

# UMBILICAL CORD CLAMPING

This guideline refers to umbilical cord clamping in term infants and preterm infants

## DEFINITIONS

**Immediate (early) cord clamping (ICC):** the cord is clamped within 60 seconds of birth, usually immediately after birth.

**Deferred (delayed) cord clamping (DCC):** the cord is clamped more than 60 seconds after the birth

## BACKGROUND

The question of when to clamp the umbilical cord after birth has received renewed attention in recent years. Compelling, high quality evidence has been published supporting the practice of waiting for placental perfusion which aids the newborn's physiological transition to extra-uterine life<sup>(2,3,4,5,6,7,20)</sup>.

Newborn blood volume is directly impacted by the timing of cord clamping. Blood volume after ICC may be considered as a deficit of 25-40% of the newborn's total blood volume<sup>(2,9)</sup>. There is a higher prevalence of iron deficiency at 4 months of age following ICC<sup>(6)</sup>. Higher neonatal iron status may improve child neurodevelopment<sup>(11,12)</sup>.

After DCC there is a significantly higher haemoglobin concentration at 24 to 48 hours<sup>(5)</sup>. DCC improves circulatory stability and the transition to extra-uterine life, especially when the cord is left intact until after the onset of respirations<sup>(13, 21)</sup>. The risks associated with DCC relate to a slightly increased incidence of jaundice requiring phototherapy in some studies<sup>(5, 20)</sup>. In a 2017 meta-analysis of cord clamping for preterm babies, DCC did not affect neonatal temperature on admission to NICU<sup>(20)</sup>.

**DCC is achievable at most births, including instrumental and caesarean births, with either active or physiological third stages, and does not increase the risk of postpartum haemorrhage (PPH)<sup>(5, 20)</sup>.**

## MANAGEMENT

- Recommend that in most circumstances DCC will occur
- The first 60 seconds of neonatal assessment, drying, warmth, airway positioning and stimulation is undertaken with cord intact.
- **Do not clamp the cord earlier than 1 minute from the birth of the baby unless there is concern about the integrity of the cord or the baby has a heart rate below 100 beats per minute that is not getting faster<sup>(22)</sup>.**

If the heart rate is below 100bpm at any time and not increasing, or the baby has not established regular respirations by 90 seconds, clamp and cut the cord and transfer the baby to the resuscitaire.

- **Spontaneous vaginal birth or instrumental birth:** The baby is passed directly to the mother for skin-to-skin, initially on her abdomen.
- **Caesarean section:** The baby is laid on the mother's legs, dried and covered with a warmed, sterile towel. The scrubbed midwife is responsible for the neonatal assessment, drying, warmth, airway positioning and stimulation. The cord is clamped at 2 minutes for term babies, 1 minute for preterm.
- **Gestational age under 30 weeks or estimated fetal weight under 1500gms:** Baby is placed in Neohelp plastic bag and the bag sealed closed around the cord. DCC occurs for 60 seconds unless there are concerns about the condition of the baby.
- **Cord milking** <sup>(17)</sup> is not sufficiently well researched to be introduced at this stage of the guideline. This will be open to review as more evidence becomes available.
- **Multiple births:** There is insufficient evidence on the timing of cord clamping for multiple births at any gestation. Because ICC is associated with significantly increased risks of major prematurity-related morbidity, it may be appropriate to facilitate DCC in some circumstances. The following guidance is suggested:
  - DCDA twins: DCC can be performed in the same way as for singleton preterm babies.
  - MCDA twins: There is a 10-20% risk of acute twin-to-twin transfusion syndrome in labour. Therefore it may be more appropriate to clamp twin one's cord within 30 seconds of birth. It would be reasonable to perform DCC for twin two, according to the clinical situation.
  - MCMA twins: ICC is performed
  - Higher order multiples: ICC is performed

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## PLACENTAL BIRTH/THIRD STAGE

Deferred cord clamping is recommended with both active management of the third stage of labour and for physiological placental birth.

