VT)

  Adrenaline* after 2nd shock then every 2nd loop (every 3-5 mins)
  Amiodarone 5mg/kg after 3rd shock

  Asynchronous DC shock 4 J/kg
  CPR for 2 minutes

- **NON-SHOCKABLE**
  - Asystole
  - Pulseless Electrical Activity (PEA)
  - Bradycardia <60bpm with cardiovascular compromise

  CPR for 2 minutes

  Adrenaline* immediately then every 2nd loop (every 3-5 mins)

  Amiodarone 5mg/kg after 3rd shock

  Asynchronous DC shock 4 J/kg
  CPR for 2 minutes

Return of spontaneous circulation

Post-resuscitation care

*Continuous cardiac compressions are NOT given in intubated neonatal patients.
Continue to use 3:1 ratio, pausing for breaths.

*Adrenaline dose:
- 1mL 1:10000 term infants
- 0.5mL 1:10000 preterm infants

Adapted from ANZCOR 2016
SVT algorithm for NICU:

1. Shock present?
   - Yes: Vagal manoeuvre (if no delays)
   - No: Vagal manoeuvre (ice to face)

2. Establish vascular access quicker than preparing for defibrillation?
   - Yes: Adenosine 100 mcg/kg
   - No: Adenosine 200 mcg/kg
     - 2 mins
     - Adenosine 300 mcg/kg
     - 2 mins

3. Synchronous DC shock
   - 1 J/kg
   - 2 J/kg

4. Consider amiodarone

Adapted from APLS Australia 2017
VT algorithm for NICU:

Cardiac arrest protocol → No → Pulse present?

Yes → CONSULT CARDIOLOGY URGENTLY
   - Amiodarone 5 mg/kg over 30 mins
   - Consider Synchronous* DC shock

No → Shock present?

Yes → Synchronous* DC shock 1 J/kg
   - Amiodarone 5 mg/kg once

No

Adapted from APLS Australia 2017

*IF SYNCHRONOUS SHOCK FAILS TO CAPTURE OR DISCHARGE, USE AN ASYNCHRONOUS SHOCK
# Related WNHS policies, procedures and guidelines

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<td>Author / Reviewer:</td>
<td>Neonatal Directorate Management Committee</td>
</tr>
<tr>
<td>Date first issued:</td>
<td>February 2019</td>
</tr>
<tr>
<td>Last reviewed:</td>
<td>29th January 2019</td>
</tr>
<tr>
<td>Next review date:</td>
<td></td>
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<tr>
<td>Endorsed by:</td>
<td>Neonatal Directorate Management Committee</td>
</tr>
<tr>
<td>Date endorsed:</td>
<td>26th February 2019</td>
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<tr>
<td>Standards Applicable:</td>
<td>NSQHS Standards: Governance, Medication Safety, Communicating, Acute Deterioration</td>
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