PEDIATRIC NEWBORN MEDICINE CLINICAL PRACTICE GUIDELINES

Optimal Umbilical Cord Clamping
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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
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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: