



IN THE FIRST 5 MIN OF LIFE

OB and neonatal medicine practices are evolving—in ways that might surprise you

👉 Move away from, first, suctioning during normal term birth and, second, any immediate clamping of the cord. There's more.

Obstetricians are trained to manage key aspects of the birth process, including protecting the maternal perineum and fetus from trauma and providing initial support to the newborn. Historically, our initial support for the newborn has included:

- suctioning the oronasopharynx
- immediate clamping of the cord
- providing 100% oxygen if resuscitation is necessary.

The American Academy of Pediatrics recently modified its recommendations on initial support to emphasize several alternative practices.¹ Here is a round-up of what the Academy recommends now.

For normal term birth

Reduce, or eliminate, the practice of suctioning the fetal oronasopharynx

During the past half century, the first action an OB took after delivering the fetal head was to perform oronasopharyngeal suctioning, using a bulb or DeLee device. The aim has been to remove secretions that might interfere with initial breathing by the newborn.

Recent expert guidance, however, recommends that OBs cease this practice¹: For a healthy newborn,

suctioning appears to do more harm than good because it can cause cardiorespiratory complications.

Study results were clear. In a randomized clinical trial, 140 newborns born by cesarean delivery were randomized to oronasopharyngeal suctioning or no suctioning. At 2 minutes and at 6 minutes after birth, infants who were treated with oronasopharyngeal suctioning had a lower mean O₂ saturation and a higher mean heart rate than those who were not suctioned. In addition, the Apgar score was, on average, one point lower at 5 minutes in infants who were suctioned.²

Given a lack of evidence of benefit, and evidence of potential harm, reserve suctioning for newborns who have obvious respiratory difficulty caused by secretions. If you determine that suctioning is required, perform gentle bulb suctioning of the

mouth and nares **with minimal stimulation of the posterior pharynx**, which can cause a vagal response and bradycardia.

For term and preterm births

Stop immediate clamping of the cord

At birth, when a newborn is placed on the maternal abdomen or held below the vaginal introitus and the cord is *not clamped*, approximately 25 mL of blood for every kilogram of birth weight is transfused from the placenta-cord into the newborn. Most of that transfusion occurs in the first 2 minutes after birth; in some infants, transfusion continues for as long as 5 minutes.³

Autotransfusion significantly increases hemoglobin concentration

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Delayed cord clamping presents both benefits and risks to the baby

Benefits^{4,7}

- An increase in red blood cell volume, with an improvement in hemoglobin concentration of approximately 2 to 5 g/L
- An increase in the serum ferritin level at 6 months of age
- A diminished likelihood of being diagnosed with anemia in the first year of life

Risks⁷

- An increase in the risk of neonatal jaundice
- An increase in the need for phototherapy
- An increase in blood viscosity immediately after birth

in a newborn. It's notable that the newborn obtains benefit from delayed clamping whether it has been placed on its mother's abdomen or held below the vaginal introitus⁴—suggesting that gravity alone isn't responsible for cord-to-newborn transfusion. Although delayed cord clamping has been studied for 70 years,⁵ only 1% of OBs who participated in a recent survey in the United Kingdom reported that they delay cord clamping for at least 1 minute.⁶

Pluses & minuses. Evidence from many clinical trials indicates that delaying cord clamping carries benefits *and* risks^{4,7}—but that the benefits outweigh risks, in most cases (TABLE).

In addition, delayed cord clamping is associated with delayed administration of a postpartum uterine tocolytic. This delay does not, however, appear to increase the risk of postpartum hemorrhage.

Note: If you are concerned about waiting 1 to 5 minutes to clamp the cord because it might delay

resuscitation of an infant, **milking the cord four times** appears to provide significant cord-to-fetus transfusion.⁸

Who benefits the most? Delayed clamping of the cord is likely to provide the greatest benefit to preterm newborns. In some studies, delayed clamping in very preterm infants (<32 weeks' gestation) reduced the incidence of intraventricular hemorrhage and late-onset sepsis. For example, in a study in which 72 mother-infant pairs were randomized to delayed cord clamping or immediate cord clamping, intraventricular hemorrhage occurred in 14% of infants in the delayed group and in 36% of the immediate-clamping group.⁹

In a healthy term infant who has access to good postnatal nutrition, the benefits of delayed cord clamping are likely limited to a modest increase in hemoglobin concentration. The problem with delayed cord clamping in a healthy term infant is an increased risk of jaundice and need for phototherapy.⁷

In some centers, umbilical cord blood is collected and stored in a public cord blood bank for use in a bone marrow transplantation program. Autotransfusion of blood from the cord to the newborn reduces the success rate of cord blood collection for public banking because fewer stem cells are obtained from a depleted cord.

