



**PEDIATRIC NEWBORN
MEDICINE CLINICAL
PRACTICE GUIDELINES**

Optimal Umbilical Cord
Clamping





Clinical Guideline Name	Optimal Umbilical Cord Clamping
CWN Clinical Practice Manual Policy Number	
Implementation Date	
Due for CPC Review	11/2018
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Approved By	Dept of Pediatric Newborn Medicine Clinical Practice Council MSEC _____ CWN SPP _____ SPP Steering _____ Nurse Executive Board/CNO_____

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Background



I. **Purpose:** To improve neonatal outcomes for term and preterm infants through the optimal timing of umbilical cord clamping in the vigorous term and preterm infant for at least 60 seconds after birth.

II. **Background:**

Optimal umbilical cord clamping after delivery allows for continued blood flow between the placenta, umbilical cord, and baby, with net blood flow to the infant.

Physiologic studies in term infants have shown that a transfer from the placenta approximately 80mL of blood in the first minute after birth, reaching approximately 100mL at 3 minutes after birth. The placental transfusion is enhanced with the infant's first breaths, thought to be due to the negative intra-thoracic pressure generated by lung inflation.

Term infants with optimal umbilical cord clamping have higher hemoglobin levels and increased iron stores, which may have favorable effects on developmental outcomes.

Preterm infants are at highest risk for adverse neonatal outcomes, and therefore have the potential for greatest benefit and have the highest evidence for optimal umbilical cord clamping.

Providing additional placental blood to the preterm infant by optimal umbilical cord clamping is associated with:

- Decreased need for blood transfusion
- Better circulatory stability
- Lower incidence of intraventricular hemorrhage (all grades)
- Lower risk for necrotizing enterocolitis (NEC)

For term infants ≥ 37 weeks, optimal delayed cord clamping may decrease iron deficiency anemia in infants without access to appropriate nutrition, however it increases the risk of jaundice requiring phototherapy. When delayed umbilical cord clamping is carried out after 37 weeks gestational age, it should be ensured that there is adequate pediatric jaundice surveillance available for the neonate. All infants are screened with either transcutaneous or serum bilirubin as a part of routine neonatal care. [Link reference to jaundice screening CPP/CPG.](#)

Delayed umbilical cord clamping does not increase the risk of postpartum hemorrhage.

Indications:

Vigorous term and preterm infants, with the following contraindications:

Contraindications:

Monochorionic multiple gestations

Maternal Hgb <7 grams/dl (in case delay affects efficiency of treatment of post-partum hemorrhage)

Placental abnormalities, including but not limited to vasa previa, placenta previa, placenta accreta and abruption.

Need for resuscitation of the infant beyond drying, warmth and stimulation.

There is no evidence for contraindication in the following settings:

Meconium stained fluid

Intra-amniotic infection

Fetal anomaly

Maternal infectious disease (including Hepatitis B & C and HIV)



Route of delivery (vaginal vs. Caesarean, classical vs. low-transverse)

Procedure:

1. Delivery of the baby (entire body) will be clearly announced by the senior obstetric provider present
2. Timekeeping will start (the obstetric nurse is the time keeper)
3. For vaginal deliveries the baby should be placed on the maternal lower abdomen and covered with a warm blanket. For cesarean deliveries the baby should be placed on the upper legs or the abdomen above the incision at Caesarean delivery (at the obstetrician's judgment). The infant will not be held up for parental viewing until after the cord has been clamped to ensure blood flow toward rather than away from the infant.
4. No milking or stripping of the cord should be performed.
5. The obstetric nurse verbally reports when 60 seconds have elapsed.
6. Cord clamp is then applied, the umbilical cord is cut, and the infant is given to the mother or to the pediatric team if indicated.

Immediate clamping criteria

Per the discretion of the obstetrician

If the pediatrician desires the optimal cord clamping to be discontinued, they will clearly communicate to the attending obstetrician, "Do you think there is a need for pediatric assessment?" Unless there is a disagreement on behalf of the obstetrician, immediate cord clamping should be instituted at this prompt. If there is disagreement, the pediatrician should be invited for bedside assessment.

