

UMBILICAL CORD CLAMPING FOR TERM INFANTS \geq 37 WEEKS

This guideline refers to umbilical cord clamping in term infants
(those \geq 37 weeks gestational age)

DEFINITION

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 remains unclamped for at least 3 minutes when the baby is well⁽¹⁾. For compromised babies who may require resuscitation, clamp and cut the cord at 60 seconds.

BACKGROUND

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

Newborn blood volume is directly impacted by the timing of cord clamping. It can be considered as an increase with DCC of 30% of the baby's blood volume at birth⁽⁵⁾, which equates to 21% of the infant's final blood volume (19ml/kg)⁽⁸⁾. Blood volume after ICC may be considered as a deficit of 25-40% of the newborn's total blood volume^(2,9) and there is a higher prevalence of iron deficiency at 4 months of age following ICC⁽⁶⁾. Iron deficiency alters metabolism and neurotransmission, myelination and gene and protein profiles, impacting negatively on developmental outcomes⁽¹⁰⁾.

Major benefits of DCC include a higher circulating blood volume during the first 24 hours of life, a significantly higher haemoglobin concentration at 24 to 48 hours⁽⁵⁾ and significantly higher iron stores which remain evident at 4⁽⁶⁾ and 6⁽¹²⁾ months of age. It has been argued that higher neonatal iron status improves child neurodevelopment^(11,12). DCC improves circulatory stability and the transition to extra-uterine life, especially when the cord is left intact until after the onset of respirations⁽¹³⁾. The risks associated with DCC relate to a slightly increased incidence of jaundice requiring phototherapy in some studies⁽⁵⁾.

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 post-partum haemorrhage (PPH)⁽⁵⁾.

MANAGEMENT

CORD CLAMPING

Term babies \geq 37 weeks gestation:

- Advise the woman that in most circumstances the cord will be left unclamped for **at least 3 minutes** after birth.
- Where neonatal resuscitation is required the lead health professional may consider it necessary to have the baby at the resuscitaire sooner⁽¹⁴⁾.
- **Spontaneous vaginal birth or instrumental birth:** The baby is passed directly to the mother for skin-to-skin. Care should be taken that the baby is not too high (no more than 30cm) above the placenta. The midwife calculates the APGAR at 1 minute.
- **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 initial assessment, drying, airway positioning and APGAR assessment at 1 minute. The cord is clamped at 2-3 minutes. The uterotonic is given after the cord is clamped unless there is an immediate concern about PPH.
- Care must be taken to dry the baby, replace the wet towel, and keep baby warm during the period of DCC.

PLACENTAL BIRTH/THIRD STAGE

Deferred cord clamping is recommended with both active management and physiological third stage.

During active management of the third stage, the uterotonic is given after the cord is clamped⁽¹⁾, unless there is an immediate concern about PPH.

During physiological third stage the cord is left unclamped until either pulsation ceases, or preferably until the placenta is born⁽¹⁾.

RESUSCITATION

The New Zealand Resuscitation Council (NZRC) recommends a delay of a minimum of one minute, OR until the cord stops pulsating, prior to clamping the umbilical cord⁽¹⁵⁾. **The first 60 seconds of neonatal assessment, drying, warmth and stimulation is best undertaken with cord intact.** If the baby appears to need resuscitation, clamp and cut the cord at 60 seconds to transfer the baby to the resuscitaire.

In cases of acute, profound hypoxia: clamp and cut the cord, transfer the baby to the resuscitaire immediately.

Cord milking⁽¹⁷⁾ is not sufficiently well researched to be introduced formally at this stage of the guideline. This will be open to review as more evidence becomes available.

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⁽¹⁶⁾.

