Waikato District Health Board

Guideline

Resuscitation of Marginally Viable Infants

Guideline Responsibilities and Authorisation

Department Responsible for Guideline	NICU
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Target Audience	Medical staff, registered nurses and midwives

Guideline Review History

Version	Updated by	Date Updated	Description of Changes
3	David Bourchier	March 2016	Update
4	David Bourchier	January 2018	Update
4.1	David Bourchier	January 2020	Minor update to improve references
4.2	J van den Boom	Sept 2020	Minor amendment of 'documentation paragraph' and 'audit information' Parent information added Reference to Periviability checklist
5	J van den Boom	January 2021	Minor amendment: tidying up spelling mistakes, specification of staff responsibilities, insertion of document number

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Contents

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1. Overview

1.1 Purpose

To determine the appropriateness of resuscitation in infants born at a questionably viable gestation period. This document is consistent with the New Zealand Consensus Statement on the care of Mother and Baby(ies) at pre-viable gestations (1).

The outcomes for premature infants, both in terms of mortality and long-term morbidity, are closely linked to the gestational age at the time of birth. In general terms, the more mature infants have a higher chance of a good outcome. The limit of viability is in the region of 22-23 weeks gestation. – see Appendix A - Survival and Morbidity.

1.2 Scope

Medical staff, registered nurses and midwives.

1.3 Patient / client group

Marginally viable premature infants

1.4 Exceptions / contraindications

No exceptions

1.5 Definitions

Mortality	Refers to the state of being mortal (destined to die). In medicine, a term also used for death rate, or the number of deaths in a certain group of people in a certain period of time. Mortality may be reported for people who have a certain disease, live in one area of the country, or who are of a certain gender, age, or ethnic group.
Morbidity	A diseased condition or state. The incidence or prevalence of a disease or of all diseases
Previable infant	An infant who at birth weighs ≤ 500 g or is 24 weeks or less of gestational age. An infant unlikely to survive to the point of sustaining life Independently without the benefit of available medical therapy. .
Gestational age	Is the common term used during pregnancy to describe how far along the pregnancy is. It is measured in weeks, from the first day of the woman's last menstrual cycle to the current date. A normal pregnancy can range from 38 to 42 weeks. Infants born before 37 weeks are considered premature.
Plato	Perinatal Information Management System
Resuscitation	Neonatal Resuscitation is intervention after an infant is born to actively assist it to breathe and to help its heart beat.
Senior Medical Officer (SMO)	Senior medical officers are doctors employed or contracted as consultants/specialists
Comfort cares	Is care that helps or soothes a person who is dying. The goals are to prevent or relieve suffering as much as possible and to improve quality of life while respecting the parent's wishes for the dying infant.

2. Clinical Management

2.1 Competency required

Registered Midwives, Medical Staff and Registered Nurses who hold a current practicing certificate and have obtained competency annually from a recognised institution on Newborn Life Support

2.2 Guideline

It is acknowledged that accurate determination of gestational age, to an actual day, is not usually possible. Nonetheless, this document is necessarily focused on the best clinical assessment of gestational age. Where there is reason to believe that the "best clinical assessment" is clearly less precise than usual, then a reassessment at the time of birth would be reasonable. Birthweight is also an important determinant of outcome.

- Early discussions to determine Advance Directives will allow parents time to consider their desire for treatment if their child was born extremely premature.
- Where appropriate, offering the option of further support from Maori staff, e.g. kaitiaki. Where possible this should happen prior to delivery.
- Returning of whenua (placenta) and foetal material that is consistent with Tikanga Best Practice flipchart W0372HWF.

2.3 Before 22 weeks of completed gestation (i.e. up to 21 weeks and 6 days).

- Delivery is not associated with successful outcomes, and there should be no attempt to resuscitate such infants, even if live-born[1].
- Parents should be counselled before delivery that a good outcome is a very remote possibility, with a very high likelihood of an adverse outcome, and that our recommendation is that such infants should not be resuscitated in the first instance.
- Comfort care and support is given to the parents as well as the infant after birth.

2.4 Between 22 and 22^6 weeks gestation

- Delivery is associated with an extremely high likelihood of death or long-term disability.
- Parents should be counselled before delivery that a good outcome is a very remote possibility, with a very high likelihood of an adverse outcome, and that our recommendation is that such infants should not be resuscitated in the first instance.

