

## Delayed Cord Clamping Raises Iron Stores at 4 Months

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November 15, 2011 — Allowing placental blood to flow into the neonate for 3 minutes, rather than cutting the umbilical cord within the first 10 seconds, as is common, increases blood volume sufficiently to elevate ferritin at 4 months, finds a study published online November 16 in the *British Medical Journal*.

Adequate iron stores are essential for brain neuron myelination, dendritic growth, neurotransmission, and energy metabolism in neurons and glia. Because iron demands are high in the young, iron-deficiency anemia and subclinical iron deficiency are associated with long-lasting cognitive and behavioral problems. Past studies that support a delay in cord cutting were conducted in developing or middle-income populations that have a high prevalence of iron deficiency anemia (ie, in Guatemala, India, Mexico, and Zambia), but did not follow up children past the neonatal period. Iron deficiency is less prevalent, yet still fairly common, in other nations.

Ola Andersson, MD, a neonatologist at the Hospital of Halland in Sweden, and colleagues enrolled 400 full-term infants born after low-risk pregnancies between April 2008 and September 2009, and randomized the time of cord cutting to either 10 seconds or 3 minutes. When a birth was imminent, the midwife would open an envelope assigning either cord-cut time. Midwives held the neonates 20 cm below the level of the mothers' vulvas for 30 seconds and then placed the infants on the mothers' abdomens to facilitate blood transfer.

The researchers assessed infant blood sampled on the second day for CBC (hemoglobin, packed cell volume, mean cell volume, mean cell hemoglobin concentration, reticulocyte count, and reticulocyte hemoglobin), iron status (serum iron, transferrin, serum ferritin, transferrin saturation, and soluble transferrin receptors), C reactive protein, and bilirubin and repeated all but the bilirubin test on 4-month samples.

Because past rationale for cutting the cord immediately after birth was increased risk for adverse events resulting from excess blood, the researchers also assessed the late-cord-cut infants for respiratory symptoms, polycythemia, and need for phototherapy to treat neonatal jaundice. Blood was drained from the placenta and volume measured, which explained the higher average weight of the babies with later-cut cords.

At 4 months, the infants in both groups had similar hemoglobin concentration, but the infants whose cords were cut later had 45% (95% confidence interval, 23% - 71%) higher mean ferritin concentration (117 µg/L vs 81 µg/L;  $P < .001$ ) and lower prevalence of iron deficiency (1 [0.6%] vs 10 [5.7%] infants;  $P = .01$ ). The delayed group also had lower prevalence of neonatal anemia (2 [1.2%] vs 10 [6.3%] infants;  $P = .02$ ). The groups did not differ in respiratory symptoms, polycythemia, or hyperbilirubinemia.

Every 20 babies having delayed clamping could prevent 1 case of iron deficiency, the researchers estimate. They conclude that delayed clamping "should be considered as standard care for full term deliveries after uncomplicated pregnancies."

Patrick van Rheenen, MD, a consultant pediatrician at the University of Groningen in the Netherlands, agrees in an accompanying editorial that "enough evidence exists to encourage a routine change in practice."

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