

Newborn Prophylactic Vitamin K Administration

What is Vitamin K? Vitamin K is naturally found in the human body and is necessary for synthesis of coagulation (blood clotting) factors.

In nature there are two types of vitamin K: vitamin K1 is found in foodstuffs like green vegetables, legumes, soybean and olive oils, and dairy products. K2 is synthesized by the intestinal flora.

Babies are born with very little Vitamin K. They will get a small but possibly insufficient amount from breastfeeding. Intestinal production of Vit K begins in the first week of life.

What is Vitamin K deficiency bleeding? Lack of Vitamin K does not cause the baby to bleed, however, if baby bleeds for any reason, sufficient Vitamin K is necessary for the bleeding to stop. Vitamin K deficiency bleeding (VKDB) is divided into three categories: early, classic and late.

Early VKDB occurs within 24 hours after birth and cannot be prevented by vitamin K injection at birth. It is most often due to anticoagulant and/or anti-seizure medications the mother was taking during pregnancy.

Classic VKDB occurs on days one to seven. Common bleeding sites are gastrointestinal, cutaneous, nasal or from a circumcision. The incidence of classic vitamin K deficiency bleeding ranges from 0.25-1.7 cases per 100 births (all births, term and preterm). Infants who have classic vitamin K deficiency bleeding are often ill, have delayed feeding, or both.

Because the bleeding in classic vitamin K deficiency bleeding usually is not life threatening, a single dose of IM vitamin K is sufficient to stop the bleeding and return clotting times to normal.

Late VKDB occurs from week 2-12. The most common bleeding sites in this latter condition are intracranial, cutaneous, and gastrointestinal. The estimated incidence of late VKDB in the developed world is approximately 5 to 7 per 100,000 live births.

Late VKDB occurs primarily in exclusively breastfed infants who have not received neonatal vitamin K prophylaxis (preventative injection at birth). In addition, infants who have intestinal malabsorption defects (cholestatic jaundice, cystic fibrosis, etc) may also have late VKDB.

A single dose of oral vitamin K was found to decrease the rate of late VKDB to 1.4 to 6.4 per 100 000 births though Vitamin K IM injection prevents late VKDB in infants, with the rare exception of those with severe malabsorption syndromes.

Intracranial bleeding (bleeding around the brain) is rare and usually associated with other causes of bleeding, particularly thrombocytopenia (low platelets); however, it has been reported in vitamin K deficiency bleeding and can be fatal. Long-term consequences of intracranial hemorrhage may include motor and intellectual deficits.

Is my baby at risk? All babies are considered at-risk for VKDB. However, some babies fall into higher risk categories than others. Babies who are exclusively breastfed may develop insufficient vitamin K levels over time resulting in late VKDB. Additional risk factors for late VKDB include: diarrhea, Hepatitis, Cystic fibrosis, Celiac disease, Short bowel syndrome, and long term antibiotic exposure.

Risk of VKDB may be higher for babies who have difficult deliveries, such as premature births, breech births, vacuum extraction, forceps, asphyxia, and C-Section. Babies who have liver disease or difficulty feeding are also at higher risk.

Sufficient maternal vitamin K in late pregnancy may be associated with a lower incidence of excess bleeding or hemorrhage for her after delivery, however this has not been found to prevent VKDB in infants.

How is Vitamin K administered? Vitamin K injections, given at birth or anytime thereafter, are considered to be the most effective, because one intramuscular dose protects the infant for a much longer period than a single dose of oral Vitamin K. Oral vitamin K has been studied as an alternative and can improve clotting studies and vitamin K levels, but it has not been studied in large randomized controlled trials to determine if this strategy effectively prevents early and late vitamin K deficiency bleeding.

Are there risks to giving prophylactic Vitamin K? In the early 1990s, an association between IM (intramuscular injection) vitamin K and the later occurrence of childhood cancer was reported. The American Academy of Pediatrics reports that a large cohort study and a large retrospective analysis of a database in the United States could not confirm this association. Therefore the AAP continues to recommend IM prophylactic Vitamin K for newborns. The risks of IM prophylactic Vitamin K are mainly the risks of injection: local pain at the injection site, injury to vessels and nerves, abscesses, osteomyelitis, hemorrhage (in an infant with a bleeding disorder), and inadvertent IV injection that can lead to cardiac or respiratory failure. Hyperbilirubinemia (jaundice) has also been associated with Vitamin K injection. For any type of administration the risks include anaphylactic response to Vitamin K and unknown effects of high blood levels of Vitamin K.

REFERENCES

American Academy of Pediatrics
Controversies Concerning Vitamin K and the Newborn.
Pediatrics Vol. 112 No. 1 July 1, 2003
pp. 191 -192

Case Report: Vitamin K deficiency bleeding presenting as impending brain herniation.

[H Gopakumar](#), [R Sivji](#), [PK Rajiv](#)

Department of Neonatology, Amrita Institute of Medical Sciences (AIMS), Kochi, Kerala, India. 2010. Vol 5. Issue 1. Page 55-58.

Hemorrhagic Disease of the Newborn

Medscape Reference. Author: Dharmendra J Nimavat, MD, FAAP; Chief Editor: Ted Rosenkrantz, MD
Updated April 13, 2012

Prophylactic vitamin K for vitamin K deficiency bleeding in neonates.

Puckett RM, Offringa M

Date edited: 21/08/2000

The Dutch Cochrane Centre, NETHERLANDS

Dept of Pediatrics, Emma Children's Hospital A.M.C. Amsterdam, Netherlands