

Benefits and safety of delayed cord clamping



What delayed cord clamping means

Immediate or early cord clamping occurs soon after birth, whereas delayed cord clamping involves waiting before applying the clamp. Guidance commonly supports delaying clamping for at least one minute when the clinical situation permits. Some protocols use a longer interval, such as 30 to 60 seconds in preterm birth or approximately one to three minutes in term birth, but timing varies among institutions and according to the condition of the newborn.

The physiological rationale is placental transfusion. While the cord remains unclamped, blood continues moving through the umbilical vessels from the placenta to the infant. The amount transferred is influenced by gestational age, the newborn's position relative to the placenta, uterine contractions, breathing, and the duration of the delay. This additional blood increases circulating volume and supplies red blood cells containing iron.

Delayed clamping is distinct from delayed delivery of the placenta. It concerns the interval between birth and cord clamping, not the management of the third stage of labor or the timing of placental separation. A clinician may also adjust the plan if the placenta, cord, maternal circulation, or newborn condition requires immediate attention.

Benefits for term newborns

For infants born at term, the most consistent benefit is improved hematologic status. Studies summarized by the World Health Organization and published reviews report higher hemoglobin levels in the early months after birth when clamping is delayed. The additional red-cell volume can also increase iron stores, an important reserve during a period when the infant's iron requirement is high and dietary iron intake is limited.

Improved iron stores may persist for several months, with evidence suggesting benefit through approximately six months of age. This matters because iron deficiency during infancy can affect neurodevelopment, attention, and behavior. Delayed cord clamping cannot prevent every cause of iron deficiency and does not replace routine infant nutritional assessment, but it may provide a useful early contribution to iron status.

Meta-analysis data indicate a reduced risk of anemia during infancy among term newborns whose cords were clamped later. Some infants may have a modestly higher hematocrit or hemoglobin concentration, sometimes described as polycythemia. In the available evidence, this increase generally appeared clinically benign rather than associated with a meaningful rise in adverse outcomes. Newborn care teams still assess the infant as a whole rather than interpreting one laboratory value in isolation.

Delayed clamping also supports a smoother cardiovascular transition. The newborn must rapidly shift from receiving oxygen through the placenta to exchanging oxygen through the lungs. Continued placental circulation during the first moments may help maintain venous return and cardiac output while pulmonary blood flow increases.

Benefits for preterm infants

The potential advantages are particularly important for preterm infants, whose circulatory and respiratory transitions can be more fragile. Placental transfusion may improve blood pressure, circulating volume, and cardiac function during the early neonatal period. These effects can be clinically relevant when an infant has limited physiological reserve.

Reviews of delayed cord clamping in preterm birth associate the practice with fewer red-cell transfusions. Avoiding transfusion is not the only goal of neonatal care, but reducing exposure to donor blood can simplify treatment and lower the cumulative burden of intensive care. The intervention may also be associated with lower rates of necrotizing enterocolitis, a serious inflammatory intestinal disease, and intraventricular hemorrhage, bleeding into the brain's ventricular system. These findings are especially significant because both conditions can contribute to prolonged hospitalization and long-term complications.

The evidence does not mean that delayed clamping guarantees a better outcome for every premature infant. Outcomes are affected by gestational age, birth weight, infection, respiratory disease, placental function, and the quality and speed of neonatal support. Delayed clamping is therefore one component of a broader strategy that may include thermal care, respiratory support, careful fluid management, and monitoring for anemia or hemodynamic instability.

In some settings, clinicians use intact-cord stabilization, sometimes called resuscitation with the cord intact, when this can be safely organized. This requires appropriate equipment, trained personnel, and a protocol that accounts for the need to provide effective ventilation or other urgent care. It is not equivalent to delaying clamping without a plan for immediate newborn assessment.

Safety for the birthing parent

One common concern is whether waiting to clamp the cord increases maternal bleeding. The available review evidence does not show an increase in postpartum hemorrhage or maternal blood loss attributable to delayed cord clamping. The practice is focused on the newborn, but it takes place during a period when clinicians continue to monitor uterine tone, placental separation, vital signs, and bleeding.