Post-clamping procedure

Postpartum uterotonics should be administered by the obstetrical team as per routine

The time to cord clamping should be recorded in the mother's medical record by the delivering obstetrical provider

Procedure for collection of umbilical cord blood samples

Including umbilical cord blood gases, genetic samples, umbilical cord banking, etc.

Collect directly from the cord following clamping at the discretion of delivering Obstetrical Provider



Responsibility	Action
Obstetrical Provider	Deliver the baby, announce occurrence of delivery to the obstetric nurse, wrap in warm blanket provided by nursing, gentle stimulation and bulb suction if needed. Hold baby on the mother. Clamp and cut cord at least 60 seconds after delivery and give infant to mother or to the Pediatric team as appropriate. Perform immediate cord clamping if deemed necessary.
NICU or OB Nurse	Have a warm sterile blanket ready for OB team. Announce time at 30, 45, and 60 seconds following delivery. Note time of umbilical cord clamping and record it in the chart.
Neonatal Physician/NNP	Receive infant from delivering OB following cord clamping. Assess Apgar scores at 60 seconds after birth in concert with the obstetrical provider. Proceed with standard neonatal stabilization or resuscitation.

References:

1. Mercer JS, Vohr BR, McGrath MM, Padbury JF, Wallach M, Oh W. Delayed cord clamping in very preterm infants reduces the incidence of intraventricular hemorrhage and late-onset sepsis: a randomized, controlled trial. *Pediatrics* 2006; 117:1235.
2. Rabe H, Diaz-Rossello JL, Duley L, Dowswell T. Effect of timing of umbilical cord clamping and other strategies to influence placental transfusion at preterm birth on maternal and infant outcomes. *Cochrane Review* 2012, Issue 8.
3. McDonald SJ, Middleton P. Effect of timing of umbilical cord clamping of term infants on maternal and neonatal outcomes. *Cochrane Review* 2009, Issue 3.
4. Aladangady N, McHugh S, Aitchison TC, Wardrop CAJ, Holland BM. Infants' blood volume in a controlled trial of placental transfusion at preterm delivery. *Pediatrics* 2006; 117:93-99.
5. Baenziger O, Stokin F, Keel M, et al. The influence of the timing of cord clamping on postnatal cerebral oxygenation in preterm neonates: a randomized, controlled trial. *Pediatrics* 2007; 119:455-460.
6. Kinmond S, Aitchison TC, Holland BM, Jones JG, Turner TL, Wardrop CAJ. Umbilical cord clamping and preterm infants: a randomized. *BMJ* 1993; 306:172-175.
7. Kugelman A, Borenstein-Levin L, Kessel A, Riskin A, Toubi E, Bader D. Immunologic and infectious consequences of immediate versus delayed umbilical cord clamping in premature infants: a prospective, randomized, controlled study. *J Perinat Med* 2009; 37:281-87.
8. Mercer JS, Vohr BR, Erikson-Owens DA, Padbury JF, Oh W. Seven month developmental outcomes of very low birth weight infants enrolled in a randomized controlled trial of delayed versus immediate cord clamping. *J Perinatol* 2010; 30(1):11-16
9. Rabe J, Wacker A, Hulskamp G, et al. A randomized controlled trial of delayed cord clamping in very low birth weight preterm infants. *Eur J Pediatr* 2000; 159:775-777.
10. Ceriani JM, Carroli G, Pellegrini L, et al. The effect of timing of cord clamping on neonatal venous hematocrit value and clinical outcome at term: a randomized controlled trial. *Pediatrics* 2006; 117:e779-86.
11. Delayed umbilical cord clamping after birth. Committee Opinion No. 684. American College of Obstetricians and Gynecologists. *Obstet Gynecol* 2017;129:35-10.
12. Textbook of Neonatal Resuscitation (NRP), 7th Edition. p.49-50.
13. Guidelines for Perinatal Care, 8th Edition. p.269-270.