WHO recommendation on the timing of cord clamping after vaginal birth

22 September 2012

Recommendation

Late cord clamping (performed approximately 1 to 3 minutes after birth) is recommended for all births while initiating simultaneous essential newborn care. Early cord clamping (<1 minute after birth) is not recommended unless the neonate is asphyxiated and needs to be moved immediately for resuscitation.

(Strong recommendations, moderate-quality evidence)

Publication history

First published: September 2012

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Remarks

- The evidence base for recommendations for the timing of cord clamping includes both vaginal and caesarean births. The GDG considers this recommendation to be equally important for caesarean sections.
- Delayed clamping should be performed during the provision of essential newborn care. For essential newborn care and resuscitation, please refer to the WHO guidelines on neonatal resuscitation.
- The recommendations for the timing of cord clamping apply equally to preterm and term births. The GDG considers the benefits of delayed clamping for preterm infants to be particularly important.
- Some health professionals working in areas of high HIV prevalence have expressed concern regarding delayed cord clamping as part of management of the third stage of labour. These professionals are concerned that during placental separation, a partially detached placenta could be exposed to maternal blood and this could lead to a micro-transfusion of maternal blood to the baby. It has been demonstrated that the potential for maternal-to-child transmission of HIV can take place at three different points in time: micro-transfusions of maternal blood to the fetus during pregnancy (intra-uterine HIV transmission), exposure to maternal blood and vaginal secretions when the fetus passes through the birth canal in vaginal deliveries (intra-partum transmission), and during breastfeeding (postnatal infection). For this reason, the main intervention to reduce the maternal-to-child...
transmission is the reduction of maternal viral load through the use of antiretroviral drugs during pregnancy, childbirth and postnatal period. There is no evidence that delaying the cord clamping increases the possibility of HIV transmission from the mother to the newborn. Maternal blood percolates through the placental intervillous space throughout pregnancy with a relatively low risk of maternal fetal transmission before delivery. It is highly unlikely that separation of the placenta increases exposure to maternal blood, and is highly unlikely that it disrupts the fetal placental circulation (i.e. it is unlikely that during placenta separation the newborn circulation is exposed to maternal blood). Thus, the proven benefits of a 1 – 3 minute delay at least in clamping the cord outweigh the theoretical, and unproven, harms. Late cord clamping is recommended even among women living with HIV or women with unknown HIV status.

- Based on the most recent evidence, understanding of the contribution of each component of the active management of the third stage of labour package has evolved. The GDG considered that this package has a primary intervention: the use of an uterotonic. In the context of oxytocin use, CCT may add a small benefit, while uterine massage may add no benefit for the prevention of PPH. Early cord clamping is generally contraindicated.

### Background

Postpartum haemorrhage is defined as blood loss of 500ml or more within 24 hours after birth. PPH is the primary cause of nearly one-fifth of all maternal deaths globally. Most of these deaths occur during the first 24 hours after birth. The majority could be prevented through the use of prophylactic uterotonics during the third stage of labour, and by timely and appropriate management.

In the past, as part of an active management strategy, the umbilical cord has usually been clamped shortly following birth of the infant. However, more recent guidelines for management of the third stage of labour no longer recommend immediate cord clamping, and cord traction is regarded as optional and is only suggested when skilled staff are in attendance. (1)

### Methods

The recommendation was developed using standardized operating procedures in accordance with the process described in the “WHO handbook for guideline development”, based on the GRADE approach. (2,3) Outcomes used for this recommendation were the prioritized outcomes from the WHO recommendations on prevention and treatment of postpartum haemorrhage (2012).(4) Two systematic reviews provided evidence for this recommendation. (1,5) Data on relevant outcomes and comparisons were extracted.

WHO convened a Guideline Development Group (GDG) meeting in March 2012. This group of independent experts used the evidence profiles to assess evidence on effects on the pre-specified outcomes. GDG members discussed the balance between desirable and undesirable effects, overall quality of supporting evidence, values and preferences, magnitude of effect, balance of benefits versus disadvantages, resource usage, and feasibility, to formulate the recommendation. Remarks were added to clarify the recommendation, and aid implementation.

Further information on procedures for developing this recommendation are available [here](#).

### Recommendation question
For this recommendation, we aimed to answer the following question:

- For all women giving birth (P), does late cord clamping (I) compared to standard care (C) improve outcomes (O)?

**Evidence Summary**

One systematic review included 13 randomized controlled trials which investigated the effects of different policies for the timing of cord clamping at the delivery of the placenta at term (the sample size was 3600 mothers and their babies). Four of these (>2500 women) included PPH as an outcome. (1)

Early cord clamping was defined as the clamping of the umbilical cord at 5 seconds after birth in one trial (45 women), at 10 seconds after birth in three trials (980 women), and at 15, 20 and 30 seconds after birth in another three (276, 91, and 64 women respectively). In two trials (433 women), early cord clamping was defined as being “within the first minute” after birth. The remaining four trials defined early cord clamping as “following birth” (963 women), “as soon as possible” (554 women), and “as soon as the baby is born” (two trials, 209 women).

