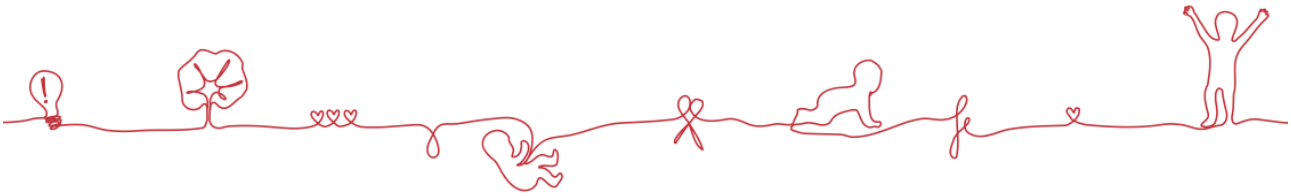

Brief facts about anemia, umbilical cord clamping and our research

Anemia affects over 40% of all children under 5 years of age in the world. Anemia can impinge mental and physical performance, and provide long-term deterioration in growth and development. Approximately half of the children with anemia have it because of iron deficiency. The clamping of the umbilical cord is delayed, ie after 3 minutes, iron deficiency up to 6 months of age can be prevented, but it has not been shown to prevent iron deficiency or anemia in older infants.

At birth, approximately 1/3 of the child's blood is in the placenta. If you then clamp the umbilical cord immediately (early cord clamping), the blood will remain in the placenta and go to waste (or can be stored in stem cell banks). If instead clamping is postponed for 3 minutes, most of the blood can flow back to the child as an extra blood transfusion, consisting of about one deciliter (1/2 cup) of blood, equivalent to about 2 liters (half a US gallon) of an adult. A blood donor leaves 0.4-0.5 liters of blood.

Blood contains red blood cells that contains hemoglobin. Hemoglobin carries oxygen to the tissues of the body. Hemoglobin contains a lot of iron, and the extra deciliter of blood may contain iron that correspond to 3-4 months of the need for an infant.

The World Health Organization (WHO) recommends umbilical cord clamping at 1 minute or later, American College of Obstetricians and Gynecologists (ACOG) recommends umbilical cord clamping at 30-60 seconds or later.

Our research

We randomized 540 children, born at a large obstetrical hospital in Kathmandu, Nepal, to early (≤ 60 seconds) or delayed cord clamping (≥180 seconds). In Nepal, approximately 70 % of infants up to one year of age have anemia. Follow-up included blood samples at 8 and 12 months of age, to evaluate for anemia and iron deficiency.

Previously, we have demonstrated that delayed clamped children had more iron in the body at 4 months of age and that the proportion of children with iron deficiency decreased by 90%, from 5.7% to 0.6%.

We have also shown that the children's general intelligence and development did not differ at four years of age, but the delayed clamped children had improved fine motor and social skills.

What did we find?

At the age of 8 months the incidence of anemia was reduced by 9% among the Nepalese infants and still at 12 months of age 8% fewer infants were anemic. The children in the delayed cord clamping group generally had higher hemoglobin values, and the percentage of children who had iron deficiency at 8 months of age decreased significantly, more than 40%.

Do the study have any limits?

The major earthquakes in Nepal occurred in the midst of the trial, in May 2015. It was difficult to reach all the infants for blood sampling at 8 and 12 months of age. At eight months 3/4 (74%) and at 12 months of age just under two thirds (62%) were assessed. We had anticipated these problems and had therefore 188 additional children included in the study from the beginning.

More than 1/5 (23%) of the infants randomized to delayed cord clamping were still clamped early. Their results were counted among the delayed clamped infants according to "intention to treat". If we exclude them, the beneficial effects of delayed cord clamping become even clearer.

What are the research implications?

This study implicates that waiting to clamp the umbilical cord for more than three minutes is important in communities where it is common for infants to have anemia and iron deficiency. Delayed cord clamping after 3 minutes is an action with no cost, from which we have not seen any side effects. We hope that those who write recommendation regarding umbilical cord clamping will take our results into consideration in the future.

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