

Evidence-based answers from the
Family Physicians Inquiries Network

CLINICAL INQUIRIES

Q / When is the best time to clamp the umbilical cord after routine vaginal delivery?

EVIDENCE-BASED ANSWER

A / SOMETIME BETWEEN 30 SECONDS AND 2 MINUTES after delivery appears to be the best interval. In term infants, delayed clamping (waiting 1 or 2 minutes or until the cord stops pulsating) improves hemoglobin and ferritin levels, but slightly increases the risk of neonatal jaundice requiring phototherapy (strength of recommendation [SOR]: A, meta-analysis).

In preterm infants less than 37 weeks of age, cord clamping between 30 and 120 seconds after delivery reduces the need for blood transfusion (number needed to treat [NNT]=4) and frequency of intraventricular hemorrhage (NNT=8) compared with clamping in less than 20 seconds (SOR: A, meta-analyses).

Evidence summary

A 2008 Cochrane meta-analysis reviewed 11 randomized controlled trials (RCTs), enrolling more than 2900 women who had term vaginal deliveries, that compared early cord clamping (ECC) with delayed cord clamping (DCC).¹ All of the trials defined ECC as clamping less than 1 minute after birth. DCC was variously defined as clamping after 1 minute, after 2 minutes, or after the cord stopped pulsating.

DCC was associated with increased newborn hemoglobin values (weighted mean difference [WMD]=2.2 g/dL; 95% confidence interval [CI], 0.3-4.1) and increased mean ferritin levels that persisted for as long as 6 months (WMD=12 mcg/L; 95% CI, 4.1-20). However, significantly fewer infants who underwent ECC required phototherapy for jaundice (relative risk [RR]=0.59; 95% CI, 0.38-0.92; NNT=45).

This meta-analysis was limited by variations in the definition of DCC, the level at which newborns were held in relation to the placenta (above, below, or level with), and the use of uterotonics. These limitations also apply to the other systematic reviews discussed here.

But is hyperbilirubinemia significant?

A 2007 meta-analysis of 15 clinical trials (8 randomized and 7 nonrandomized) with 1001 term infants in the DCC group and 911 in the ECC group found results similar to the Cochrane review.² When compared with ECC, delayed clamping at least 2 minutes after birth was associated with significantly higher hematocrit (WMD=3.7%; 95% CI, 2-4), ferritin (WMD=18 mcg/L; 95% CI, 17-19), and stored iron (WMD=20 mg; 95% CI, 8-32), as well as decreased risk of anemia (RR=0.5; 95% CI, 0.4-0.7).

Infants in the DCC group had an increased risk of asymptomatic polycythemia (RR=3.9; 95% CI, 1.0-15). Delayed clamping was also associated with an increased rate of phototherapy for hyperbilirubinemia that didn't reach statistical significance, although the confidence interval was wide (RR=1.78; 95% CI, 0.71-4.46).

Early clamping poses risks for preterm infants

A 2008 meta-analysis (using Cochrane methodology) identified 10 RCTs enrolling 454 infants born at less than 37 weeks' gestation.³

CONTINUED

Angela "Carmi" Hendrick, MD; Jon O. Neher, MD
Valley Family Medicine,
Renton, Wash

Sarah M. Safronek, MLIS
Health Sciences
Library, University of
Washington, Seattle

ASSISTANT EDITOR

Gary Kelsberg, MD
Valley Family Medicine,
Renton, Wash

CLINICAL INQUIRIES

ECC was defined as less than 20 seconds after delivery and DCC as greater than 30 seconds (and up to 120 seconds).

The review found ECC to be inferior to DCC. Early clamping was associated with an increased risk of transfusion for anemia (3 studies, 112 patients; RR=2.1; 95% CI, 1.2-3.3; NNT=4), increased number of blood transfusions (4 studies, 170 patients; WMD=1.2; 95% CI, 0.52-1.8), and increased rate of intraventricular hemorrhage (RR=1.9; 95% CI, 1.3-2.8; NNT=8).

Recommendations

The World Health Organization (WHO) recommends against clamping the umbilical

cord any earlier than is necessary to apply traction to the placenta in the active management of the third state of labor.⁴ (WHO estimates this would normally take around 3 minutes.) Early clamping may be required if the baby is asphyxiated and needs immediate resuscitation.

The Society of Obstetricians and Gynecologists of Canada recommends delaying cord clamping by at least 60 seconds in premature newborns (<37 weeks' gestation) to reduce the risk of intraventricular hemorrhage and the need for transfusion.⁵ For term newborns, the Society advises clinicians to weigh the increased risk of neonatal jaundice against the benefit of greater iron stores on a case-by-case basis. **JFP**

References

1. McDonald SJ, Middleton P. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Database Syst Rev.* 2008;(2):CD004074.
2. Hutton EK, Hassan ES. Late vs early clamping of the umbilical cord in full-term neonates: systematic review and meta-analysis of controlled trials. *JAMA.* 2007;297:1241-1252.
3. Rabe H, Reynolds G, Diaz-Rossello J. A systematic review and meta-analysis of a brief delay in clamping the umbilical cord of preterm infants. *Neonatology.* 2008;93:138-144.
4. Abalos E. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes: RHL commentary (last revised March 2, 2009). In: *The WHO Reproductive Health Library*; Geneva, Switzerland: World Health Organization. Available at: http://apps.who.int/rhl/pregnancy_childbirth/childbirth/3rd_stage/cd004074_abalose_com/en/index.html. Accessed July 21, 2010.
5. Leduc D, Senikas V, Lalonde AB, et al. Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage. *J Obstet Gynaecol Can.* 2009;31:980-993.

Improving Medication Adherence in Chronic Disease Management

FREE
1.0 CME
CREDIT

- Review the impact of poor medication adherence on clinical outcomes
- Identify and address barriers to adherence
- Apply smart communication techniques and other strategies to promote adherence
- Know when and how pharmacists, case managers, and nurses can provide supportive interventions

Earn FREE CME credit for this and other supplements online.
Click on CME at jfponline.com



FACULTY

>> **Stephen A. Brunton, MD, FAAFP**
Adjunct Clinical Professor of Family Medicine, University of North Carolina at Chapel Hill, Chapel Hill, North Carolina; Executive Vice President for Education, Primary Care Education Consortium, Charlotte, North Carolina



This supplement was submitted by the Primary Care Education Consortium and supported by an educational grant from Takeda Pharmaceuticals North America, Inc.