[1] Legal opinion provided by DHB Legal Services

2.5 Between 23 and 24[6] weeks gestation

- Parents may choose to request that resuscitation and stabilisation is attempted, and we should then ensure that they are in a position to be fully aware of the consequences of that request. A direct request from a fully informed parent cannot be dismissed at 23 weeks, and full resuscitative attempts and stabilisation attempts should be made in that circumstance.
- It is reasonable to offer preparation for delivery at 23 weeks however, by commencing antenatal steroid treatment at 22 weeks + 5 days, and MgSO4 at 23weeks and transfer to a tertiary centre
- Delivery is associated with a high likelihood of an adverse outcome, but there are many satisfactory survivors as well.
- Parents should be counselled before delivery that a good outcome is possible, but a poor outcome is more likely.
- Our recommendation is that such infants should be resuscitated in the first instance.
- Parents may request that resuscitation does not proceed, and such a request from a fully-informed parent should be accepted.

2.6 At 25 weeks & beyond

- Delivery is associated with lower likelihoods of adverse outcomes.
- Parents should be counselled before delivery that a good outcome is likely, but cannot be guaranteed.
- Our recommendation is that such infants should be resuscitated.
- If a parent requests that resuscitation is not initiated, then this request should not necessarily be adhered to.
- Careful discussion between the parents and the health-care providers should establish the rationale for this parental choice.

3. Documentation

Whenever a discussion of this nature occurs between a member of the staff and the parents, then the documentation standards are:

- Any staff member who has had such a discussion with a parent should record that fact, along with the substance of the discussion, their name and identification, in the maternal chart.
- A Periviability (22+5 – 25 weeks) checklist (W0715HWF) to document discussion with the family and the outcome is available. Please use this form to document ongoing discussions.
- If time allows, for gestations between 23 weeks and 25 weeks, a neonatal clinical staff member (preferably an SMO, alternatively an NNP or registrar) must meet and discuss with the parents the likely outcomes at the relevant gestation, preferably together with the obstetric and maternity team.

- When a neonatal clinical staff member has this discussion with the parent, then this should be recorded and highlighted in the maternal chart.
- If the maternal condition allows for advancement of gestation with a live foetus, then any decisions reached must be revised, re-declared and re-documented with each successive week.

3.1 Maintained live status

- In the event of a baby continuing to show signs of life when a decision has been made to withhold resuscitation under these circumstances, then a neonatal clinical staff member must review the infant at 30 minutes of life. Once again the parent wishes must be sought and an agreed decision made by a senior medical officer about whether to now offer supportive treatment.
- Documentation of that decision must be made in the neonatal notes.
- If the decision is to continue to withhold treatment, then a further review at an agreed time must be undertaken by the senior medical officer, and again documented if the baby is still alive at that time.

4. Uncertain gestation

Where the gestational age is uncertain, an assessment of the newborn baby by a neonatal clinical staff member must be made in the first instance. In general a baby of birthweight greater than 500g will be offered resuscitation, unless the neonatal clinical staff member believes the situation to be futile. In such circumstances, the observations and rationale must be recorded in the maternal chart.

5. Regional referral

Where the family request resuscitation of the infant and following discussion with the referring obstetrician and /or Paediatrician the mother should be transferred to Waikato Hospital at 22weeks + 5th day gestation. Antenatal steroids treatment should be commenced at 22 weeks and 5 days, and $MgSO_4$ at 23 weeks.
Further discussion with the family should be undertaken at Waikato Hospital.

6. Patient Information

1. Stillborn and Newborn Death Support (SANDS) Pamphlets
2. Parent information and decision aid is available (Appendix B – Parent Information and Decision Aid on 23/24 week gestation)

7. Audit

7.1 Indicators

- 100% of mothers that have not birthed within 2 hours following their arrival have a multidisciplinary discussion and a plan regarding resuscitation using the periviability checklist

8. Evidence Base

8.1 Summary of Evidence, Review and Recommendations

Resuscitation of infants of a questionable viability should take into account two objectives; the first to prevent the imminent death in the short term, followed by a long term objective to minimise morbidity and maximise the functional status. Clinical intervention should be initiated and maintained only so long as these objectives are reasonably expected to be accomplished.

8.2 Bibliography

1. New Zealand Consensus Statement on the Care of Mother and Baby(ies) at Periviable Gestations. New Zealand Child and Youth Clinical Networks (NZCYCN) national guidelines https://www.starship.org.nz/guidelines/practice-recommendation-for-the-bundle-of-neonatal-care-at-23-24-weeks
2. https://media.starship.org.nz/parent-information-and-decision-aid-on-23%2F24-weeks-gestation/Parent_Information_and_Decision_Aid.docx
3. Queensland Clinical Guidelines. Perinatal care at the threshold of viability. (2014) – www.health.qld.gov.au/qcg
4. Canadian Paediatric Society Position Pape. Paediatrics and Child Health 2017;22(6):334-41
5. Decisions and Dilemmas Related to Resuscitation of Infants Born on the Verge of Viability: Traci L. Powell, MSN, NNP; Leslie Parker, PhD, NNP-BC; Cynthia F. Dedrick, PhD, NNP; Christina M. Barrera, MSN, NNP; Dawn Di Salvo, MSN, NNP, CLC; Felicia Erdman, MSN, NNP; Sally P. Huff, RN, BSN; Mahala Saunders, MSN, ARNP. Newborn and Infant Nursing Reviews. March 2012;12(1):27-32
6. American Academy of Paediatrics Guideline – Paediatrics, September 2015;136(3):588-95