### Active management

- **Intramuscular uterotonic – administer as soon as possible within the first 3 minutes after the birth.** Clamp and cut the cord after 3 minutes and before 5 minutes in order to perform controlled cord traction. If the woman requests that the cord is clamped and cut later than 5 minutes, support her in her choice<sup>(22)</sup>.
- **Intravenous uterotonic (eg. at caesarean births)** – administer after the cord is clamped.
- **In all cases, if there is concern about PPH, administer uterotonic immediately.** Refer to CDHB guideline [Postpartum Haemorrhage](#) (GLM0021).

The effect on the neonate when uterotonics are given prior to the clamping of the cord is unknown<sup>(1)</sup>. A Cochrane review in 2010<sup>(23)</sup> found that routine administration of oxytocin with the anterior shoulder compared with use of oxytocin after delivery of the placenta did not have any influence on the amount of bleeding postpartum. However, more recent studies<sup>(24, 25)</sup> showed improved maternal haemoglobin levels where the uterotonic was given with the birth of the shoulders rather than after placental expulsion. In order to achieve a reduction in PPH and to reduce maternal morbidity it is

advised that uterotonics are given within the first three minutes of birth which may be before the cord is clamped and cut.

**Physiological placental birth:**

The cord is left unclamped until either pulsation ceases, or until the placenta is born<sup>(1)</sup>.

## **CORD BLOOD ANALYSIS**

When cord blood analysis is indicated, the cord is double clamped after placental perfusion, which is timed according to the wellbeing of the newborn as described in the resuscitation section. If the baby is well, the cord remains intact for 3 minutes. Take paired cord blood samples for lactates as a priority, and gases if possible as lactate deteriorates more slowly than cord blood pH and may give a more reliable indication of fetal compromise when deferred cord clamping is performed. Cord gases values begin to change following the onset of respirations so the timing of cord clamping must be documented when reporting values<sup>(16)</sup>.

**Paired** cord blood lactate and gas analysis is recommended in the following situations:

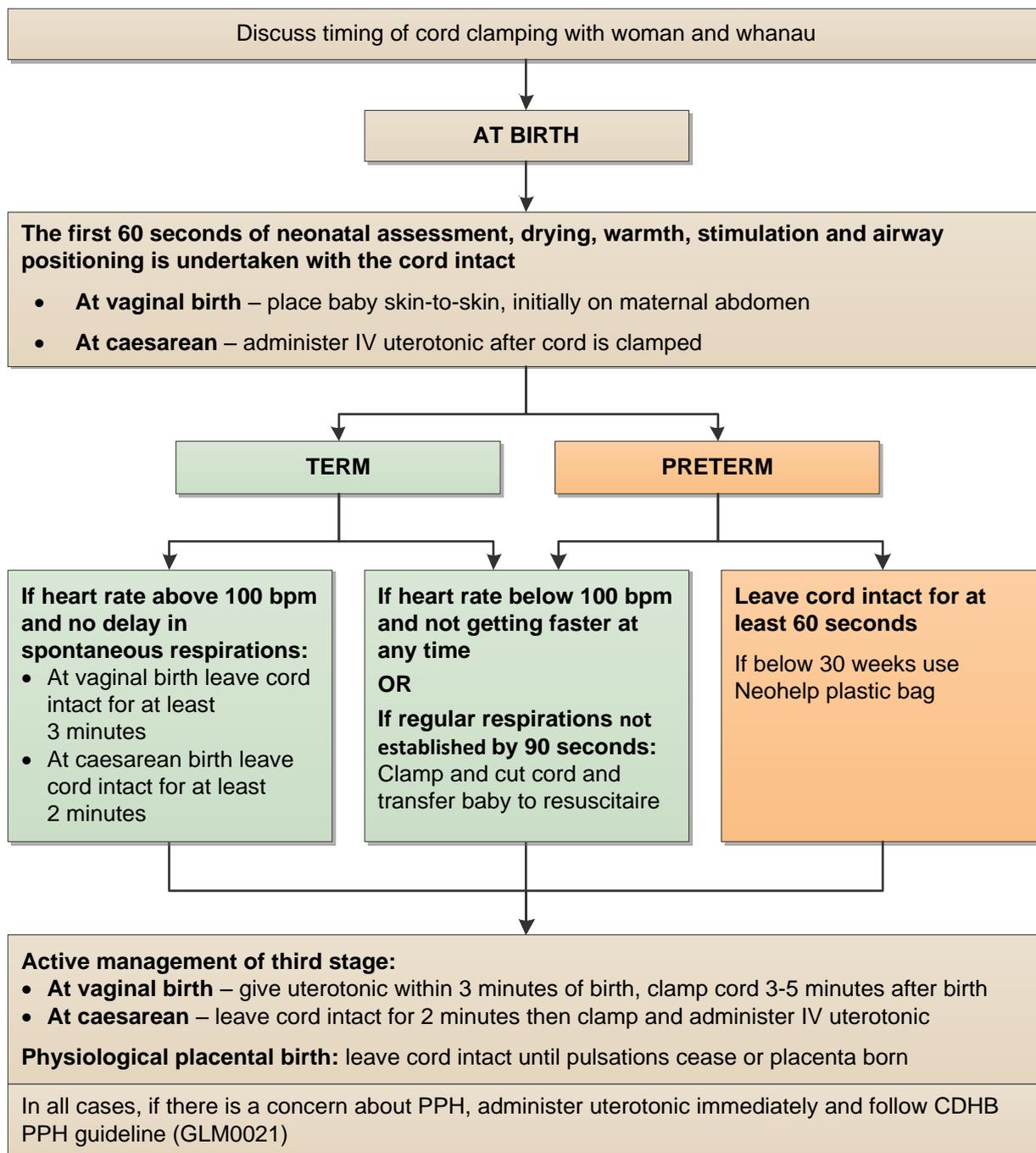
- When a fetal blood sample has been performed during labour (See CDHB Fetal Monitoring Guideline)
- Concern about severe intrauterine hypoxia – abnormal CTG which shows likelihood of significant fetal compromise
- Meconium-stained liquor (see CDHB Neonatal Handbook)
- If a baby requires active resuscitation with intermittent positive pressure ventilation (IPPV) and/or if Apgar score < 6 at 5 minutes (Neonatal Handbook)