Vigorous newborns who have been birthed through meconium-stained amniotic fluid do not need airway suctioning

Most obstetric providers have been trained to aspirate the upper airway—first the oropharynx, then the nares—of infants who have been born through meconium-stained amniotic fluid. Why? It was long believed that suctioning would reduce

the risk of meconium aspiration syndrome.

Recent expert guidelines, however, no longer recommend that you suction the upper airway of vigorous infants born through meconium-stained fluid.^{1,10}

Findings from a clinical trial. Fetuses from 2,514 term pregnancies that were characterized by meconium-stained amniotic fluid were randomized to **1)** suctioning of the oropharynx, nasopharynx, and hypopharynx before delivery of the shoulders or **2)** no suctioning. No differences in outcome were observed between the two groups—including no difference in the incidence of meconium aspiration syndrome; need for mechanical ventilation or duration of mechanical ventilation; oxygen dependency; and length of stay.¹¹

The same guidelines recommend endotracheal suctioning in nonvigorous newborns,^{1,10}—even though strong evidence to support the practice is lacking. Of course, suctioning is always warranted when the airway is clearly obstructed.

For preterm birth

Keep the preterm newborn warm with a polythene wrap

Obstetrical providers and pediatricians know: It's important to keep preterm newborns warm because they are at high risk of hypothermia. The preterm infant has poorly developed thermoregulatory mechanisms and a very high surface area, which increase the rate of heat transfer from the newborn to the environment.

A new recommendation is that every preterm newborn who was born earlier than 28 weeks' gestation should be kept **1)** wet and **2)** wrapped up to its neck in a polythene garment (known as a "life-support pouch")

to decrease the risk of hypothermia. Only the head should be dried. In a timely manner, the infant should then be placed under a radiant heater and resuscitated or stabilized, if this is indicated.

That approach has been demonstrated to be superior to drying and placing the newborn under a radiant heater as a means to prevent hypothermia.¹²

If wrapping is not possible, use of an exothermic mattress helps to reduce the risk of hypothermia. However, use of *both* polythene wrapping and an exothermic mattress may increase the risk of *hyperthermia*. Timely placement of a newborn under a radiant heater competes with the recommendation (discussed above) to delay clamping of the cord.

Reduce the use of 100% O₂ during resuscitation

Surprisingly, use of 100% oxygen may be associated with more harm than benefit when a newborn requires resuscitation. Why? 100% oxygen may increase the level of free oxygen radicals, thereby damaging tissue. In fact, some studies report that use of 100% oxygen is associated

Birth practices in the US, in 1936 and in 1962

In his 1936 textbook on obstetrics, Frederick Irving, MD, recommended not suctioning the oropharynx or nares of newborns.¹ If a newborn did not immediately start to cry, he advised that the baby be “drained”—by holding it upside down by its ankles and holding the head back to straighten the trachea. If necessary, Dr. Irving wrote, administer a few gentle pats over the lower ribs.

Dr. Irving approved of delayed cord clamping. In the protocol he described, the newborn typically was placed on a small baby table, just below the level of the vaginal introitus. The cord was clamped and cut when it stopped pulsating.¹

Fast forward, 26 years

In his 1962 textbook on obstetrics, Duncan Reid, MD, recommended that, at birth, a baby should be immediately held upside down by the ankles and the oropharynx and nares suctioned with a bulb.² Dr. Reid recommended that obstetricians make their own decision about delayed or immediate clamping of the cord. If the preference was for delayed cord clamping, he observed that the cord typically ceased to pulsate approximately 1 minute after birth—at which time it could be clamped.²

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with an increased risk of neonatal mortality.^{13,14}

When a newborn requires resuscitation, AAP recommends:

- Initiate resuscitation with **blended O₂**; if this is not available, use ambient air
- Adjust the O₂ concentration to achieve SpO₂ targets that are based on minutes-since-birth

- Use 100% oxygen if the infant's heart rate is below 60/min at 90 seconds of resuscitation—but only until the heartbeat reaches a normal rate.¹ 🚫



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