

Optimal Cord Management at preterm deliveries

‘All babies born <34 weeks’ gestation should have their umbilical cord clamped at least 60 seconds or more after birth, except when there are specific documented maternal or fetal conditions to justify earlier clamping’ (BAPM guidance 2020¹)

Background

Deferred cord clamping (DCC) at preterm deliveries improves neonatal outcome ²⁻⁴

- Reduced rates of mortality
- Reduced rates of necrotising enterocolitis
- Reduced rates of intraventricular haemorrhage (all grades)
- Reduced need for packed cell transfusions
- Reduced need for blood pressure support

‘The number of preterm babies needing to receive DCC to prevent a death is around 30-50 overall and may be as low as 20 in the least mature babies’ (BAPM guidance 2020¹)

A systematic review carried out in 2018 provided high quality evidence that deferred cord clamping for at least 60 seconds reduces hospital mortality in pre-term babies with a number needed to treat of 33 (p=0.05). This review included 18 randomised controlled trials (RCT) of 2834 preterm infants (<37 weeks). Three of the RCT’s, looked at extreme preterm babies <28 weeks (996 infants). Results in this cohort showed an even more significant reduction in hospital mortality with a number needed to treat of 20 (p=0.02) ²

A Cochrane review in 2004, updated in 2012 and 2019 concluded that there is high quality evidence that deferred cord clamping for at least 30 secs in preterm infants (<37 weeks) reduces risk of death before discharge (RR = 0.73, 95% CI 0.54-0.98) and reduces the risk of intraventricular haemorrhages of any grade (RR 0.83, 95% CI 0.7-0.99) ³

Long term benefits of DCC in term babies include increases iron stores at 4-6 months and improves neurodevelopmental outcome. There is a small increase in the proportion of babies with jaundice needing phototherapy, but not needing significant interventions. ¹²

The International Liaison Committee for Resuscitation (ILCOR), European Resuscitation Council and Resuscitation Council (UK) have all recommended DCC for at least 1 minute in stable babies, but state that resuscitation should take priority in unstable babies. It is possible however to provide initial stabilisation of preterm infants with an intact cord ⁵. Based on current evidence, the World Health Organisation (WHO) recommends waiting 60 seconds before clamping the cord in preterm babies and clearly states that immediate umbilical cord clamping is generally contraindicated ⁶

Deferred cord clamping requires joint team working between midwifery, obstetrics, anaesthetists, theatre and neonatal staff.

Scope

This guideline is relevant to all staff caring for preterm babies <37 week across neonatal intensive care and maternity.

Purpose

This guideline aims to facilitate a common approach to the management of preterm babies at delivery. All preterm babies should have at least 1 minute of deferred cord clamping unless contraindicated. At times deviation from the guideline may be necessary. This should be documented and is the responsibility of the attending neonatal doctor, obstetrician and midwife caring for the baby.

Contraindications

- The need for maternal resuscitation in the face of massive, acute haemorrhage
- A ruptured vasa praevia, snapped cord or other trauma to the cord vessels which will result in haemorrhage from the baby
- Known severe fetal hypervolaemia, e.g., hydrops fetalis

Special circumstances

- Complete placental abruption – consider holding placenta above baby and apply gentle pressure to placenta to aid placental transfusion
- Short cord length – should not prohibit DCC but needs optimal positioning
- Multiple pregnancies – does not prohibit DCC unless next baby imminently delivering
- MCMA twins with evidence of TTTS requires individual case discussion.
- Whilst maternal general anaesthesia (GA) is not a contraindication to DCC, caution should be exercised as the baby is likely to become apnoeic and may need continued respiratory support until GA effects wear off.

Cord milking is not currently recommended in babies < 28 weeks.¹⁴ There are very few situations where 1 minute of delayed cord clamping cannot be achieved.

Suggested approaches to deferred cord clamping at preterm deliveries

(See appendix 1 - flow diagram)

1. Standard resuscitaire in standard position (all <37 weeks) – Baby delivered onto mother's bed, continual assessment, open airway, keep warm (plastic bag or plastic suit if ≤ 32 weeks) and gentle stimulation. (*see appendix 2 & 3*)
2. Standard resuscitaire moved close to mum's bedside (≤ 32 weeks) Neopuff reaching mother perineum – baby delivered onto mother's bed, place in plastic bag or plastic suit, continual assessment, open airway, keep warm, gentle stimulation and provide respiratory support with Neopuff system (*see appendix 2 & 3*)
3. LifeStart Trolley available (≤ 32 weeks) - baby delivered onto LifeStart platform, place in plastic bag or plastic suit, open airway, keep warm, gentle stimulation and provide

respiratory support given via LifeStart's resuscitation positive airway pressure (rPAP) unit. (see appendix 4 & 5)

It is important to remember that when the placenta is intact, the baby will continue to receive oxygenated blood via the umbilical cord. If the baby does not cry immediately this is normal, support the baby's transition by opening the airway, placing the head in the neutral position, keeping baby warm and gentle stimulation. Over 90% of preterm babies will start to breathe during optimal cord management with or without gentle stimulation ^{7, 8}

Physiological based cord clamping whereby the lungs are aerated prior to cutting the cord allows for a more stable cardiovascular and respiratory transition from fluid filled lungs and placental oxygen supply to the aerated lungs supplying oxygen to the baby. Lamb studies have shown delaying clamping the cord until after ventilation of the lungs leads to increased pulmonary blood-flow, more stable arterial pressure and stable heart rate. ⁹ The Newborn Life Support guidelines updated in 2021 recommend cord clamping should ideally take place after the lungs are aerated. ¹⁴

The LifeStart Trolley

The LifeStart by Inspiration Healthcare is currently the only bedside resuscitation unit available in the UK. It has been specifically designed to aid in implementation of DCC in preterm babies who are anticipated to need respiratory support at birth. It is a mobile unit with a heated mattress with equipment to provide respiratory support. While the LifeStart is not essential to provide DCC, it has been shown to be a safe, feasible way of providing stabilisation of the neonate with an intact cord. ⁵

The LifeStart is an option for consideration but is not an absolute requirement to delivering effective delayed cord clamping.

