

THAMES VALLEY & WESSEX NEONATAL OPERATIONAL DELIVERY NETWORK

OPTIMAL CORD MANAGEMENT GUIDELINE

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	<p>6 WHO (2012) <i>Guidelines on Basic Newborn Resuscitation</i> https://www.who.int/publications/i/item/9789241503693</p> <p>7 NICE (2022) <i>Intrapartum Care: Care of Healthy Women and Their Babies During Childbirth. Recommendations Guidance and Guidelines</i> https://www.nice.org.uk/guidance/cg190/chapter/Recommendations#third-stage-of-labour</p> <p>8 Madar et al (2021) <i>European Resuscitation Council Guidelines 2021: Newborn Resuscitation and Support of Transition of Infants at Birth.</i> https://pubmed.ncbi.nlm.nih.gov/33773829/</p> <p>9 Royal College of Obstetricians & Gynaecologists (2015) <i>Clamping of the Umbilical Cord and Placental Transfusion</i> https://www-temp.rcog.org.uk/media/ahppgoek/sip-14.pdf</p> <p>10 BAPM In collaboration with NNAP (National neonatal audit programme) (2020) <i>Optimal Cord Management in Preterm Babies – A Quality Improvement Toolkit</i> https://www.bapm.org/pages/197-optimal-cord-management-toolkit</p> <p>11 Royal College of Paediatrics and Child Health (2023) National Neonatal Audit Programme National Neonatal Audit Programme (NNAP) RCPCCH</p> <p>12 WHO (2014) <i>Guideline: Delayed umbilical cord clamping for improved maternal and infant health and nutrition outcomes</i> http://apps.who.int/iris/bitstream/handle/10665/148793/9789241508209_eng.pdf</p> <p>13 Giovannini N, Crippa B, Denaro E et al (2020) The effect of delayed umbilical cord clamping on cord blood gas analysis in vaginal and caesarean-delivered term newborns without fetal distress: a prospective observational study - Giovannini - 2020 - BJOG: An International Journal of Obstetrics & Gynaecology - Wiley Online Library T</p>
Implications of race, equality & other diversity duties for this document	This guideline must be implemented fairly and without prejudice whether on the grounds of race, gender, sexual orientation or religion.

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Optimal Cord Management Guideline

Contents

1.0	Introduction	4
2.0	Aim of Guideline.....	4
3.0	Scope of Guidelines.....	4
4.0	Definitions	5
5.0	Guideline Framework.....	5
5.1	How does OCM work?	5
5.2	Benefits of OCM	6
5.2.1	Stability during transition	6
5.2.2	Reduction in mortality.....	6
5.2.3	Iron Stores.....	6
5.2.4	Other benefits for preterm infants	6
5.3	Contra-Indications	6
5.3.1	Other exceptions that should be considered.....	7
5.4	Process	7
5.5	Effect of positioning	8
5.6	Potential Issues	8
5.6.1	Temperature after birth	8
5.6.2	Jaundice.....	8
5.6.3	Polycythaemia.....	9
5.6.4	Cord blood gas analysis.....	9
6.0	Issues Arising at Delivery.....	9
6.1	Potentially Compromised Babies	9
6.3	Maternal Compromise	10
6.3	Umbilical Cord / placental issues	10
7.0	Cord Milking.....	11
8.0	Appendices	12
	Appendix 1 Example guidance for OCM at Caesarean Section	12
	Appendix 2 Example Guidance for OCM at Vaginal Delivery	14
	Appendix 3 Example Positioning Diagram for Cord Intact Stabilisation at Caesarean Section	16
	Appendix 4 Example Positioning Diagram for Cord Intact Stabilisation at Vaginal Delivery	17
	Appendix 5 Example OCM Flowchart: Preterm Delivery	18
	Appendix 6 Traffic Light System for OCM.....	19
	Appendix 7 Parents' Information Leaflet	20

1.0 Introduction

Umbilical cord clamping is a procedure performed at every birth. There is considerable evidence to show that there are significant benefits to optimally timing the clamping of the umbilical cord for preterm and term infants, allowing extra blood to be transferred from the placenta to the baby. The cord should be left intact for a minimum of 1 minute¹ and a maximum of 3-5 minutes for stable, term babies.

Optimal cord management (OCM) has been shown to improve neonatal outcomes by reducing mortality particularly in preterm babies. Recent meta-analysis² including 18 studies of >2800 babies have shown that leaving the cord intact for over 30 seconds, results in a 28% risk reduction in mortality for preterm babies < 32 weeks when compared to immediate cord clamping. OCM also provides better cardiovascular stability, improved blood pressures and reduces the need for packed cell transfusions by 10%^{2,3,4}. It has also been found to reduce the incidence of intraventricular haemorrhage (IVH)³, periventricular leukomalacia³, late onset sepsis³, as well as providing higher level of iron stores at 4-6 months of age.

This guideline applies to all births (vaginal and caesarean) of babies at **all** viable gestations. The aim of this guideline is to provide an evidence-based approach to enhanced placental transfusion, and a consistency of practice.

2.0 Aim of Guideline

Optimal cord management is recommended by the World Health Organisation (WHO)^{5,6}, the National Institute of Health and Care Excellence (NICE)⁷, the European Resuscitation Council⁸ and the Royal College of Obstetricians and Gynaecologists⁹. OCM is also included in the BAPM perinatal optimisation package of care for preterm babies in the UK which seeks to reduce neonatal morbidity and mortality by 50% by 2025¹⁰. Units are benchmarked for OCM as part of the National Neonatal Audit Programme (NNAP)¹¹. This guideline will explain how to perform OCM, which babies this is suitable for and when it is contraindicated.

3.0 Scope of Guidelines

The guideline applies to all neonates who are born in neonatal units and maternity units covered by Thames Valley & Wessex Neonatal ODN. This includes the following hospitals:

Thames Valley		
TRUST	Hospital	Designation
Oxford University Hospitals NHS Foundation Trust	- John Radcliffe Hospital, Oxford	NICU
Buckinghamshire Healthcare NHS Trust	- Stoke Mandeville Hospital, Aylesbury	LNU
Frimley Health NHS Foundation Trust	- Wexham Park Hospital, Slough	LNU
Milton Keynes University Hospital NHS Foundation Trust	- Milton Keynes General Hospital	LNU
Royal Berkshire NHS Foundation Trust	- Reading	LNU

Wessex		
TRUST	Hospital	Designation
University Hospital Southampton NHS Foundation Trust	- Princess Anne Hospital	NICU
Portsmouth Hospitals University NHS Trust	- Queen Alexandra Hospital	NICU
Dorset County Hospital NHS Foundation Trust	- Dorset County Hospital, Dorchester	SCU
Hampshire Hospitals NHS Foundation Trust	- Basingstoke and North Hampshire Hospital	LNU

Hampshire Hospitals NHS Foundation Trust	- Royal Hampshire County Hospital, Winchester	LNU
Isle of Wight NHS Trust	- St Mary's Hospital	SCU
University Hospitals Dorset NHS Foundation Trust	- Poole Hospital	LNU
Salisbury NHS Foundation Trust	- Salisbury District Hospital	LNU
University Hospitals Sussex NHS Foundation Trust	- St Richard's Hospital, Chichester	SCU

4.0 Definitions

- The recommendation for optimal cord management is to not clamp the cord until at least 1 minute after birth (Previously called deferred or delayed cord clamping)¹.
- Immediate cord clamping (ICC) is clamping the cord within 30 seconds of birth of the baby.
- Physiological based cord clamping is where the cord is not clamped until the baby has aerated their lungs and has a stable heart rate. It is not defined by a timeframe but by clinical presentation¹⁰.
- *Wait for white* is when clamping is deferred until the cord goes white and stops pulsating (therefore blood is no longer being transferred to baby via the cord).
- A Transwarmer™ is a gel filled, disposable mattress that provides up to 2 hours of warming.
- Neohelp™ is a sterile thermal heat regulation suit for premature and low birth weight babies to prevent heat loss. Used in babies up to 2.5kgs.
- High-flow delivery system / Vapotherm™ are non-invasive respiratory support that delivers warmed humidified gases to babies.
- Lifestart™ is a neonatal bedside resuscitation unit that has been specifically designed to aid the implementation of OCM. It is a mobile unit with height adjustable platform, with a heated mattress and equipment to enable provision of airway support including positive pressure and suction. Other brands such as Concord, Nooma, and INSPIRE also market similar bedside resuscitaires for newborn use.

5.0 Guideline Framework

5.1 How does OCM work?

At birth, the umbilical circulation slows and pulmonary vascular resistance falls, rapidly increasing pulmonary blood flow. This is the beginning of the transition from the fetal to the neonatal circulation. Continued flow in the umbilical vein and arteries at birth may be part of the physiological mechanisms assisting the baby as it makes this transition. After birth, if the cord remains intact, blood flow from the placenta to the baby continues for a few minutes. The additional blood volume transferred to the baby during this time is known as placental transfusion. Optimal cord management (OCM) is when we deliberately leave the cord intact for a period after birth, to allow this process to occur.

In term babies, postnatal placental transfusion provides an additional 80–100 mls of blood which is transferred in 2-5 minutes. Preterm infants can also expect to receive additional blood volume when leaving the cord intact for 1 minute.

OCM does not interfere with the management of the third stage of labour or operative deliveries and uterotonic agents can be given.

OCM should be the standard of care in all eligible babies with a few potential exceptions detailed below.

5.2 Benefits of OCM

5.2.1 Stability during transition

When a baby takes the first breath, the blood vessels in the lungs open and fill with blood. Blood moves from the systemic circulation to fill these vessels. If the cord is clamped immediately, the extra blood needed for the lungs is removed from the systemic circulation which causes a sudden drop in blood pressure. If the lung vessels open when the cord is intact (during OCM), the systemic circulation is re-filled by extra blood from the placenta. Therefore, there is a lesser drop in blood pressure and more stability during transition from the foetal circulation to the neonatal circulation. Most healthy babies at term adapt without major consequences and can cope with this drop in blood pressure during immediate cord clamping. However, babies born prematurely and babies with other issues (e.g., cardiac abnormalities or sepsis) may be less able to cope – and therefore benefit from the improved stability provided by the additional blood volume delivered during OCM.

5.2.2 Reduction in mortality

In preterm infants, OCM reduces death in preterm babies by nearly a third. A meta-analysis in 2017, showed that OCM is associated with lower in-hospital mortality for premature babies <37 weeks². This effect is more dramatic in <28 weeks' gestation with a “Number needed to treat” of 20. The number of babies needing to receive OCM to prevent a single death is 30-50 overall¹⁰.

5.2.3 Iron Stores

OCM increases the amount of iron transferred to the baby by 20–30 mg/kg. This amount is sufficient for up to 3 months. For preterm babies this means they are less likely to need blood transfusions³. Iron is essential for brain development.

Although iron deficiency is less of a problem in the developed world (with adequate maternal nutrition), iron deficiency in the first few months of life is associated with neuro-developmental delay, which may be irreversible and babies with better iron stores seem to have higher scores on neuro-developmental tests, up to 2 years of age.

5.2.4 Other benefits for preterm infants

- Reduced incidence of IVH and periventricular leukomalacia³, therefore leading to better neurodevelopmental outcomes³
- Lower risks of necrotizing enterocolitis as blood supply to the gut is improved
- Reduced rates of late onset sepsis³

5.3 Contra-Indications

Every effort should be made to provide OCM in all deliveries unless: -

- There is a need for maternal resuscitation in the face of massive, acute haemorrhage.
- Ruptured vasa praevia, snapped cord or other trauma to the cord vessels which will result in haemorrhage from the baby
- The baby has no heartbeat or has a heartbeat that is slow and not improving, and there is no facility to provide early newborn life support with the cord intact.
- Persons with parental responsibility have been advised re benefits and potential issues and decline OCM (*document in notes*)

5.3.1 Other exceptions that should be considered

5.3.1.1 Complete placental abruption

Where the placenta is delivered at the same time as the baby, it could be held above the baby, with gentle application of pressure to the placenta, and then clamped at 60 seconds before the placenta is lowered. Gentle umbilical cord milking may be considered in this situation if units practice this and the baby is at least 28 weeks' gestation at birth¹

5.3.1.2 Short cord length

A short cord length might interfere with the management of the mother or baby but can usually be addressed with optimal positioning of for instance a sterile, draped transwarmerTM, a bedside resuscitaire, or by the delivering professional holding the baby at or below the level of the placenta if resuscitation is not required during the OCM.

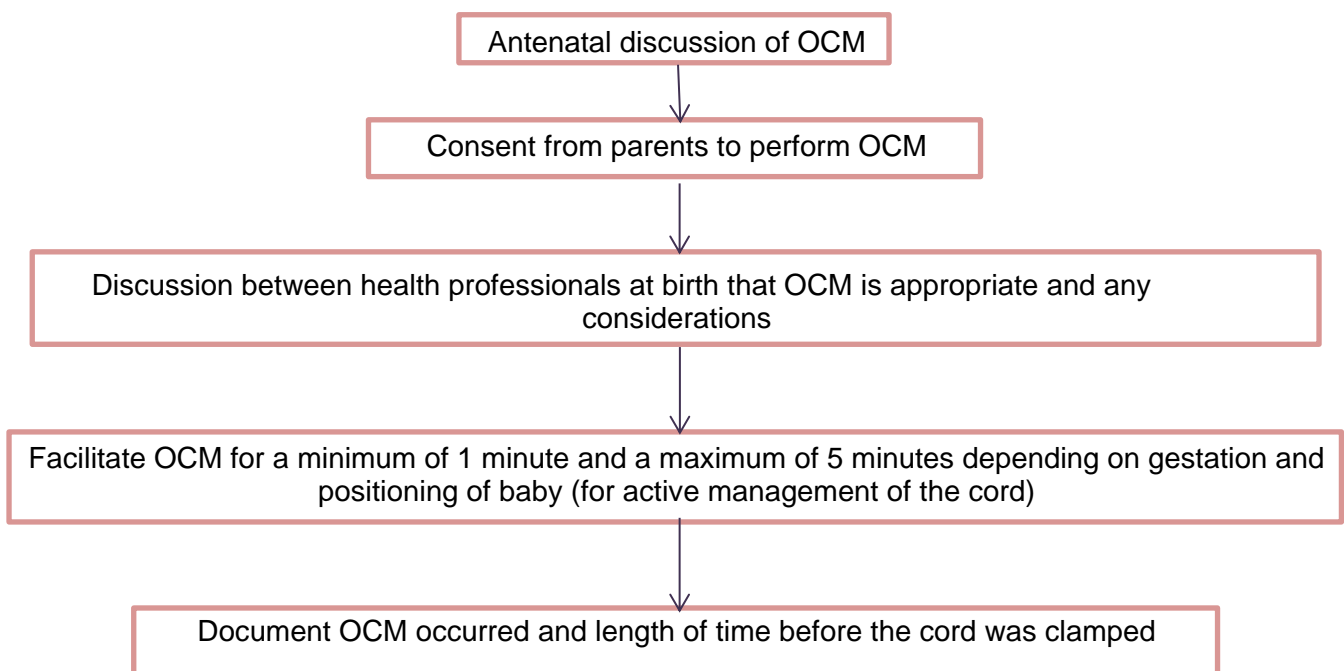
5.3.1.3 Multiple births

Studies of multiple births have demonstrated feasibility of providing OCM to twins and triplets. It has also been shown that OCM is safe in monochorionic twins unless there is significant concern about twin-to-twin transfusion.

5.3.1.4 Blood Borne Infections

Maternal Infectious Disease (HIV, Hepatitis) are not contraindications to OCM providing the cord, placenta and skin are intact. Any disruption of placental or cord integrity should lead to immediate clamping in all cases, irrespective of the presence of viral infection¹². This is supported by extensive research and the WHO and there is no evidence that the risk of viral transmission is increased by OCM. The risks are even lower in treated populations with low viral loads. However, if there is concern about transmission risk being especially high, it is acceptable to make an individualised plan, but this should be documented clearly in the maternity/ neonatal notes.

5.4 Process



Example of guidance for a Caesarean Section and a Vaginal Birth can be found in Appendix 1 and 2.

An example of professional positioning for these modes of delivery can be found in Appendix 3 and 4.

An example flowchart for a preterm baby can be found in Appendix 5.

An example of a parent information leaflet on OCM can be found in Appendix 7.

5.5 Effect of positioning

The volume of placental transfusion is mainly determined by the baby starting to breathe (because this draws blood from the placenta into the pulmonary circulation), and the strength of uterine contractions after delivery. Placental transfusion will occur irrespective of position if the uterus is actively contracting (as this forces blood from the placenta to the baby) but the rate of transfer is slower if the blood must flow “uphill” i.e., if the baby is positioned above the level of the placenta. If this position is desired (e.g., in term babies during immediate skin to skin contact on mother's chest, or in water births), consider delaying for longer (up to 5 minutes) to allow sufficient time for full transfusion to occur.

If the baby is born by caesarean section, consider lowering the screen *instead of holding the baby up in the air*, or wait until OCM has finished and the cord has been clamped before raising the baby for parents to see.

All studies in preterm babies used positioning below the level of the placenta therefore this is the recommended position for all preterm babies who should be between the mother's legs, in vaginal deliveries or as low as possible within the operating field (or to the side by the mother's thigh) during caesarean deliveries.

Wherever the baby is positioned, an open airway should be maintained.

5.6 Potential Issues

5.6.1 Temperature after birth

OCM has not been shown to cause babies to become cold, as the baby is supplied with warm placental blood during the intact cord period. No differences in temperatures were found on meta-analysis when OCM was used³. However, attention to thermoregulation should still be a priority, and babies should be dried, and a hat applied in the usual manner for vaginal deliveries. Premature babies less than 32 weeks or babies less than 1.5kg should be birthed into a warmed room and into a plastic bag with a hat applied¹. Consider the use of a warming mattress (Transwarmer™/ bedside resuscitaire) or using the radiant heater on the standard resuscitaire if the environmental temperature is low.

For babies delivered by Caesarean Section, ensure that the amniotic sack is punctured away from the zone that will receive the baby to keep the zone dry. These babies should be dried with sterile swabs/ towels and wet swabs/ towels exchanged for dry. Babies less than 32 weeks should be placed into a sterile plastic bag such as Neohelp™ without drying. Consideration should be given to a heat source (e.g., a transwarmer™ wrapped in a sterile drape) / using the radiant heater on the standard resuscitaire, and the temperature of the theatre.

5.6.2 Jaundice

In some studies, OCM was associated with a small increased risk of jaundice². This is not enough to cause any increase in exchange transfusion rates and no morbidity from jaundice following OCM has been found.

Therefore, as phototherapy is safe and effective, the benefits of OCM outweigh the risk, even in conditions predisposing to jaundice such as Rhesus Disease.

5.6.3 Polycythaemia

Polycythaemia is a condition where the blood is too concentrated with red blood cells and is “thicker” and doesn’t flow easily, causing complications. It was thought that additional blood from the placenta may increase the risk of this condition. However, the extra blood received contains fluid (plasma) as well as red cells, OCM does not make the blood more “concentrated” and no increase in symptomatic polycythaemia (requiring intervention or causing morbidity) was found on meta-analysis². Therefore, the benefits of OCM outweigh the risks, even in conditions which pre-dispose to polycythaemia e.g., in infants of diabetic mothers or congenital cardiac disorders.

5.6.4 Cord blood gas analysis

For medico legal purposes it is important to document the time at which the cord was clamped because OCM can affect the measured values of cord blood acid-base parameters. OCM reduces pH and increases base deficit values in umbilical artery blood samples particularly, so cord gas values may reflect a worse picture than was present¹³ It is therefore best practice to collect the cord blood for analysis around the time of OCM, but at the very latest within 10 minutes of birth.

6.0 Issues Arising at Delivery

6.1 Potentially Compromised Babies

Some babies may be more at risk of being compromised at birth, either because of risk factors identified antenatally or due to complications during labour or birth. The principle of OCM and the benefits still apply to these babies, but caution must be taken not to delay resuscitation for those babies who require it.

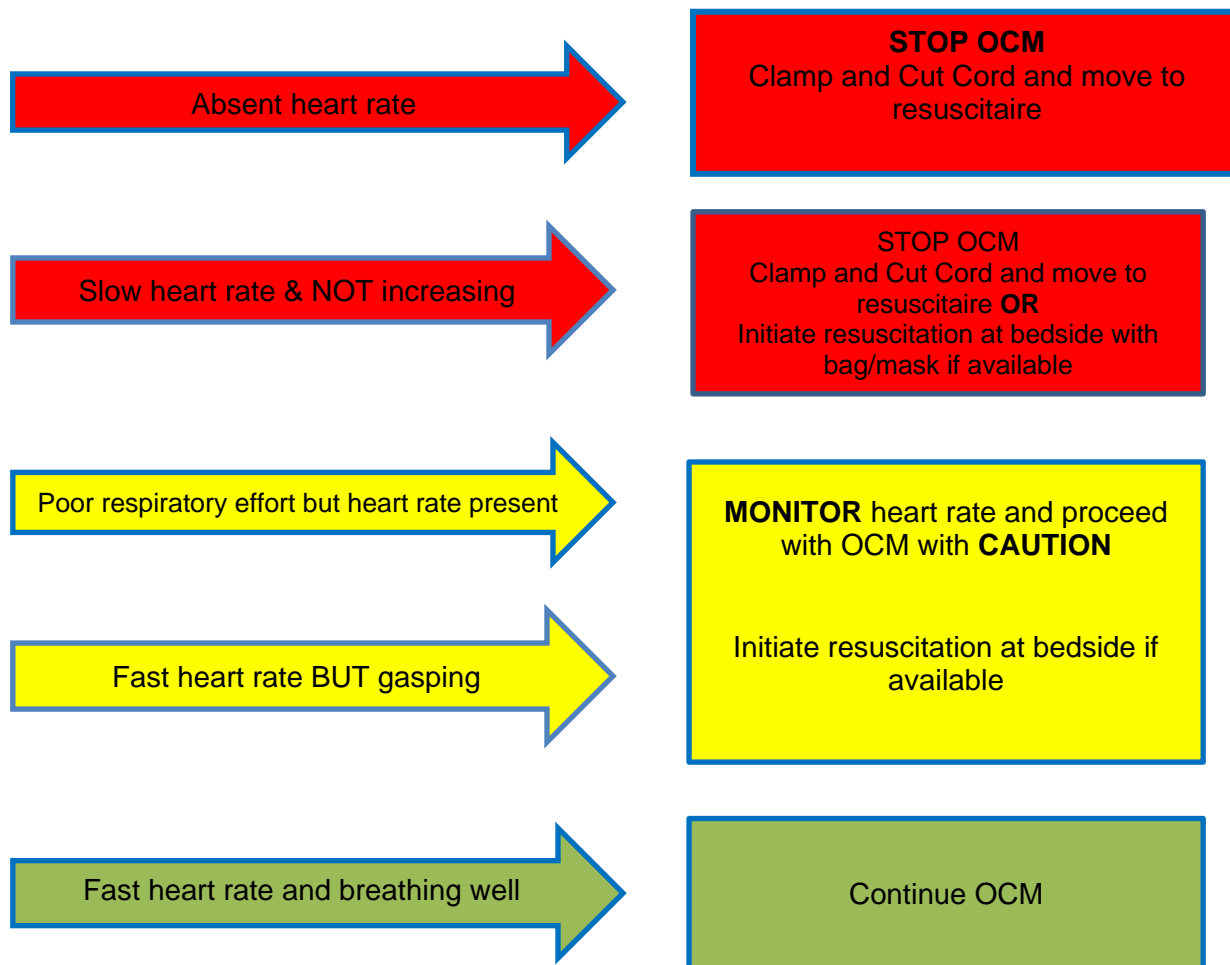
For all babies, the key principle is immediate assessment of the baby’s condition after birth, to decide whether proceeding with OCM is appropriate and possible. A baby can be visually and physically assessed during both a vaginal birth and a Caesarean birth (if the attending neonatal clinician has scrubbed in for the delivery). The neonatal clinician should ultimately decide the length of OCM provided there is no obstetric indication to abandon the OCM, so having direct access to the baby is important. The attending neonatal clinician, or in the case of a vaginal delivery the mother/ midwife, can provide stimulation in the first instance as required. It is useful to have a traffic light system approach.

An absent HR: If the baby’s heart rate is absent, the priority is resuscitation, therefore, the cord must be cut immediately and move to the resuscitaire for resuscitation.

A HR < 100 with no or little respiratory effort: If the baby is not crying, not breathing, has poor perfusion, is unresponsive or has a heart rate <100 bpm, then bag and mask ventilation can be administered, for instance from a nearby resuscitaire with an extended PEEP circuit; a neopuff™ circuit; or CPAP system on a bedside resuscitaire, if it is available. Otherwise, the OCM should be discontinued, and the baby transferred to resuscitaire for active management.

A good HR with no or little respiratory effort: If the baby is gasping/ starting to establish respirations, with a good heart rate, monitor continually to ensure they continue to improve during OCM. Consider the use of a high flow delivery system / VapoTherm™ for ongoing stabilisation in preterm babies during OCM, if the baby does not need any initial bag and mask ventilation.

Traffic Light System for OCM



(see also Appendix 6)

6.3 Maternal Compromise

If at any time there is concern about the mother, OCM should be abandoned to initiate emergency protocols without delay. This may be required in cases of Major Obstetric Haemorrhage. Good, closed loop communication between the obstetric and maternity teams is important as both will be focusing on their own patient.

6.3 Umbilical Cord / placental issues

If the integrity of the umbilical cord or placenta is an issue – cord “snapping” or bleeding from the cord or placenta, OCM will not be effective and should be abandoned. If the umbilical cord is too short to allow OCM or there are other technical difficulties with the cord and positioning (e.g. unable to perform OCM without compressing cord) then OCM may also be abandoned. Conditions such as placenta praevia or accreta, vasa praevia, or suspected placental abruption may increase the risk of maternal bleeding and potential major obstetric haemorrhage, therefore OCM should only occur if no evidence of maternal compromise is present. If the placenta has abrupted, OCM should be omitted.

7.0 Cord Milking

This approach involves actively pushing blood down the length of the exposed umbilical cord towards the baby. This is performed 3-5 times, (waiting for the cord to re-fill between each push) and takes approximately 30 seconds. This is an alternative method to enhance the volume of blood transferred to the baby in a shorter length of time. It may be of use when OCM needs to be unexpectedly interrupted. However, it should not be used as standard care with routine births. The use of a nearby standard resuscitaire with an extended PEEP circuit; a neopuff™ circuit; or CPAP system on a bedside resuscitaire, may negate the need for cord milking. **The Resus Council UK (2021) does not support cord milking under 28 weeks' gestation due to the increased risk of IVH¹.**

8.0 Appendices

Appendix 1 Example guidance for OCM at Caesarean Section

Equipment

Usual equipment for stabilisation of preterm infant including mobile high flow/ Vapotherm if used **PLUS**

- OCM C-Section Grab Bag (consider Preterm and Term version)
- Standard resuscitaire / bedside resuscitaire
- Neohelp™ (If less than 32/40¹)
- New NeoPuff™, tubing & face mask (appropriate for gestation)
- Sterile drape for standard resuscitaire/ bedside resuscitaire / transwarmer
- Stethoscope (plus sterile sheath)
- Transwarmer/ radiant heater/ heated mattress on bedside resuscitaire
- NLS algorithm displayed¹

Preparation

- Temperature of theatre increased- 25 degrees for extreme preterm delivery¹
- Theatre configured to standardised position for OCM (see appendix 3)
- Team Brief- plans for delivery discussed including OCM and any concerns
- Neonatal clinician scrubs
- Neonatal assistant checks resuscitaire (including gas supply/ radiant heater/ flow meter set to 8cms/ FiO2 set to current NLS Guidance¹/ suction available). Radiant heater activated.
- Neonatal assistant checks bedside resuscitaire if used (plugs in / green light on/ heated mattress activated if used/ timer turned on/ gas supply on/ flow meter set to 8cms/ FiO2 set to current NLS Guidance¹/ suction available). Heat source activated.
- Neonatal assistant checks high flow/ Vapotherm if available/ required. Gases warmed.
- Neonatal assistant activates transwarmer if being used independent of other equipment
- Scrubbed neonatal clinician takes sterile drape/ cover and applies to Resuscitaire/ bedside resuscitaire / transwarmer
- Neonatal assistant opens packaging (no touch technique) of Neopuff™, tubing, mask and Neohelp™ which are taken by scrubbed neonatal clinician
- Neonatal assistant connects NeoPuff™ tubing and neonatal clinician checks pressures

Position

- Position resuscitaire/ bedside resuscitaire (covered with sterile drape) as per standard positioning diagram (see Appendix 3). This equipment may need further adjusting for delivery in order to allow the obstetrician to access the uterus unhindered. Apply brake when in final position.
- Place the transwarmer (covered with sterile drape) between the mother's legs/ as low as possible (if used).
- Scrubbed neonatal clinician stands approximate to the mother's thigh on the side of the resuscitation/ stabilisation equipment.

Communication

- Continued communication as Caesarean Section continues in case of maternal compromise/ major obstetric haemorrhage / placental abruption/ neonatal concerns
- Alert Obstetric Surgeon that 1 minute (or the agreed timeframe) has passed and to clamp the cord
- Communication between neonatal team in regard to care of the baby such as increasing/ decreasing oxygen/ moving to resuscitaire

Delivery and Thermal Care

- Deliver baby and start the clock
- Scrubbed neonatal clinician places baby into Neohelp™ (if less than 32 weeks gestation¹), or onto dry, warm, sterile towels and gently dries the baby if a greater gestation. Substitute with further dry, warm, sterile towels periodically during optimal cord management. Ensure head is covered to prevent heat loss.
- Avoid touching the cord

Respiratory support

- Cord intact stabilisation via the resuscitaire with Neopuff™, extended tubing & face mask/ bedside resuscitaire with associated respiratory delivery system/ mobile high flow/ mobile Vapotherm as appropriate
- Scrubbed neonatal clinician follows standard NLS algorithm¹ for resuscitation / transition supported by assembled neonatal team

Cord Clamped

- After at least 60 seconds, cord is clamped by Obstetric Surgeon (unless heart rate is absent and immediate resuscitation is required prior to this)
- Baby moved to warmed resuscitaire
- Saturation probe and hat applied. Temperature checked. Baby is covered in warmed towels
- Stabilisation, thermal care and respiratory support continue as required.
- Update parents
- Transfer to Neonatal Unit (if required) after parental contact
- Complete documentation including length of OCM

Appendix 2 Example Guidance for OCM at Vaginal Delivery

Equipment

Usual equipment for stabilisation of preterm infant including mobile high flow/ Vapotherm if used **PLUS**

- OCM Grab Bag (consider Preterm and Term version)
- Standard Resuscitaire / bedside resuscitaire
- Plastic bag (If less than 32/40¹)
- NeoPuff™, tubing & face mask (appropriate for gestation)
- Stethoscope
- Transwarmer/ radiant heater/ heated mattress on bedside resuscitaire
- Warmed towels
- NLS algorithm displayed¹

Preparation

- Temperature of delivery room increased- 25 degrees for extreme preterm delivery ¹
- Delivery room configured to standardised position for OCM (see appendix 4)
- Team brief (including neonatal team if in attendance) - plans for delivery discussed including OCM and any concerns
- Resuscitaire is checked (including gas supply/ radiant heater/ flow meter set to 8cms/ FiO2 set to current NLS Guidance¹/ suction available). Radiant heater activated.
- If in attendance, the neonatal team checks bedside resuscitaire if used (plugs in / green light on/ heated mattress activated if used/ timer turned on/ gas supply on/ flow meter set to 8cms/ FiO2 set to current NLS Guidance¹/ suction available). Heat source activated.
- If in attendance, the neonatal team checks high flow/ Vapotherm if available/ required. Gases warmed.
- If in attendance, the neonatal team activates transwarmer if being used independent of other equipment

Position

- Position resuscitaire/ bedside resuscitaire as per standard positioning diagram (see Appendix 4). This equipment may need further adjusting for delivery in order to allow the obstetrician / midwifery staff to access the perineum / mother's legs unhindered. Apply brake when in final position.
- Place the transwarmer as low as possible but near to the vagina (if used).

Communication

- Continued communication as delivery continues in case of maternal compromise/ major obstetric haemorrhage / placental abruption/ neonatal concerns
- Alert Obstetrician that 1 minute (or the agreed timeframe) has passed and to clamp the cord
- Communication between neonatal team in regard to care of the baby if resuscitation/ stabilisation required.



Delivery
and
Thermal
Care

- Deliver baby and start the clock
- Neonatal / Maternity team place baby into plastic baby (if less than 32 weeks gestation¹), or onto dry, warm, towels and gently dries the baby if a greater gestation. Ensure head is covered to prevent heat loss/ hat applied. Term babies can be delivered on to their mother's chest and covered with dry, warm towels, but a longer period before clamping the cord will be required. Apply a hat.
- Avoid touching the cord



Respiratory
support

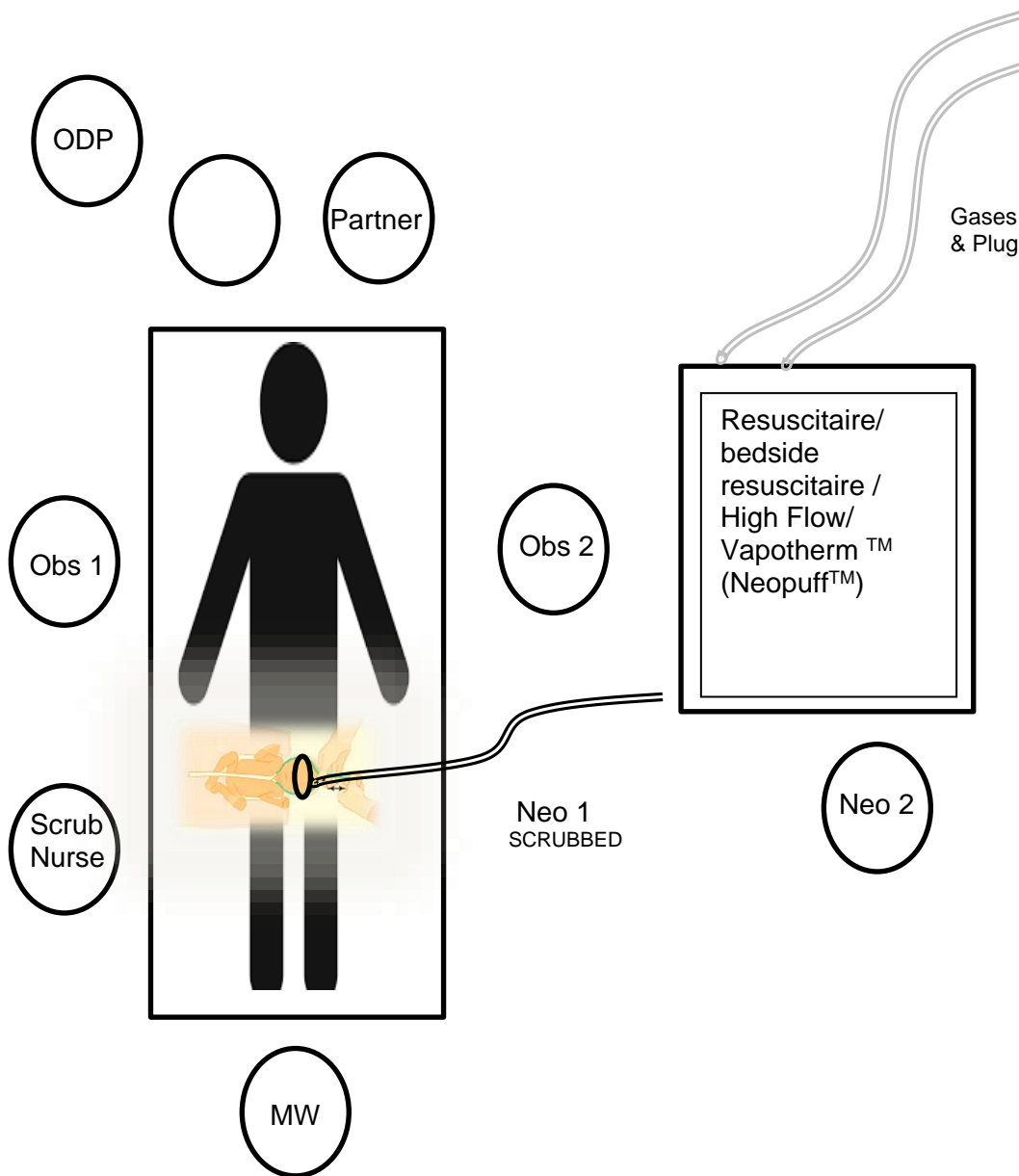
- Cord intact stabilisation via the resuscitaire with Neopuff™, extended tubing & face mask/ bedside resuscitaire with associated respiratory delivery system/ mobile high flow/ mobile Vapotherm as appropriate
- Neonatal team follow standard NLS algorithm¹ for resuscitation / transition.



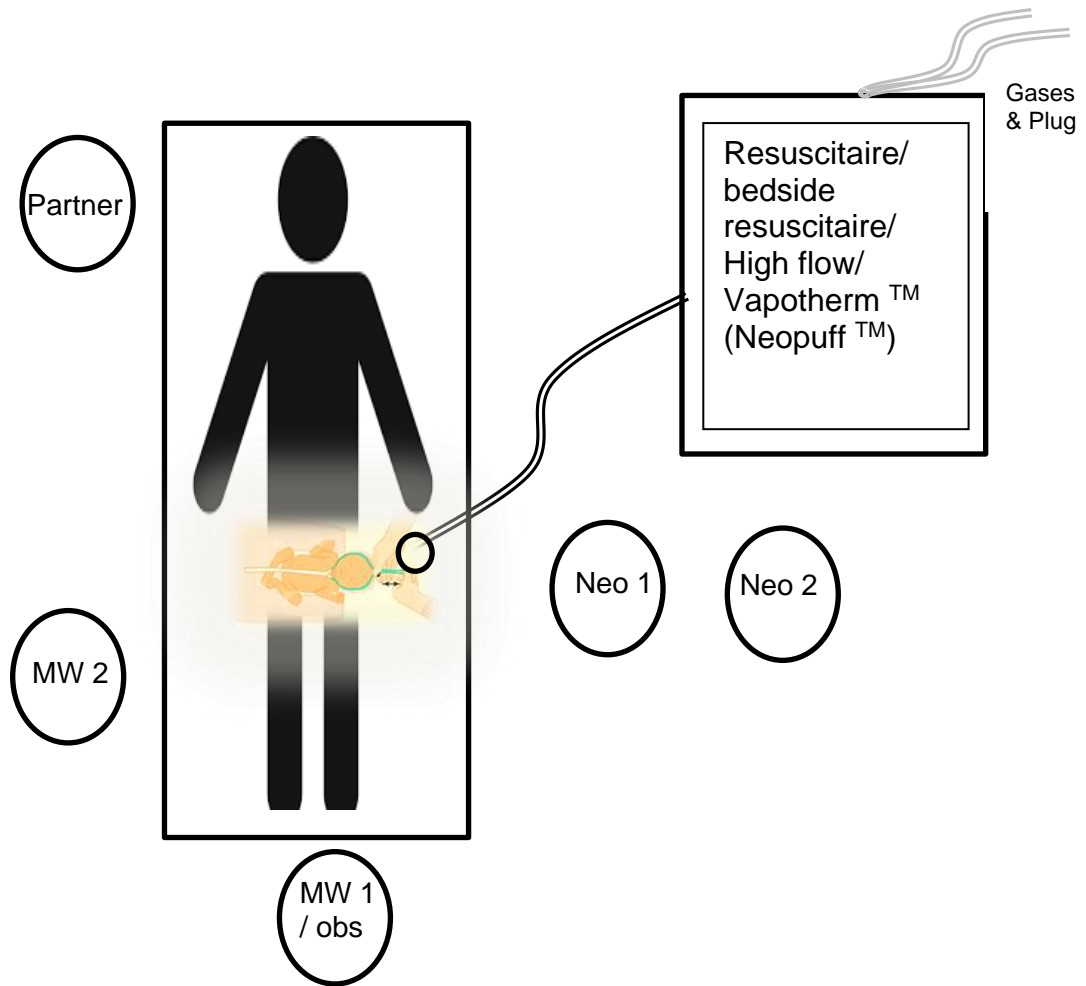
Cord
Clamped

- After at least 1 minute, cord is clamped by Obstetrician (unless heart rate is absent and immediate resuscitation is required prior to this)
- Baby moved to warmed resuscitaire for assessment if neonatal team in attendance.
- Saturation probe and hat applied if not previously done. Temperature checked. Baby is covered in warmed towels
- Stabilisation, thermal care and respiratory support continue as required.
- Update parents
- Transfer to Neonatal Unit (if required) after parental contact
- Complete documentation including length of OCM

Appendix 3 Example Positioning Diagram for Cord Intact Stabilisation at Caesarean Section

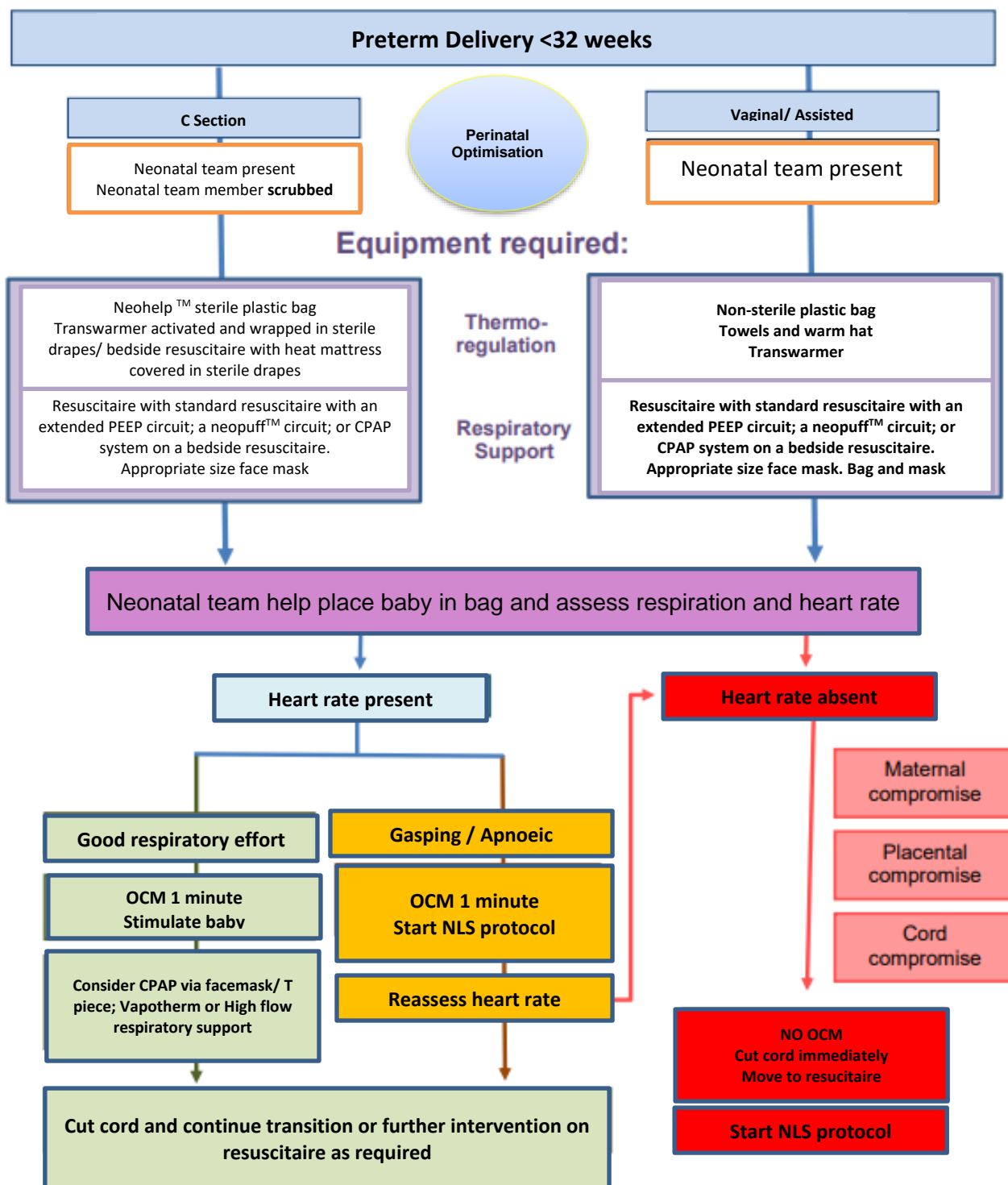


Appendix 4 Example Positioning Diagram for Cord Intact Stabilisation at Vaginal Delivery

