

Clinical Pearl: Vitamin K Refusal by Parents: How did we get here, and what can we do?

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“No shots. I just want my baby to be natural.” Despite Vitamin K being a component of many foods and playing a vital role in coagulation and bone health, increasing vaccination hesitancy has discouraged many parents from considering this important component of early neonatal care. As the rising rates of refusal of prophylactic intramuscular vitamin K put newborns at risk for life-threatening bleeding, in 2019, the American Academy of Pediatrics made public education about intramuscular vitamin K administration at birth one of its top ten public health priorities. (1) The increasing prevalence of this issue highlights the growing mistrust between patients and the medical community and the need for increased patient education in a culture where misinformation is prevalent.

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Vitamin K is essential in producing clotting factors, placing infants with inadequate levels at risk of bleeding. The clinical presentation of VKDB can vary but should be considered in any infant who presents with gastrointestinal bleeding, bruising, lethargy, or fussiness. Vitamin K deficiency bleeding (VKDB) is classified by the time of onset. (2) Early-onset VKDB begins within the first 24 hours of age. There may be a low transplacental transfer of Vitamin K. Alternatively, vitamin K activity may also be affected by certain maternal medications, including warfarin or anticonvulsants. Classic VKDB occurs between two days and one week of life and is often idiopathic. Late-onset VKDB occurs between one week and six months of age, is most frequently seen in exclusively breastfed infants, and can be attributed to a low supply of vitamin K in breast milk or immature gut flora resulting in poor vitamin K absorption. Infants may also have underlying pathology that results in liver dysfunction or malabsorption, contributing to vitamin K deficiency or ineffective utilization of vitamin K. Late VKDB can

present with intracranial bleeding. Diagnosis can be made by an international normalized ratio (INR) and prothrombin time (PT) that rapidly normalize after the administration of vitamin K. Since 1961, the AAP has recommended a prophylactic intramuscular injection of vitamin K administration shortly after birth, which has virtually eliminated all classic and late-onset VKDB. (1) Without prophylaxis, the estimated incidence per 100,000 birth ranges from 250 to 1,700 for early VKDB and 10.5 to 80 for late VKDB. (1)

“Given the high risk of potential complications, healthcare workers need to receive education and training on recognizing the presenting signs and symptoms of VDKB and its management. This problem is relevant to pediatricians and other types of providers, particularly those working in emergency departments. In a recent study, authors report that 75 to 85% of the participating emergency department physicians and nurses rated their preparedness for caring for a sick infant as poor or very poor. (5)”

Given the high risk of potential complications, healthcare workers need to receive education and training on recognizing the presenting signs and symptoms of VDKB and its management. This problem is relevant to pediatricians and other types of providers, particularly those working in emergency departments. In a recent study, authors report that 75 to 85% of the participating emergency department physicians and nurses rated their preparedness for caring for a sick infant as poor or very poor. (5) This gap in medical education has been recognized by Sanseau et al., who designed and implemented a medical simulation curriculum on VKDB for fellows and attending physicians. With the current rates of vitamin K refusal, 94% of participants rated the case as relevant. (6) This situation suggests there is a potential need for including this topic

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when developing curricula for physicians and other learners in the medical field.

Vaccine-hesitant parents and those who decline prophylactic vitamin K often have similar ideologies and concerns regarding overmedicalization and the desire for natural health remedies. These groups often distrust the medical system and prefer to use the internet or alternative health care providers as trusted sources of information. (3) A retrospective cohort study published out of Alberta, Canada, found that families who refused intramuscular vitamin K had a 14.6 higher relative risk of having no recommended vaccines at 15 months. (3) Families who have planned home births, delivered in a birth center, or elect for midwife-assisted deliveries are more likely to decline intramuscular vitamin K than those selecting physician-led hospital delivery. Surveys have found other major reasons reported for vitamin K refusal were the belief that the injection was unnecessary, harm to the infant from preservatives in the injection, or to avoid pain. (4)

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The growing body of research that identifies reasons for vitamin K refusal highlights the opportunities to connect with and educate parents. For instance, some authors report that parents have refused vitamin K in the past as they were not aware of the role of vitamin K in coagulation and the high risk of bleeding. Others believe the injection can be avoided by increasing maternal dietary vitamin K intake during pregnancy. (1) Additionally, knowing that vitamin K refusal is a strong predictor of delay or refusal of immunizations can be used by healthcare providers to identify the families in need of early education regarding immunizations, preventing children from falling behind on their vaccination schedules. (3)

Our main tools in managing the increasing rates of vitamin K refusal are education and building strong family-provider relationships to help address mistrust towards the medical system. Discussions could potentially begin during prenatal visits to allow adequate time for answering questions and addressing reasons for hesitancy. Moreover, given the potential medical education gap in this area, curricula may be developed as a form of secondary prevention. This training would allow all types of providers to quickly and effectively diagnose and manage vitamin K deficiency-related bleeds.

Summary of Pearls:

- 1.) The rising rate of intramuscular vitamin K refusal at birth highlights the growing mistrust between patients and healthcare providers and puts infants at risk for VKDB, which was

previously virtually eliminated by prophylaxis.

- 2.) Vitamin k refusal at birth can predict which children are likely to fall behind on their vaccine schedules or to be unvaccinated.

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