Delayed cord clamping should not be confused with delaying all aspects of active third-stage management. A maternity team may still administer uterotonic medication, assess for placental separation, and respond to excessive bleeding according to the birth plan and clinical need. Management decisions are individualized, especially when there are risk factors for postpartum

hemorrhage, abnormal placentation, coagulopathy, or complications requiring rapid treatment.

If the birthing parent becomes medically unstable, the cord may need to be clamped promptly so attention can shift to hemorrhage control, surgical management, anesthesia, or other urgent care. The same applies if the placenta or cord is contributing to a time-critical problem. Preserving the intended delay is never more important than stabilizing the parent and newborn.

Newborn risks and monitoring

The principal safety issue identified in term infants is a small increase in jaundice requiring phototherapy. Jaundice results from the accumulation of bilirubin as red blood cells are broken down. Because delayed clamping can increase the newborn's red-cell mass, bilirubin production may also rise in some infants. This does not mean delayed clamping causes dangerous jaundice in most babies, but it reinforces the need for routine observation and appropriate bilirubin assessment.

Newborn teams consider feeding, gestational age, bruising, blood-group incompatibility, hemolysis, weight loss, and the infant's clinical appearance when deciding whether bilirubin testing or treatment is needed. Families should seek prompt clinical advice if an infant appears increasingly yellow, is difficult to wake for feeds, feeds poorly, has fewer wet diapers, or seems unusually unwell. Those findings are not specific to one condition, so evaluation is preferable to self-diagnosis.

Reports of higher hematocrit or polycythemia have not generally shown serious clinical consequences in the evidence summarized for term infants.

Nevertheless, a newborn with respiratory distress, poor feeding, abnormal perfusion, lethargy, or other concerning findings requires assessment regardless of whether cord clamping was delayed. The cord-clamping decision should never delay neonatal resuscitation, airway support, warming, or transfer to a higher level of care.

When delayed clamping may not be possible

Delayed clamping is a planned option, not an emergency mandate. Immediate

clamping may be necessary when the newborn requires urgent resuscitation away from the birth site, has severe compromise, or needs rapid separation for specialized care. It may also be considered when the birthing parent has major bleeding, hemodynamic instability, or another condition that requires immediate intervention.

Other circumstances may complicate the decision, including placental abruption, suspected abnormal placental attachment, significant cord bleeding, or a cord complication that threatens fetal oxygenation. A prolapsed cord, for example, can cause acute cord compression and requires time-critical obstetric management. In such situations, the clinical priority is restoring adequate oxygen delivery and completing the safest birth, not maintaining a predetermined clamping interval.

Before birth, families can discuss preferences with their obstetrician, midwife, neonatologist, or birth team. Useful questions include the institution's usual timing, how the plan changes in cesarean birth or preterm birth, whether the team can provide initial assessment with the cord intact, and which circumstances would require earlier clamping. Documenting a preference in a birth plan can improve communication, while leaving room for clinical judgment is essential.

Practical planning and informed consent

A practical plan should identify who will monitor the newborn, where initial stabilization will occur, and how the cord will be positioned during the waiting period. In uncomplicated birth, the infant may be placed skin-to-skin on the birthing parent while the team observes breathing, tone, color, and circulation. In cesarean birth or preterm delivery, sterile technique, operating-room layout, temperature control, and access to neonatal equipment may affect what is feasible.

Families may also wish to discuss cord blood sampling, cord banking, and collection of blood for laboratory testing. These activities can sometimes be coordinated after the planned delay, but the available blood volume and the urgency of testing may influence the sequence. The clinical team can explain which requests are compatible with safe care.

The best decision balances population-level evidence with the individual birth. Delayed clamping offers established or promising benefits, especially for infant iron status and preterm transitional circulation, while its risks are generally manageable through appropriate newborn observation. Shared decision-making should include an explanation that recommendations may change quickly if maternal or neonatal conditions change during labor or birth.