Late cord clamping was defined as the clamping of the umbilical cord at 1 minute after birth (one trial, 45 women), at 2 minutes after birth (one trial, 476 women), and at 1 and 3 minutes after birth (one trial, 276 women). Four trials (1397 women) defined “late cord clamping” as occurring at 3 minutes after birth. In four trials, early cord clamping was defined as “when the cord stopped pulsating” (two studies, 195 women), “when the cord stopped pulsating or at 3 or 5 minutes, whichever occur first” (two studies, 54 and 963 women, respectively). The remaining two studies conducted in India (209 women) defined late cord clamping as when doctors found evidence that the placenta had descended into the vagina.

- No significant differences were in rates of PPH (>500 ml or >1000 ml) between early and late cord clamping, and no significant effect was observed regarding the use of the manual removal of the placenta, the need for blood transfusion, or the length of the third stage of labour in the trials evaluating this outcome.

- There was a significant reduction in infant jaundice requiring phototherapy (RR 0.59; 95% CI 0.38 to 0.92) in infants who had their cord clamped early. However, the haemoglobin concentration among newborns who received early cord clamping was lower (three trials, 671 babies, WMD -2.17g/dl; 95% CI -4.06g/dl to -0.28g/dl). Their haemoglobin concentration at 24–48 hours of life (three trials, 770 babies, WMD -1.38, 95% CI -1.66 to -1.10), and birth weights were also reported to be lower (10 trials, 1854 babies, WMD -65.57 g, 95% CI -104.22 g to -26.92 g).

One systematic review of cord clamping in preterm infants was found. (5) This included 15 studies with a total sample size of 734 women and their babies. The definitions of early clamping included “clamping immediately after birth” (seven trials, 313 women), “immediate cord clamping <5 seconds” (two trials, 138 women), “between 5 and 10 seconds” (two trials, 104 women), “at 10 seconds” (one trial, 65 women) “at 20 seconds” (one trial, 40 women), “at less than 30 seconds” (one trial, 37 women) and “at the attendant’s discretion” (one trial, 65 women). Definitions of delayed clamping included: “30 seconds after birth” (three trials, 95 women), “between 30 and 45 seconds after birth” (three trials, 137 women), “30–90 seconds after birth” (one trial, 46 women), “45 seconds after birth” (one trial, 40 women), “60 seconds after birth” (two trials, 143 women), “at 60–90 seconds after birth” (one trial, 39 women), “at 60–120 seconds after birth” (one trial, 86 women), and “at >180 seconds after birth” (one trial, 37 women). In two trials, late cord clamping was defined as the “positioning the baby below the introitus or the c-section incision” (one trial, 65 women), and “the time to vigorously milk the cord two or three times” (one trial, 40 women). The position of the infant in these trials also varied, as well as the upper limit of gestational age at delivery (28–36 years).

- This systematic review did not report priority and important maternal outcomes.
The reported important benefits of delayed clamping included: less infant anaemia requiring transfusion (RR 0.61; 95% CI 0.46 to 0.81), less intraventricular haemorrhage (RR 0.59; 95% CI 0.41 to 0.85), less use of transfusion for low blood pressure (RR 0.52; 95% CI 0.28 to 0.94), less necrotizing enterocolitis (RR 0.62; 95% CI 0.43 to 0.9), and less infant sepsis (RR 0.29; 95% CI 0.09 to 0.99).

Further information on evidence supporting this recommendation are available here.

Implementation considerations

- The successful introduction of evidence-based policies related to the prevention and management of PPH into national programmes and health care services depends on well-planned and participatory consensus-driven processes of adaptation and implementation. These processes may include the development or revision of national guidelines or protocols based on this recommendation.
- The recommendation should be adapted into locally-appropriate documents and tools that are able to meet the specific needs of each country and health service. Modifications to the recommendation, where necessary, should be justified in an explicit and transparent manner.
- An enabling environment should be created for the use of this recommendation, including changes in the behaviour of health care practitioners to enable the use of evidence-based practices.
- Local professional societies may play important roles in this process and an all-inclusive and participatory process should be encouraged.

Research implications

The GDG did not identify any research priorities related to this recommendation.

Related Links

WHO recommendations on prevention and treatment of postpartum haemorrhage (2012) - full document and evidence tables

Pregnancy, Childbirth, Postpartum and Newborn Care: A guide for essential practice

Managing Complications in Pregnancy and Childbirth: A guide for midwives and doctors (2nd ed)

VIDEO: Active management of third stage of labour

Education material for teachers of midwifery. Managing postpartum haemorrhage.

Links to supporting evidence:


References


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