



GUIDELINE

Resuscitation: Neonatal

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

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this [disclaimer](#)

Contents

Aim 2

Potential Risk..... 2

Key Points..... 2

Practice changes 2

Umbilical cord management..... 2

Meconium-stained amniotic fluid 4

Fraction of inspired oxygen (FiO₂ .21)..... 4

PEEP (Positive end expiratory pressure) 4

Supraglottic airway (Laryngeal Mask Device)..... 4

ECG Monitoring 4

Chest compressions 4

Medications..... 5

 Adrenaline 5

 Intravascular fluids should be considered 5

Discontinuation of resuscitation..... 5

Resuscitation pathway: ANZCOR Neonatal Flowchart 2021 6

Appendix 1. ANZCOR Newborn Guideline Summary of Changes 13.1-13.10 9

April 2021 Full details: The ARC Guidelines - Australian Resuscitation Council 9

Appendix 2: Resuscitation of the neonate with COVID-19..... 10

Aim

To standardize the practice of newborn resuscitation in alignment with contemporary international consensus ^[1] [The Australian and New Zealand Committee on Resuscitation (ANZCOR) Neonatal Guidelines April 2021]

<https://resus.org.au/guidelines/>

Potential Risk

Approximately 5-10% of newborns require some degree of active resuscitation at birth. Adverse health outcomes may occur in the event of failure to recognize the need for resuscitation, delay in providing resuscitation or ineffective techniques.

Clinician's practice should reflect both sound professional clinical judgment and decision making with best available evidence-based practice.

Key Points

- From 2020 there has been two important publications from international resuscitation committees on consensus guidelines on newborn resuscitation. ^[1,2]
- Key practice changes are now in effect that supersede the previous guideline (Neonatal Resuscitation Algorithm 2015 (American Heart Association)) in conjunction with a WA addendum ^[3].
 - [Appendix 1](#) lists significant updates from ANZCOR April 2021 from those previously published in 2015. ^[4]
- A major focus on effective teamwork and leadership continues, ensuring attention to communication, team and equipment preparation, escalation of concerns and speaking up for safety.
 - Patient focused strategies continue for the optimal provision of thermal care, cardiovascular monitoring, effective ventilation and oxygenation for all infants.
- Infection Prevention and Control considerations ([Appendix 2](#))

Practice changes

Umbilical cord management

There is insufficient evidence to recommend the optimal timing of cord clamping in specific maternal, foetal, or placental conditions or in the compromised newborn, where resuscitation measures take priority over delayed cord clamping.

For infants who are vigorous or deemed not to require immediate resuscitation at birth:

- Term and late preterm infants born at ≥ 34 weeks' gestation deferred clamping of the cord (DCC) at ≥ 60 seconds.

- < 34 weeks' gestational age deferring clamping the cord (DCC) for at least 30 seconds.
- There is insufficient evidence to recommend milking of the intact cord for term and preterm infants ≥ 34 weeks' gestation and ANZCOR suggests against milking a cut cord for all newborns, irrespective of gestational age.

Timing of cord clamping

| ANZCOR 2021 | | | | | |
|--------------------|-----------------|---|--|--|---|
| INITIAL ASSESSMENT | GESTATIONAL AGE | RECOMMENDATION | CONDITION AT BIRTH | CORD MANAGEMENT | GOOD PRACTICE POINTS |
| Vigorous | All newborns | DCC for all infants | <ul style="list-style-type: none"> ◦ Uncomplicated term or preterm ≥ 34 weeks ◦ Breathing and good muscle tone | Aim to delay cord clamping ≥ 60 seconds | <ul style="list-style-type: none"> ◦ Ideally wait until breathing is established before clamping the cord ◦ Avoid pulling on the cord ◦ Document the time of cord clamping ◦ Continue to reassess the newborn until the cord is clamped |
| | | | <ul style="list-style-type: none"> ◦ Preterm newborn <34 weeks ◦ Breathing and good muscle tone ◦ Does not require immediate interventions | Aim to delay cord clamping $\geq 30-60$ seconds | |
| Non-vigorous | All newborns | Insufficient evidence to guide practice | <ul style="list-style-type: none"> ◦ Not breathing ◦ Poor muscle tone ◦ Newborn becomes apnoeic or hypotonic during transition on the cord | Cut the cord Move the newborn to the resuscitaire | <ul style="list-style-type: none"> ◦ Insufficient evidence regarding initiating resuscitation interventions before cord clamping (studies on physiological-based cord clamping [PBCC] underway) ◦ Avoid pulling on the cord ◦ Document the time of cord clamping ◦ Continue to reassess the newborn |