At all preterm deliveries pause and delay CLAMPing the cord

Communicate – parents, midwife, obstetrician

Logistics – prepare equipment, decide on position of staff & equipment

Airway management / Respiratory support (Neopuff / rPAP)

Meticulous temperature control - environment, hat, warmed towels/ plastic bag

Pause – 60 seconds of placental transfusion and then clam

This guideline will be subject to regular review to ensure on-going evidence-based practice.

This guideline does not cover term babies, but deferred cord clamping should also be practised as a standard in this group.

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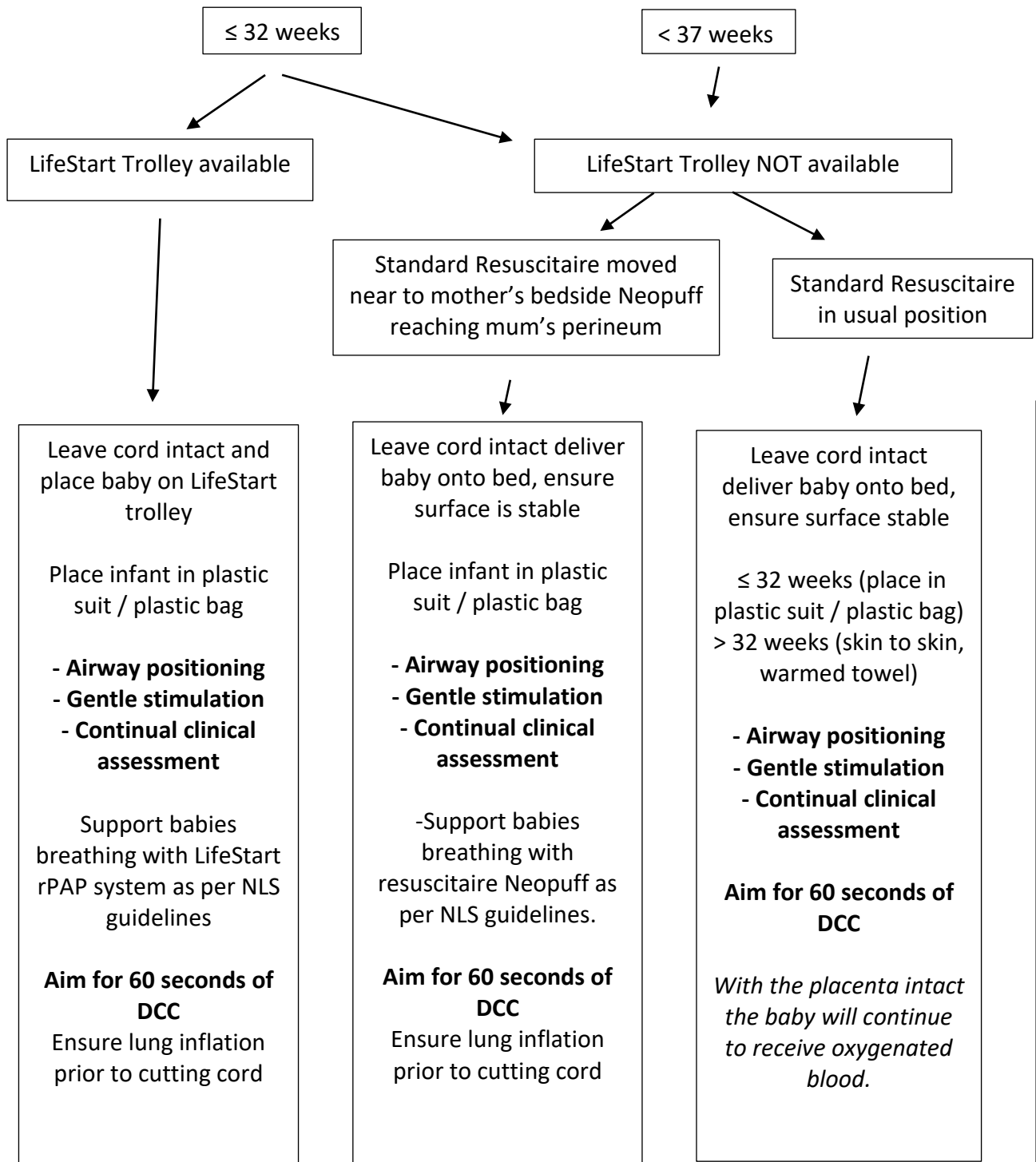
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Optimal Cord Management at preterm deliveries; East of England Guidelines



60 seconds

At any point if there are significant concerns with baby / mother consider cutting the cord early

Lung inflation prior to cutting the cord aids a smoother physiological transition from the foetus to air breathing baby

Effective lung inflation = Strong cry / PEEP to support spontaneous respiratory effort / effective inflation breaths when no respiratory effort

Effective lung inflation may not be possible before cutting the cord