Guideline

Maternity - Resuscitation of the Newborn Infant

Summary This Guideline aims to optimise, facilitate and standardise newborn resuscitation by endorsing the Australian and New Zealand Committee on Resuscitation (ANZCOR) Guidelines - Section 13: Neonatal Guidelines (2016- 17)1 for use in NSW. The Guideline outlines the mandatory education and training requirement and the resources available to support this.

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Applies to Local Health Districts, Public Hospitals, Specialty Network Governed Statutory Health Corporations

Distributed to Divisions of General Practice, Government Medical Officers, Ministry of Health, NSW Ambulance Service, Private Hospitals and Day Procedure Centres, Public Health System, Tertiary Education Institutes

Audience Clinicians who care for newborn infants in NSW Health maternity and related environments

NSW GOVERNMENT Health

GUIDELINE SUMMARY

MATERNITY – RESUSCITATION OF THE NEWBORN INFANT

PURPOSE

This Guideline aims to optimise, facilitate and standardise newborn resuscitation by endorsing the Australian and New Zealand Committee on Resuscitation (ANZCOR) Guidelines - Section 13: Neonatal Guidelines (2016- 17)[1] for use by NSW Health.

KEY PRINCIPLES

This Guideline applies to all clinicians who care for newborn infants in maternity and related environments and to the resuscitation of the newborn immediately following birth and during the birth admission.

USE OF THE GUIDELINE

This Guideline:

- replaces the Policy Directive PD2008_027 Maternity - Clinical Care and Resuscitation of the Newborn Infant
- endorses ANZCOR Guidelines (2016-2017) Section 13 - Neonatal guidelines 13.1-13.10 and the Newborn Life Support algorithm (Attachment 1)
- outlines local health district responsibilities to develop systems to ensure:
    - clinicians are appropriately targeted to complete mandatory and recommended newborn basic life support education, training and proficiency requirements
    - locally determined clinicians complete newborn advanced life support education, training and proficiency requirements, and are in attendance at the birth of newborn infants who are at higher risk of requiring resuscitation at birth
    - standardised newborn resuscitation equipment is available and operational and clinicians are familiar with the equipment
    - local procedures are in place to review resuscitation interventions and outcomes to monitor patient safety and quality of care and improve training and performance.

REVISION HISTORY

Version	Approved by	Amendment notes
June 2018 (GL2018_016)	Deputy Secretary – Strategy and Resources	Guideline replaces PD2008_027 *Maternity – Clinical Care and Resuscitation of the Newborn Infant* Updated advice from Australian and New Zealand Committee on Resuscitation Mandatory newborn resuscitation education and training
May 2008 (PD2008_027)	Director General	Replaces PD2005_242 Children- Clinical care/Resuscitation /Newly Born infant – AHS Development of Policy/Procedures
January 2005	Director General	Replaces Framework for Area Health services to develop

(PD2005_242)		policy and procedures related to clinical care and resuscitation of newly born infant.
February 2002 Circular No 2002/30	Acting Director - General	New

ATTACHMENTS

1. Maternity – Resuscitation of the Newborn Infant: Guideline

Maternity - Resuscitation of the Newborn Infant

NSW GOVERNMENT Health

GUIDELINE

Issue date: June-2018

GL2018_016

CONTENTS

1 BACKGROUND

The transition from fetal to extra-uterine life occurs through a series of unique physiological events. Newborn resuscitation therefore requires a graded response for those newborns who are not making this transition effectively.

The need for newborn resuscitation may be anticipated, but there are many occasions when it is unexpected. While approximately 85 percent of births require no intervention to initiate spontaneous breaths, approximately 10 percent of newborns will need minimal interventions, a further 3 percent will require positive pressure respiratory support and another 2 percent will need to be intubated to support respiratory efforts. The full range of resuscitation interventions will be required by 0.1 percent of newborns.[1]

1.1 Purpose

This Guideline aims to optimise, facilitate and standardise newborn resuscitation by endorsing the Australian and New Zealand Committee on Resuscitation (ANZCOR) Guidelines - Section 13: Neonatal Guidelines (2016- 17)[1] for use by NSW Health.