ANZCOR Guideline 13.1 (2021)

In practice at KEMH

- The midwife accoucheur and when present, neonatal medical staff, will maintain responsibility for the safe positioning, clinical assessment, observation, thermal care of the newborn and guide timing of cord clamping.
 - Focus on the clinical status of the baby and need for resuscitation must be prioritized over duration of cord clamping.
 - The use of a neohelpTM in infants <2.5kg or NeoWrapTM in infants above this weight is encouraged to facilitate thermal care and maintain sterility.

Labour and Birth: Neonatal team attendance for births

- Midwifery led births (FBC/LBS)
- Group 1: Operational/IUGR/Elective C-section (Neonatal RMO)
- Group 2: Late preterm/NELSCS (Neonatal Reg/RMO)
- Group 3: High risk (Neonatal SR/Reg/RMO)

New additions to the MR 410 Neonatal History Form: Please record “Duration of cord clamping from the time of birth” by ticking the box as either Immediate, 30-60 secs or > 1 minute.

Meconium-stained amniotic fluid

For all newborns exposed to meconium-stained amniotic fluid, ANZCOR suggests against routine direct laryngoscopy immediately after birth, with or without tracheal suctioning.

Fraction of inspired oxygen (FiO₂ .21)

- For term and near-term newborn infants commence with an FiO₂ .21 (room air), with supplemental oxygen reserved for those whose saturations do not meet the lower end of the targets despite respiratory support.
- For preterm infants born at less than 35 weeks' gestation commence resuscitation with an FiO₂ .21 or blended gas up to FiO₂ .30.
- If oxygen saturations reach 90% while supplemental oxygen is being administered, the concentration of oxygen should be decreased.

PEEP (Positive end expiratory pressure)

Commencing at an initial setting of 5cm H₂O (especially for preterm infants) but may increase to 8cm during resuscitation of newborns, whenever appropriate equipment is available.

Supraglottic airway (Laryngeal Mask Device)

Should be considered if facemask ventilation is unsuccessful in term and near-term infants >34 weeks, approximately 2000g BW. Consider as an alternative to tracheal intubation if tracheal intubation is unsuccessful or not feasible. Pro-Breathe® LMA size 1.0 (up to 5kg); size 1.5 (5-10kg)

ECG Monitoring

ECG can also be used to display heart rate more rapidly and accurately in the first 3 minutes of life.

Chest compressions

Compressions and inflations should be co-ordinated to Ratio 3:1. Continuous compressions at 120 compressions per minute without interruptions for breaths can be considered in the intubated newborn.

Medications

Adrenaline

- Intravenous route recommended (umbilical vein or peripheral intravenous cannula)
- Given as a rapid push followed by a 0.5 mL flush of 0.9% sodium chloride
- The dose may be repeated every few minutes if the heart rate remains <60/min despite effective ventilation and chest compressions.
- **Can be given via the tracheal route if IV access cannot be obtained** as some infants may have an endotracheal tube inserted prior to intravenous access being established.
- Up to ten times the intravenous dose can be administered via the endotracheal tube as a quick bolus followed by positive pressure inflations via the ETT. N.B. Evidence for the endotracheal route is lacking.
- Intraosseous (IO) lines are not commonly used in newborns because of the more readily accessible umbilical vein, the fragility of small bones and the small intraosseous space, particularly in a preterm infant. However, ANZCOR suggests this route can be used as an alternative.

| IV Adrenaline 1:10,000 solution | |
|---------------------------------|---------|
| Gestation (weeks) | Dose |
| 23-26 | 0.1 mL |
| 27-37 | 0.25 mL |
| 38-43 | 0.5 mL |
| 10-30 microg/kg (0.1-0.3 mL/kg) | |

Intravascular fluids should be considered

- If foetal blood loss is suspected and/or
- The newborn appears to be in shock (pale, poor perfusion, weak pulses)
- The newborn has not responded to other resuscitation measures (especially if the HR is not improving)

0.9% NaCl (Normal saline) should be used initially. O-negative red blood cell replacement is the priority in the setting of massive blood loss or suspected blood loss.