8.3 Associated Waikato DHB documents

- Periviability Checklist 22+5-25 weeks checklist W01715HWF

Appendix A – Survival and Morbidity

Gestation (weeks)

Survival to Hospital Discharge **(Live-born)**		23	24	25	26
	WWH(inborn) (2008 – 17)	36%	63%	72%	78%
	EPCURE.2 (UK) (2016)	19%	46%	66%	77%
	(a) Canada (2010-13)	40%	61%	79%	
	(b) California (2007-11)	26.9%	59.8%	78%	85.9% (No 2 yr data)
2-3 yr Morbidity **(Survivors)**	WWH (2008 – 17)	50%	50%	32%	29%
	EPICURE.2 (UK) (2006)	47%	35%	28%	21%

*Morbidity (at age 2 years) – cerebral palsy, deafness, blindness, epilepsy or IQ <84

(a) J. Paediatrics (2016), 36: 503-9.

(b) Paediatrics, 2016, 138(1): C 20154434

Appendix B – Parent Information and Decision Aid on 23/24 week gestation.

At this difficult time, your doctors, midwife (LMC) and nurses will talk with you about the options for care of you and your pēpi / baby.
Each mama / pēpi, mother / baby situation is different and a number of factors could influence the advice given to you. These include:

- the certainty of your dates and your pregnancy length in weeks and days,
- how well your baby has been growing,
- the level of fluid seen around your baby,
- the presence of infection which often leads to your waters breaking
- Your health including such things as high blood pressure.

We have prepared a chart called a 'decision aid'. This includes probable outcomes for babies delivered at 23 and 24 weeks. It also includes possible developmental issues. It starts from when a baby's mother first goes to hospital facing early delivery. It ends when mother and baby leave the unit.
Every day counts when delivery of your baby may be early but the babies are grouped here by weeks. Babies born at 23 and 24 weeks are very fragile in all areas of their body.
Looking at the outcomes for babies born at 24 weeks, out of 100 mother/baby pairs:

- 6 parents decided on supportive care / keeping baby comfortable (palliative care)
- 94 decided on active treatment – of these, resuscitation at birth was unsuccessful in only a few
- 92 were admitted to a NICU
- 64 babies survived to go home which is two thirds of those admitted.

For babies born at 23 weeks' gestation out of 100 mother/baby pairs,

- 27 parents decided on supportive care / keeping baby comfortable (palliative care)
- Unfortunately 1 in 10 where active treatment was commenced did not survive due to the stress of labour or unsuccessful resuscitation
- 62 were admitted to a NICU
- 27 babies at 23 weeks survived to go home which was half of those admitted.

The large (lime on green) dots represent those who have severe developmental problems. These may include moderate/severe Cerebral Palsy involving major body movements including the ability to walk. Also significant learning or intellectual problems and less frequently blindness and deafness which cannot be corrected with aids. These affect 20% of survivors at 23 and 24 weeks gestation at birth.
Moderate problems (small lime on green dots) include less severe cerebral palsy (one or 2 limbs), and learning difficulties. These children often need help in school, and is seen in another 13 out of 100 survivors.
You can see the majority of survivors, 6 out of 10 at 23 weeks, 7 out of 10 at 24 weeks, have no or only mild brain or development issues. These may include co-ordination/movement difficulties, understanding of information, autism and attention difficulties. For comparison about 9 out of 10 children born at term have no problems.
It is not easy to always predict that problems will develop but progress and results of scans inform the discussions that we will have with you.
If your baby is much smaller than expected, has signs of infection, is a twin or triplet or is male, then the outlook may not be as good as these charts show. Outcomes for twins and singletons are mixed in the outcome results, but we know that twins develop a little slower and have lower chances of survival. It's as if they are a week earlier in gestation.
If active treatment is your decision two treatments will be recommended for you to help your baby

- Antenatal steroids help improve survival. We know that to give maximum help to your baby 2 doses given 12-24 hours apart should be followed by another day. If the time to birth is shorter there is still benefit to the lungs and they also reduce the risk of bleeding in the brain and poor circulation.
- Magnesium sulphate given before birth is also known to reduce the chance of cerebral palsy and developmental delay.