1.2 Scope

This Guideline applies to all clinicians who care for newborn infants in NSW Health maternity and related environments.

For the purpose of this Guideline the term 'newborn resuscitation' applies to the resuscitation of the newborn infant immediately following birth and during the birth admission.

1.3 About this document

This Guideline replaces PD2008_027 *Maternity - Clinical Care and Resuscitation of the Newborn Infant* and endorses ANZCOR Guidelines (2016-2017) Section 13 - Neonatal Guidelines 13.1-13.10 for use by NSW Health clinicians.

The ANZCOR Neonatal Guidelines for resuscitation are drawn from consensus treatment and resuscitation recommendations from:

- International Liaison Committee on Resuscitation (ILCOR),[2] which includes representation from the Australian Resuscitation Council (ARC) and the New Zealand Resuscitation Council (NZRC).
- American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care (Neonatal) 2015. [3]
- European Resuscitation Council Guidelines for Resuscitation 2015.[4]

1.4 Key definitions

Birth admission - initial hospital stay following birth

Mandatory training - training that an employee or contractor of NSW Health must complete

1.5 Relevant NSW Health Policy Directives and Guidelines

This Guideline should be read in conjunction with:

PD2012_069 *Health Care Records – Documentation and Management*

PD2013_049 *Recognition and Management of Patients who are Clinically Deteriorating*

PD2014_030 *Using Resuscitation Plans in End of Life Decisions*

GL2016_018 *NSW Maternity and Neonatal Service Capability Framework*

2 LOCAL HEALTH DISTRICT RESPONSIBILITIES

The Chief Executives of local health districts (districts) are responsible to ensure:

- all clinicians targeted for mandatory newborn basic life support (NBLS) attend education and training and are assessed as proficient[5]
- a clinician who has completed additional education and training, and assessed as proficient in newborn advanced life support (NALS), is available to attend births where there is increased likelihood of the newborn infant requiring resuscitation[1,6]
- standardised resuscitation equipment should be available in NSW Health environments where newborn care is provided (Attachment 2). A system should be in place to ensure clinicians are familiar with the equipment and it is operational at all times[1,6]
- processes are in place to guide escalation and transfer of care in line with PD2013_049 *Recognition and Management of Patients who are Clinically Deteriorating* and GL2016_018 *NSW Maternity and Neonatal Service Capability Framework*
- local procedures are in place to review resuscitation interventions and outcomes to monitor patient safety and quality of care and improve training and performance.

3 EDUCATION FOR HEALTH PROFESSIONALS

3.1 Newborn Basic Life Support

NBLS education and training is mandatory for all NSW Health maternity clinicians currently targeted for Fetal welfare assessment, Obstetric emergencies and Neonatal resuscitation Training (FONT).

The training is also recommended for clinicians who provide newborn care in shared and related environments (e.g. newborn nurseries) and clinicians who may attend births which occur outside the birth suite. These clinicians should be locally determined.

NBLS training, education and assessment for NSW Health clinicians consists of:

- online training to be completed **every 5 years** and

- practical component - *Newborn Basic Life Support Practical Session* - to be completed **annually.**

3.2 Newborn Advanced Life Support

Education and training in NALS, in addition to NBLS, is available via My Health Learning for those NSW Health clinicians who may be called upon to attend births where there is increased likelihood of the newborn requiring resuscitation.[1] The training needs of these clinicians should be locally determined.

Simulation training, where available, may enhance clinical performance.[1,7,8]

4 RESOURCES

To support standardisation of newborn resuscitation, the following resources are provided and should be available to clinicians:

- the ANZCOR Newborn Life Support algorithm defines a sequence of simultaneous evaluation and resuscitation interventions (Attachment 1)[1]
- a list of recommended equipment for resuscitation that should be available in NSW Health environments where newborn care is provided (Attachment 2).[1,6]

5 DOCUMENTATION

5.1 Newborn Resuscitation Record

Documentation of newborn resuscitation interventions and response to treatment must occur during the event. The NSW Health *Newborn Resuscitation Record* has been designed to support and standardise this documentation. The record should be used at every newborn resuscitation event to monitor patient safety and quality of care.

5.2 Resuscitation plans

Resuscitation plans can be made, in line with PD2014_030 *Using Resuscitation Plans in End of Life Decisions*. The content and outcome of these discussions should be documented in the patient clinical record and a system should be in place to ensure relevant clinicians are aware of these plans.

6 CARE OF THE FAMILY

Particular consideration should be given to the communication that takes place with parents/ families whilst newborn resuscitation is occurring, and following the event. Regardless of the outcome of the resuscitation, some parents/ families may need additional support.[1] Clinicians should be sensitive to their needs and take into account

cultural considerations for the family, and refer appropriately when required. Support services may include:

- Aboriginal support services - midwives, health workers and liaison officers
- multicultural health services for specific cultural groups.

7 REFERENCES

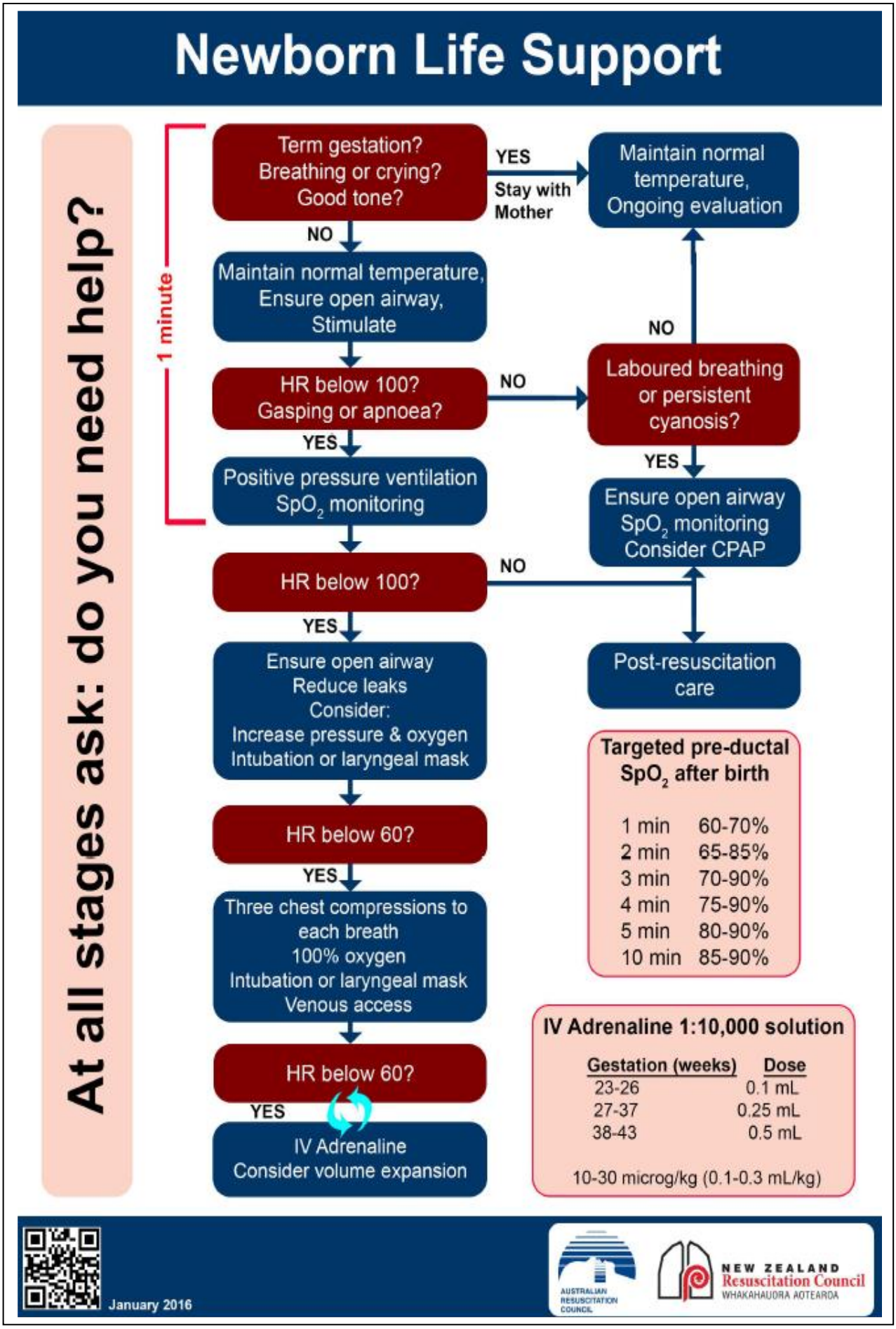
1. Australian and New Zealand Council of Resuscitation (ANZCOR) *Neonatal Guidelines: Section 13*. 2016 - 17 https:/resus.org.au
2. Wyllie J, Perlman JM, Kattwinkel J, et al. Part 7: *Neonatal resuscitation: 2015* International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations. Resuscitation. 2015; 95:e169-201.
3. Wyckoff MH, Aziz K, Escobedo MB, et al. Part 13: *Neonatal Resuscitation: 2015* American Heart Association Guidelines Update for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation 2015; 132:S543-60.
4. Wyllie J, Bruinenberg J, Roehr CC, Rudiger M, Trevisanuto D, Urlesberger B. *European Resuscitation Council Guidelines for Resuscitation 2015*: Section 7. Resuscitation and support of transition of babies at birth. Resuscitation 2015; 95:249-63.
5. Australian Commission on Safety and Quality in Health Care, *National Safety and Quality Health Service Standards* (September 2012). Sydney. ACSQHC, Standard: 9 Recognising and Responding to Clinical Deterioration in Acute Health Care.
6. Australian Resuscitation Council Standards for Resuscitation: *Clinical Practice and Education. A Resource for Healthcar*e. 2014. https://resus.org.au/standards-for-resuscitation-clinical-practice-and-education.
7. Mileder LP, Urlesberger B, Szyld EG, Roehr CC, Schmölzer GM. *Simulation-based neonatal and infant resuscitation teaching: a systematic review of randomized controlled trials*. Klin Pädiatr. 2014 Sep; 226(5):259-67. doi: 10.1055/s-0034-1372621.
8. Sawyer T, Sierocka-Castaneda A, Chan D, Berg B, Lustik M, Thompson M*. Deliberate practice using simulation improves neonatal resuscitation performance*. Simulation in Healthcare. 2011 Dec; 6(6):327-36. doi: 10.1097/SIH.0b013e31822b1307.