- **Dose: 10 mL/kg**, over several minutes. Repeat PRN

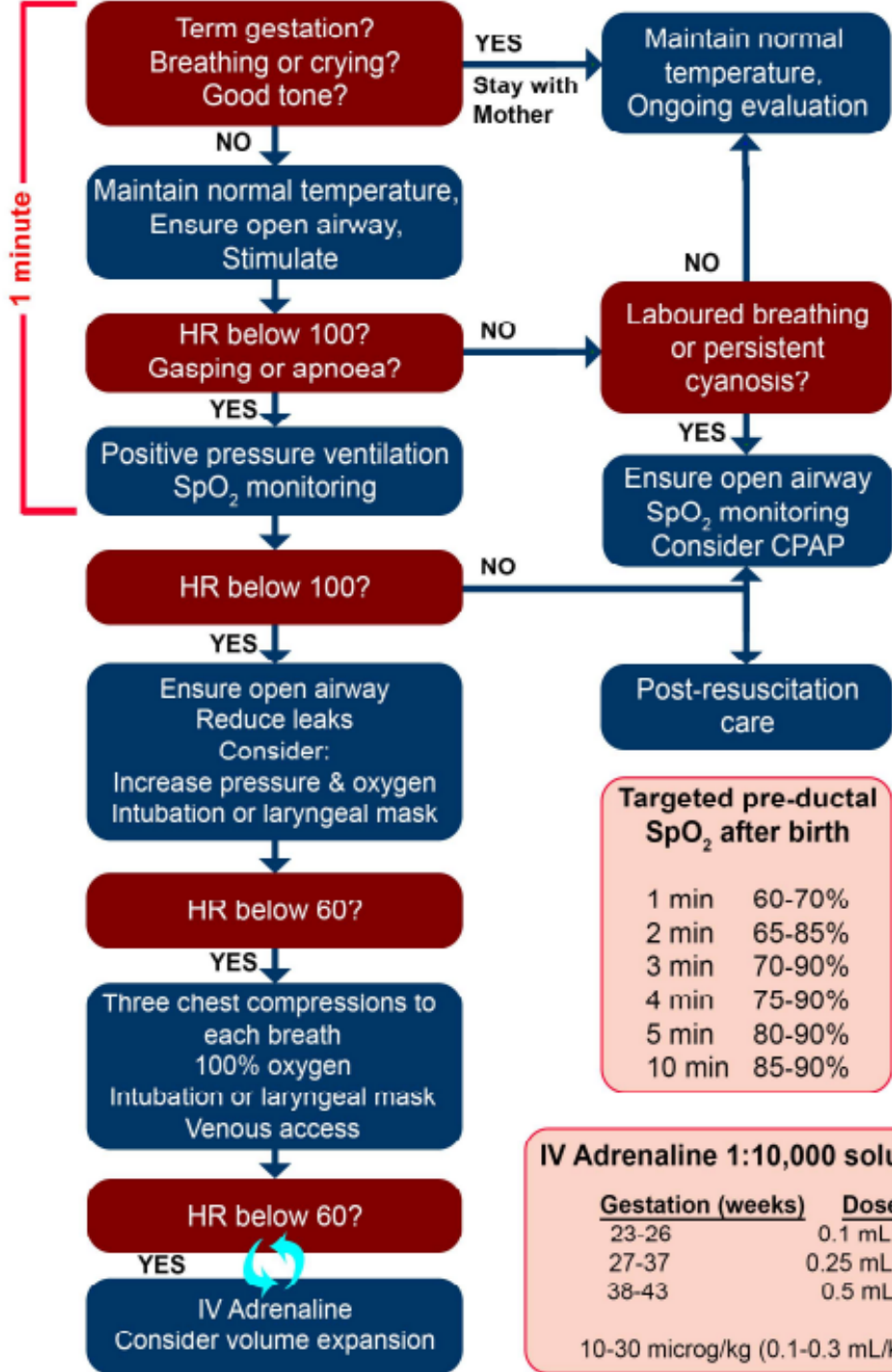
Discontinuation of resuscitation

ANZCOR suggests that a reasonable time frame to consider this change in goals of care is around 20 minutes after birth of effective resuscitation efforts.

Resuscitation pathway: ANZCOR Neonatal Flowchart 2021

Newborn Life Support

At all stages ask: do you need help?



Related CAHS internal policies, procedures and guidelines

Neonatology Clinical Guidelines

- [Resuscitation: Emergency Transfusion of O-Negative Blood in Theatre](#)

NETS WA

- [Resuscitation and Intubation Drugs for Neonates](#)


WNHS Obstetric Guidelines

- [Labour and Birth: Neonatal team attendance for births](#)
- [Meconium Stained Amniotic Fluid](#)
- [Neonatal Care \(well-baby\) at KEMH](#)
- [Operative vaginal birth](#)
- [Second stage of labour](#)
- [Third stage of Labour](#)

References

1. The Australian and New Zealand Committee on Resuscitation (ANZCOR) Neonatal Guidelines April 2021 <https://resus.org.au/guidelines/>
2. Neonatal Life Support: 2020 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations (CoSTR). 21 Oct 2020 Circulation. 2020;142:S185–S221 <https://www.ahajournals.org/doi/10.1161/CIR.0000000000000895>
3. NRP 2015 WA Addendum: <https://www.caahs.health.wa.gov.au/-/media/HSPs/CAHS/Documents/Health-Professionals/Neonatology-guidelines/Resuscitation-Algorithm-for-the-Newborn.pdf>
4. ANZCOR Guideline Updates 2021 - Australian Resuscitation Council <https://resus.org.au/guidelines/anzcor-guideline-updates-2021/> neonatal-summary-of-changes-2021
