

## Vitamin K: Facts and Controversies

It is standard practice in the United States, as well as many other parts of the world, to give 1 mg of liquid vitamin K to newborns, by intramuscular injection within the first two hours of life. As a more or less universal practice endorsed by the World Health Organization, vitamin K administration is performed without informed consent, and hospitals as well as individual providers may be penalized for not complying. In some states, such as New York state, parents who refuse the shot can be reported to Child Protective Services and threatened with child custody loss so that the shot can be administered.

Vitamin K is important because it is essential to blood coagulation. In the 1930s, researchers discovered that dietary deficiencies of vitamin K or of the lipids necessary to vitamin K absorption is associated with hemorrhagic syndromes. Hemorrhagic disease of the newborn (HDN) is a syndrome that is rare but potentially fatal and can occur in otherwise healthy, breastfeeding infants. Symptoms of HDN include bleeding from the umbilicus, nose, mouth, ears, urinary tract, or rectum, bruising unrelated to known trauma, black tarry stools after meconium has passed, and prolonged bleeding from puncture sites. Intracranial hemorrhage is a very serious type of bleeding that can be harder to detect. It is evidenced by paleness, a glassy-eyed look, high-pitched crying, loss of appetite, vomiting, fever, or prolonged jaundice.

HDN presents in different ways. An early-onset condition occurs within 24 hours of birth and is usually associated with prematurity, birth trauma, or maternal medications such as anti-convulsants or anti-coagulants. A late-onset condition occurs after the first week of life and mainly affects breastfed babies, due to the fact that infant formulas are highly fortified with vitamin K, and babies given formula typically ingest more volume per feeding than do nursing babies. Low birth weight, birth trauma, and gastrointestinal disorders that interfere with fat absorption are risk factors for late onset HDN. Vitamin K administration is the primary treatment for HDN.

Newborn babies are born with levels of vitamin K that are 25-65% lower than normal adult levels. This “deficiency” is found in other newborn animals as well. Vitamin K is synthesized in the presence of bile salts in the gut; the sterile gut of the newborn can not produce vitamin K until a number of feedings have occurred, after about 1-2 weeks of life. Nor can the immature newborn liver produce normal amounts of clotting factors in response to vitamin K. We do not know why there is poor placental transfer of vitamin K, why breast milk is relatively low in the vitamin, or why normal newborns seem to produce clotting inhibitors.

Is there some adaptive reason for low vitamin K in newborns that we have yet to discover? Are vitamin K levels lower today and in some regions or groups than at other times and in other places?

“Philosophically, the question is raised that if all babies have what is perceived as a ‘low’ level of vitamin K, then surely this must be the ‘normal level’,” suggests British midwife Sara Wickham. “Doesn’t this just feed into the idea that women are relatively inefficient at making babies and need to be supplemented by the skills and technology of hospitals and doctors?”

The incidence rates of HDN vary widely and are derived from studies performed at a time when traumatic deliveries were more common, first feeds were typically delayed or restricted to feeding schedules, and colostrum was not given to babies. Because vitamin K is fat-soluble, it is found mostly in colostrum and hindmilk (breastmilk that comes later in a nursing session, after the initial let-down).

Some authors hypothesize that the production of certain clotting factors are low at birth to facilitate the metabolism of bilirubin, and that too much vitamin K both stresses the immature liver and causes hemolysis, leading to increased jaundice problems in babies. Some researchers show that low dietary intake of vitamin K and rampant antibiotic use contribute to hemorrhagic events. Vitamin K is obtained through foods no longer abundant in modern diets. Green vegetables such as spinach, broccoli, brussels sprouts, kale, turnip greens, and alfalfa, as well as liver and bacteria-rich fermented foods, are excellent sources of vitamin K. Vitamin K is also internally synthesized by a healthy balance of bacteria in the gut.

What we know for sure – that HDN incidence is lower among babies who receive the supplement and higher among breastfed babies – is not well-studied in the particulars. What is necessary for your particular baby, given your particular diet, birth process, and health choices, you are best at defining and deciding. I encourage you to research the topic until you are comfortable and confident in your choice.

After examining the data, many of my healthy breastfeeding clients choose oral vitamin K for their newborns, believing the oral route is more natural and wishing to avoid a needle-stick. Oral vitamin K is an oil-soluble supplement extracted from alfalfa, nettles, and green tea that is administered on the day of birth, at one week of age, and at four weeks of age. These women often supplement themselves as well with vitamin K, theoretically to enhance pregnancy and breastmilk availability.

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