8 LIST OF ATTACHMENTS

ATTACHMENT 1: ANZCOR Newborn Life Support Algorithm

ATTACHMENT 2: Resuscitation Trolley - Recommended Equipment and Drugs for Resuscitation of the Newborn Infant

ATTACHMENT 1: ANZCOR Newborn Life Support Algorithm



ATTACHMENT 2: Resuscitation Trolley - Recommended equipment and drugs for resuscitation of the newborn infant

The equipment recommended is adapted from the Australia & New Zealand Resuscitation Council (ANZCOR)

1. Guideline 13.1: Recommended equipment and drugs for the resuscitation of the newborn Infant. June 2017
2. Guideline 13.4: Airway management and mask ventilation of the newborn infant. November 2016
3. Guideline 13.5: Tracheal intubation and ventilation of the newborn infant. August 2016

REQUIREMENTS

General:

• Firm, horizontal padded resuscitation surface
• Overhead warmer
• Light
• Clock with timer
• Source of Medical Air and Oxygen (Air/ O_2) attached to
- Blender with flow meter allowing flow to 10 Litres/ minute connected to
▪ Self- inflating bag with 240 mL reservoir or
▪ T piece device (e.g. Neopuff™) or
▪ Face Mask
• Twin-o-vac or wall suction attached to
- Suction tubing with Y suction catheter FG 10

On top of the trolley

• Stethoscope (neonatal size preferred)	x 1
• Neonatal Pulse Oximeter with disposable neonatal sensor attached	x 1
• Baby blankets - warmed (where possible)	x 1
• Towel - warmed (where possible)	x 1
• Polyethylene wrap for infants <1500 gm	x 1
• Nappy	x 1
• Hat	x 1