5. Wilson A, Vento M, Shah PS, Saugstad O, Finer N, Rich W, Morton RL, Rabi Y, Tarnow-Mordi W, Suzuki K, Wright IM, Oei JL. A review of international clinical practice guidelines for the use of oxygen in the delivery room resuscitation of preterm infants. Acta Paediatr. 2018 Jan;107(1):20-27. doi: 10.1111/apa.14012. Epub 2017 Sep 6. PMID: 28792628.
6. Oei JL, Kapadia V. Oxygen for respiratory support of moderate and late preterm and term infants at birth: Is air best? Semin Fetal Neonatal Med. 2020 Apr;25(2):101074. doi: 10.1016/j.siny.2019.101074. Epub 2019 Dec 6. PMID: 31843378.

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

| | | | |
|-----------------------|--|-------------------|-------------|
| Document Owner: | Neonatology | | |
| Reviewer / Team: | Neonatology Coordinating Group | | |
| Date First Issued: | October 2013 | Last Reviewed: | August 2022 |
| Amendment Dates: | | Next Review Date: | August 2025 |
| Approved by: | Neonatology Coordinating Group | Date: | May 2022 |
| Endorsed by: | Neonatology Coordinating Group | Date: | |
| Standards Applicable: | NSQHS Standards:  Child Safe Standards: 1,10 | | |

Printed or personally saved electronic copies of this document are considered uncontrolled



Healthy kids, healthy communities

Compassion

Excellence

Collaboration

Accountability

Equity

Respect

Neonatology | Community Health | Mental Health | Perth Children's Hospital

Appendix 1. ANZCOR Newborn Guideline Summary of Changes 13.1-13.10



April 2021 Full details: [The ARC Guidelines - Australian Resuscitation Council](#)