See Appendix II for cord blood analysis procedure.

## **DOCUMENTATION**

Document the timing of cord clamping on the Newborn Record QMR0044.

**UMBILICAL CORD CLAMPING**



Document time of cord clamping on Newborn Record QMR0044

If cord blood sampling is indicated ensure:

- paired sample
- check lactates and pH
- document when cord was clamped
- document time sample taken
- test as soon as possible or if delay is unavoidable, cool sample and document when sample tested

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## APPENDIX

### TAKING PAIRED CORD GASES<sup>(18)</sup>

- Ensure cord has been double clamped
- Avoid bubbles in specimen
- Minimise exposure to air – a larger sample is ideal
- Roll syringe briskly to mix blood with heparin in syringe
- Process promptly – if you cannot process immediately, keep sample cool
- Do not dispose of syringe or cord until you are satisfied that the results are reliable
- Analyse within 10 minutes of birth of placenta or one hour if double clamped and refrigerated
- **Document the interval between the birth and cord clamping as this can affect the results of cord blood gas analysis**

**In all cases** it is important to document the interval between the birth and cord clamping as this can affect the results of cord blood gas analysis.<sup>(17)</sup> Blood left for prolonged periods either in cord or syringe will continue to metabolise and there will be a fall in pH value. This metabolism will be slowed at lower temperatures. If blood sample is exposed to air there may be a diffusion of blood gases and subsequent drop in pH value.

### TWO WAYS TO CHECK YOU HAVE A PAIRED SAMPLE

- Inspect syringe to see the samples are a different colour. Arterial blood is a deeper more bluey shade.
- Check to see difference in pH is 0.03 units or more. A small A-V difference probably means the same vessel has been sampled especially if other values are very similar too. Occasionally, there will be a true A-V difference of <0.03 units, however, a small difference should warn you that it is probably not a paired sample.

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Umbilical Cord Clamping for Term Infants  $\geq$  37 Weeks  
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