Airway: Drawer 1

• Face Masks	
- Size 1	x 1
- Size 0	x 1
- Size 00	x 1
• Guedel airway	
- Size 0	x 1
- Size 00	x 1
• Suction Catheters	
- Size 6	x 3
- Size 8	x 3
- Size 10 or 12	x 3
• Gastric tubes for gastric decompression	
- Size 6	x 3
- Size 8	x 3

ATTACHMENT 2: Resuscitation Trolley - Recommended Equipment and Drugs for Resuscitation of the Newborn Infant – continued

Breathing: Drawer 2

• Endotracheal tubes (uniform diameter, uncuffed, no eye, transparent)	
- Size 2.5	x 3
- Size 3.0	x 3
- Size 3.5	x 3
- Size 4.0	x 3
• Endotracheal stylet or introducer	
• Laryngeal mask	
- Size 1.0 (>34 weeks or >2kg)	x 3
- 5ml syringe	x 3
• Infant Magill's forceps - neonatal size (optional)	x 1
• End - tidal carbon dioxide detector (eg Pedicap™)	x 2
• Laryngoscope handle	x 1
- blade size 00	x 1
- blade size 0	x 1
- blade size 1	x 1
• Meconium aspirator device	x 1
• Spare Batteries and bulbs for laryngoscope	x 2
• Supplies for fixing ETT (eg scissors and tape)	

ETT size and insertion depth

Note: approximate insertion depth = weight in kilograms + 6 cm.[3]

Gestation (weeks)	Weight (grams)	Tube size	Depth of insertion from lip (centimetres)
23 - 24	500 -600	2.5	5.5
25 - 26	700 – 800	2.5	6.0
27 - 29	900 - 1000	2.5/ 3.0	6.5
30 - 32	1100 - 1400	3.0	7
33 - 34	1500 - 1800	3.0	7.5
35 - 37	1900 - 2400	3.0/ 3.5	8.0
38 - 40	2500 - 3100	3.5	8.5
41 - 43	3200 - 4200	3.5	9

ATTACHMENT 2: Resuscitation Trolley - Recommended Equipment and Drugs for Resuscitation of the Newborn Infant – continued

Circulation: Drawer 3

• Drugs / Fluids	
- Adrenaline 1:10,000/10 mls	x 2
- 0.9% Sodium Chloride 10 ml	x 5
• Ready access to blood for emergency neonatal transfusion	
• Umbilical vessel kit to include:	
- Size 3 French	x 2
- Size 5 French	x 2
- 3 way stopcock	x 2
- Sterile gauze swabs	x 2
- 3/ 0 silk or 4/ 0 silk on PS 2 needle	x 1
- 0.9 % Sodium Chloride 100 ml bag	x 2
- I ml syringe	x 3
- 50 ml syringe	x 2
- 19 G needle	x 3
- White cotton tape, sterile	x 1
- Scalpel blade size 23	x 1
- Leucoplast tape 2.5 cm width role	x 1
• Syringes	
- Micro ABG (blood gas syringes)	x 3
- 1 ml	x 3
- 2 ml	x 3
- 3 ml	x 3
- 10 ml	x 3
• Needles	
- Blunt drawing up needle	x 3
- 18 gauge	x 3
- 23 gauge	x 3
- 25 gauge	x 3
• Cannulae	
- Butterfly 23 gauge	x 2
- 24 gauge - yellow	x 2
- 22 gauge - blue	x 2
- 20 gauge - pink	x 2
• Alcohol wipes/ skin preparation	x 10
• Scissors (for cutting tape)	x 1
• IV bungs	x 3
• Intraosseous 50 mm needle (use if UVC unsuccessful in term infants)	x 1
• Pathology tubes	
- Purple (for routine cord blood collection)	x 2
- Small red (FBC and blood group + Coombs test	x 2
- Small orange (EUC, SBR)	x 2
• Cord clamps	x 3
• Newborn Resuscitation Record	x 2