ANZCOR Newborn Guideline Changes April 2021

| ANZCOR Guideline Number | ANZCOR Guideline Title | 2021 Significant Changes |
|---------------------------|---|---|
| All guidelines 13.1-13.10 | | <ul style="list-style-type: none"> • Updates of wording for clarity and consistency with contemporary good practice. • Updating of review evidence, references, and terminology to increase consistency with GRADE terminology. |
| 13.1 | Introduction to Resuscitation of the Newborn | <ul style="list-style-type: none"> • For infants born at less than 34 weeks' gestational age who do not require immediate resuscitation after birth, ANZCOR suggests deferring clamping the cord for at least 30 seconds. • For term and late preterm infants born at ≥ 34 weeks' gestation who are vigorous or deemed not to require immediate resuscitation at birth, ANZCOR suggests later (delayed or deferred) clamping of the cord at ≥ 60 seconds. • ANZCOR suggests against intact cord milking for infants born at less than 28+0 weeks' gestational age. |
| 13.4 | Airway Management and Mask Ventilation of the Newborn | <ul style="list-style-type: none"> • For all newborns exposed to meconium-stained amniotic fluid, ANZCOR suggests against routine direct laryngoscopy immediately after birth, with or without tracheal suctioning. |
| 13.7 | Medication or Fluids for the Resuscitation of the Newborn | <ul style="list-style-type: none"> • ANZCOR suggests that intraosseous lines can be used as an alternative, especially if umbilical or direct venous access is not available. The choice of route may depend on local availability of equipment, training and experience. |
| 13.8 | The Resuscitation of the Newborn in Special Circumstances | <ul style="list-style-type: none"> • For preterm infants born at less than 35 weeks' gestation ANZCOR suggests commencing resuscitation either using room air or blended air and oxygen up to an oxygen concentration of 30% rather than higher initial oxygen concentration (60%–100%). |
| 13.10 | Ethical Issues in Resuscitation of the Newborn | <ul style="list-style-type: none"> • If, despite provision of all the recommended steps of resuscitation and excluding reversible causes, a newborn requires ongoing cardiopulmonary resuscitation (CPR) after birth, we suggest discussion of discontinuing resuscitative efforts with the clinical team and family. ANZCOR suggests that a reasonable time frame to consider this change in goals of care is around 20 minutes after birth. |

April 2021

Appendix 2: Resuscitation of the neonate with COVID-19

- Resuscitation should proceed as per standard neonatal guidelines.
- A viral filter should be added to the Neopuff circuit directly before the mask

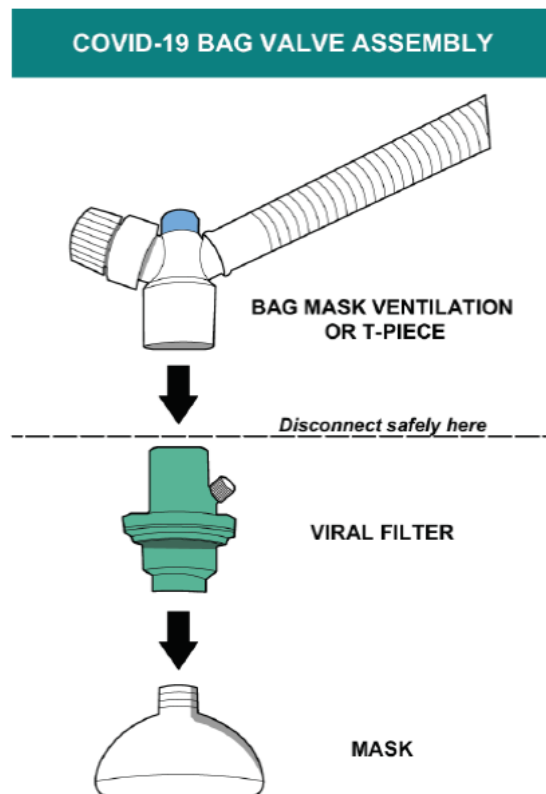


Figure 1: Set up for initial neonatal resuscitation and stabilisation during COVID-19 pandemic

Adapted from Queensland Children's Hospital Paediatric Consensus Statement Paediatric Intubation Guideline during COVID 19 outbreak.