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

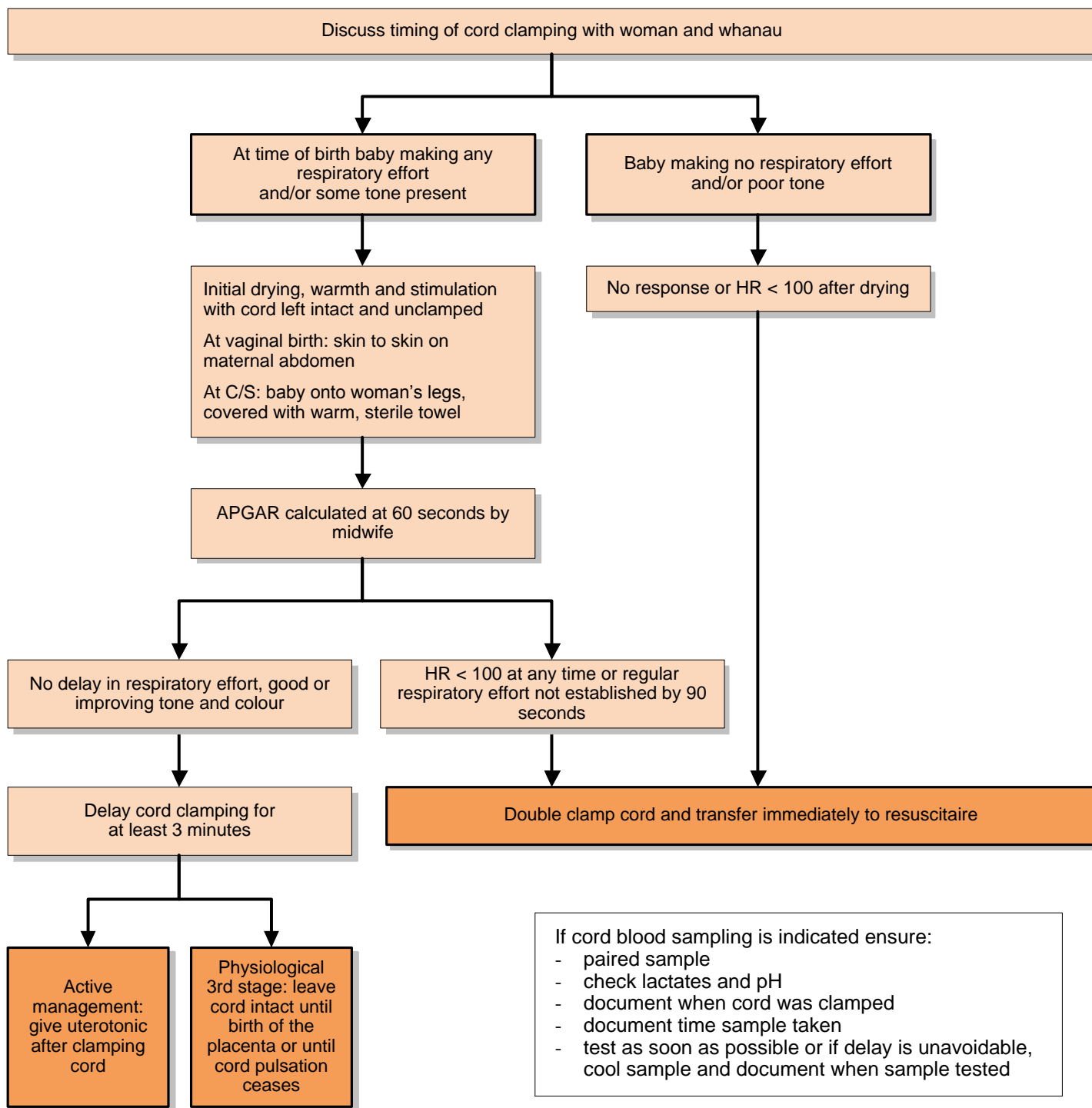
- When a fetal blood sample has been performed during labour (See CDHB Fetal Monitoring Guideline)
- Concern about severe intrauterine hypoxia – fetal distress on CTG
- Meconium-stained liquor (see CDHB Neonatal Handbook)
- If a baby requires active resuscitation with bag and mask ventilation and/or 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.

TIMING OF UMBILICAL CORD CLAMPING



At any stage if PPH occurs, clamp and cut the cord and administer uterotonic

Document time of cord clamping on Newborn Record QMR0044

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APPENDICES

TAKING PAIRED CORD GASES⁽¹⁸⁾

- 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.⁽¹⁷⁾ 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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