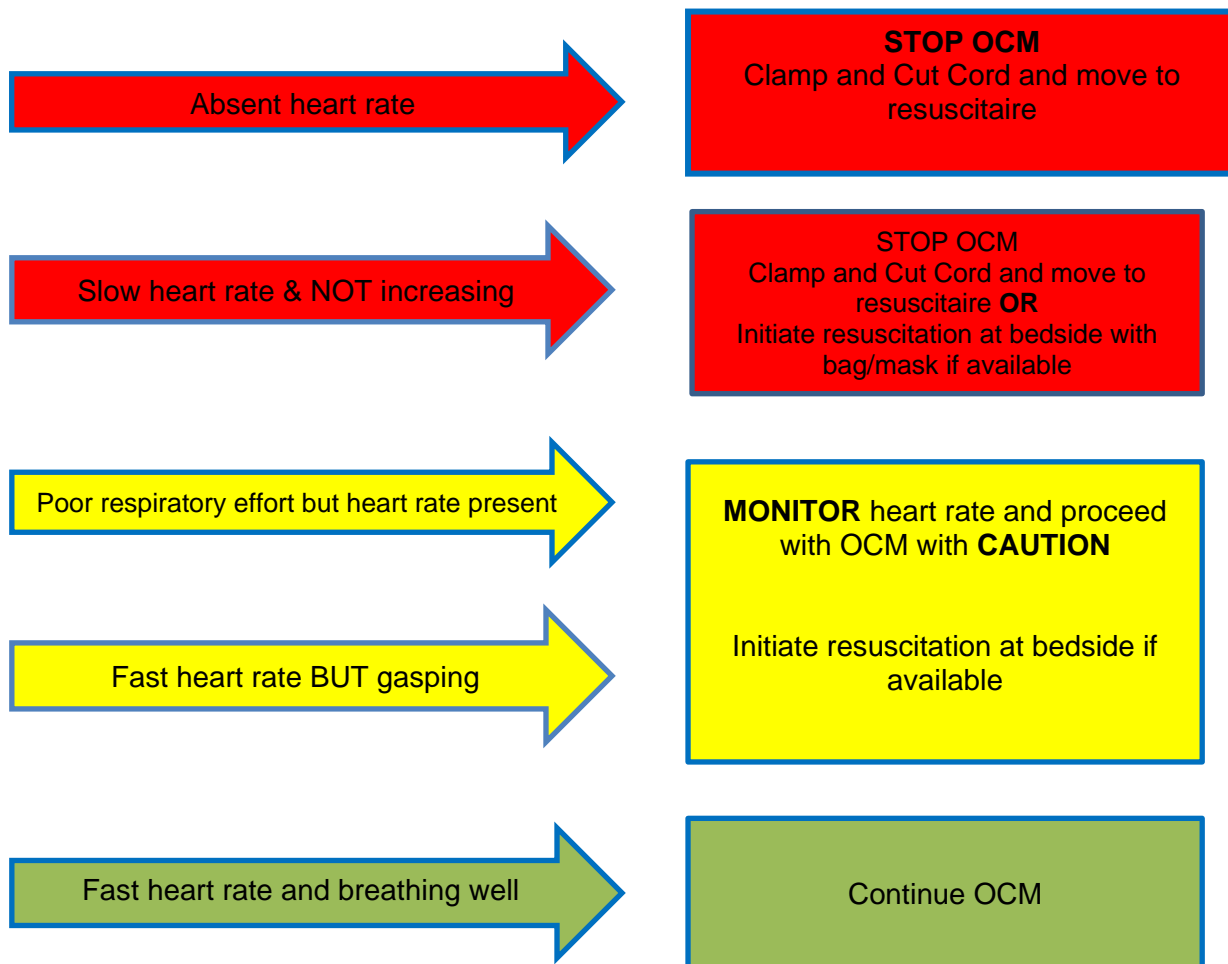


Appendix 5 Example OCM Flowchart: Preterm Delivery

Example OCM Flowchart: Preterm Delivery



Appendix 6 Traffic Light System for OCM



Optimal Cord Management

What is Optimal Cord Management?

After your baby is born their umbilical cord is clamped and cut, separating your baby from the placenta. There is evidence that babies benefit from waiting a few minutes before the cord is clamped, allowing time for extra blood to flow from the placenta to the baby. This is called Optimal Cord Management (OCM) and is advised for almost all babies.

This leaflet is intended to give you more information about OCM but if you have any questions or wish to discuss this, your midwife/ obstetrician will be happy to talk to you about it.

What are the benefits of OCM?

OCM allows extra blood to be transferred from the placenta. When your baby takes their first breaths, blood is moved to their lungs – the increased flow of blood from the placenta during OCM can help to keep your baby's blood pressure stable.

OCM also increases the amount of iron transferred to your baby. Iron is essential for brain development and evidence suggests that there is a link between better iron levels in babies and better results in brain development tests later in childhood.

What will happen after birth?

Once your baby is born, they will be dried, wrapped and checked for wellbeing. If there are no concerns, we will wait up to five minutes before clamping and cutting the cord. Your baby can still be placed skin to skin on your chest whilst receiving OCM and your birth partner will still be able to cut the cord once OCM has finished.

If you have a caesarean birth your baby will be held up for you to see them once the cord is clamped.

If I have the injection to deliver my placenta, can OCM still happen?

Yes, even with the injection it can take five to ten minutes before the placenta is delivered and during this time there can be a transfer of the blood with OCM.

What happens if my baby is premature or sick?

Premature babies can benefit from OCM even more than babies born around their due date. Babies who are born early have more fragile organs which can be damaged by low blood pressure. Improved blood pressure levels resulting from OCM can help protect delicate organs and reduce the risk of some complications which are more common in premature babies, such as problems with their gut or bleeding into the brain. Sick babies can also have problems with low blood pressure so will benefit from OCM in the same way. OCM can also mean premature or sick babies need fewer blood transfusions and less medicine to increase their blood pressure after birth. They also benefit from the increased iron stores associated with OCM.

We therefore perform OCM for all premature or sick babies when it is safe to do so. Premature and/or sick babies are placed on the bed between your legs. We will wait one minute before the cord is clamped and cut (same for vaginal and caesarean section). We may also use various techniques to keep very

premature babies warm at this time, including a heated mattress, putting a hat on baby, placing their body in a clear plastic bag to maintain their temperature, and providing some early breathing support.

If your baby's heart rate is slow or we have concerns about their breathing the cord will be clamped straight away so that your baby can be resuscitated.

Are there any risks?

OCM has been shown to be safe and effective and is recommended worldwide by the World Health Organisation (WHO). There is a small increased risk of jaundice in babies who have OCM, but this can be easily treated by placing the baby under blue light ("phototherapy"). There have also been concerns that babies can get cold during OCM; however, they are still getting warm blood from the placenta and will be dried and wrapped in warm dry towels while waiting for the cord to be clamped and cut.

Consent

We recommend OCM for all babies whenever it is safe to do so. However, if you would prefer not to have OCM, this is your decision. It is a good idea to talk to your midwife about the benefits and risks before deciding. If you decide you do not wish to consent to OCM, you can write this in your birth plan and tell the midwife caring for you about your choices.

Which babies can't have OCM?

Monochorionic twins (twins who share the same placenta) may not have OCM if there are concerns about a shared blood supply as there is a small risk that blood could move from one twin into the other at the time of delivery. If one twin has too much blood, OCM could make the situation worse for that baby.

OCM may not be possible if there is a problem with you and/or your baby at the time of birth. In these cases, the cord will be clamped immediately so that resuscitation or other medical treatment can start as soon as possible.

OCM will also not be possible if the placenta has separated early or the umbilical cord is too short.

If you have any questions, please ask one of the midwives or support workers.

Contact details

**Maternity Department
Number...**