You may receive antibiotics while you wait to see if you are going to deliver.
The type of monitoring during labour will be decided between you, your LMC and the obstetric team(s) involved in your care, as will how you deliver your baby.

If supportive care is your decision the team will meet your needs through the birth and afterwards.
Tell us about your cultural and spiritual needs at any time as this will help us support you.
Notes: I want to ask about……
……
……
……
……

Glossary:
Supportive / Palliative care provides care for end of life. This means your baby will be kept comfortable usually held in your arms until the heart beat stops. Breathing efforts are usually intermittent and not sufficient to give baby enough oxygen for more than 1-2 hours.
Neurodevelopment (ND) includes movement, understanding or intellect, vision and hearing function compared to expected for age.

The information in the chart comes from the Canadian Perinatal Society 2017 data. They have collected data from presentation in birthing suite. Outcomes for babies who are born alive, survive resuscitation and are admitted to a Neonatal Intensive Care Units (NICU) in Australia and New Zealand are very similar.

Approved by:
NZCOM, RANZCOG, RACP(Paediatrics), Paediatric Society.

{DHB Logo / Document approval}

Parent information for shared decision making at 23 and 24 weeks gestation

Appendix C – Decision aid approved by the Periviability working group

New Zealand 2016-2018 for counselling at gestation < 25 weeks.

Each dot represents a baby born at the specified gestation.

Palliative/End of life care

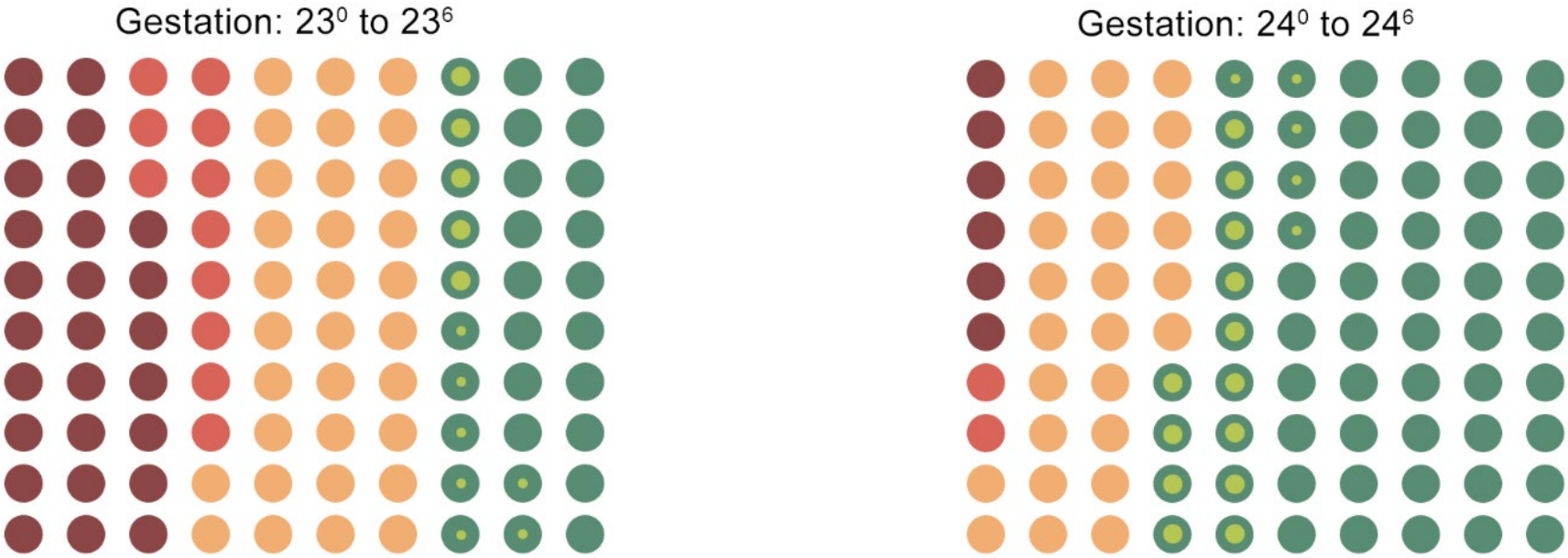
Resusciation provided but died in delivery

Admitted to NICU but died

Discharged home, severe neurodevelopmental impairment at 4-8y

Discharged home, moderate neurodevelopmental impairment at 4-8y

Discharged home, minor/no neurodevelopmental impairment at 4-8y



Source: *Lemyre B, Moore G. Canadian Paediatric Society Position Statement: Counselling and management for anticipated extremely preterm birth. Paediatrics & child health. 2017 Sep 1;22(6):334-41.*