Frimley Health
NHS Foundation Trust

Neonatal Vitamin K Administration in Maternity

Key Points

- Parents should be advised that with intramuscular injection, the risk of Vitamin K deficiency bleeding is extremely low.
- Verbal consent is necessary for vitamin K administration should be documented on the baby's medication administration record (MAR).
- The recommended route of administration is via a single intramuscular (IM) injection given at birth.
- If parents do not consent to IM administration, oral vitamin K should be offered. This needs to be given in 2 to 3 separate doses according to the regime.
- Dose for intramuscular injection of vitamin K:
  Babies over 36 weeks should receive 1mg IM
  Babies under 36 weeks and over 2.5kg should be given 1mg IM
  Babies under 36 weeks and between 1kg and 2.5kg should be given 0.4mg/kg (maximum dose 1mg).

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Abbreviations

NNU	Neonatal Unit
VKDB	Vitamin K deficiency bleeding

Contents

This guideline has been written in accordance with the most recent evidence for neonatal Vitamin K.

The Department of Health 1 and the National Institute for Clinical Excellence 2 recommend all neonates receive vitamin K within 24 hours of birth. This view is supported by the neonatal team and midwives at FHFT.

Before giving Vitamin K by any route, parental consent must be obtained. If, after informed discussion, the parents decline vitamin K, this must be clearly documented in the baby's electronic records. The parents should be given information on observing for signs of bleeding, including what action to take.

1. BACKGROUND

1.1 Vitamin K deficiency

- Neonates are born with low levels of Vitamin K [3]. They have low plasma concentrations and low levels of Vitamin K dependent coagulation factors. This deficiency intensifies in the days after birth. Neonatal levels are considerably lower than maternal levels [4].
- Without administration of supplemental vitamin K, neonates are at a higher risk of developing Vitamin K Deficiency Bleeding (VKDB) [5].
- VKDB is defined as 'spontaneous bruising, bleeding or intracranial haemorrhage associated with prolonged clotting times but not due to an inherited coagulopathy or disseminated intravascular coagulation in neonates under six months of age' [5].
- Early VKDB occurs within the first 24 hours of life, classical VKDB occurs between 24 hours and 7 days, and late VKDB occurs after the first week of life. VKDB can cause serious morbidity and mortality [3].

Type of VKDB	Timing	Characteristics
Early-onset	Within first 24 hours of life	• Severe • Mainly occurs among neonates whose mothers used certain medications which interfere with how the body uses vitamin K
Classical	24 hours to one week of life	• Bruising • Bleeding from the umbilical cord
Late-onset	One week to six months old, most commonly 2-8 weeks after birth	• 30-60% of neonates have bleeding in the brain • Most commonly occurs in exclusively breastfed babies who have not received vitamin K administration. • Warning bleeds are rare

The known risk factors for VKDB are:

- Maternal anticonvulsant and isoniazid use in pregnancy [3]
- Neonates with malabsorption disorders or hepatobiliary disease [3]
- Neonates with diarrhoea, coeliac disease, or cystic fibrosis [3]
- Preterm neonates [6]
- Breastfed neonates (formula milk contains higher levels of vitamin K than breastmilk) [3]

1.2 Informed Consent

Following a discussion of the risks and benefits of vitamin K administration, parents are asked to provide verbal consent for the administration of vitamin K. Staff should be aware of the following key points when discussing vitamin K administration, to ensure that this consent is fully informed:

- Vitamin K is required to produce essential clotting factors in the liver [4]. VKDB occurs when babies cannot stop bleeding because their blood does not have enough vitamin K to clot. Bleeding can occur inside or outside of the body. Internal bleeding can be difficult to notice and may be fatal or cause severe brain damage. Bleeding can occur without warning [3].
- VKDB can be prevented through intramuscular (IM) vitamin K administration [3].
- The agreed policy therefore is to offer vitamin K IM. If parents decline IM administration of vitamin K, oral administration can be offered as an alternative. This however does not guarantee full protection [6].
- Details of the discussion with the parent(s) including the risk associated with vitamin K being given orally rather than IM must be documented in the baby's record.

2. PRESCRIBING AND DOSAGE OF VITAMIN K

2.1 Prescribing

Phytomenadione (Konakion MM Paediatric) is covered by the midwives' exemptions; therefore, it can be prescribed by a midwife [7]. The prescribing practitioner should ensure that Phytomenadione is prescribed on the baby's MAR (medication administration record on EPIC) along with the correct route of administration.

2.2 Dosage

Adapted from BNF [8]

Gestation and weight at birth	Dose
>36 weeks	1mg IM
<36 weeks and >2.5kg	1mg IM
<36 weeks and 1kg – 2.5kg	0.4mg/kg (maximum dose 1mg) IM
<36 weeks and <1kg	0.4mg/kg IM usually given in NNU. May be given via intravenous (IV) injection if IM route not appropriate. *NNU only: If IV is given at birth, 2 further oral (or IV) doses should be given at one week and 4-6 weeks.*
Healthy term baby (Where intramuscular vitamin K has been declined)	2mg orally at birth 2mg orally after 4-7 days
Healthy term baby – exclusively breastfed (Where intramuscular vitamin K has been declined)	2mg orally at birth 2mg orally after 4-7 days 2mg orally 1 month after birth

3. VITAMIN K ADMINISTRATION AND DOCUMENTATION

3.1 Administration of vitamin K

- Vitamin K ampoules should be checked by two registered practitioners prior to administration.

3.2 Administration of IM vitamin K

- Vitamin K should be drawn up using a blunt fill filter needle and administered using a 1ml syringe with a 25G hypodermic safety needle.

3.3 Administration of oral vitamin K

- Details of the discussion with the parent(s) including the risk associated with vitamin K being given orally rather than IM must be documented in the baby's record.
- Ensure the appropriate syringe is used for oral administration (only the syringes that come with the vitamin K box should be used for oral administration)

- Each baby needs to have an Oral Vitamin K Administration Record completed by the midwife giving the first dose of oral vitamin K, which should be secured in the Child Health Record. This file is accessed via the shared maternity drive (Appendix 1).
- One further dose of vitamin K should be given to the parents to take home to be administered on day 4-7. This should be administered by the community midwife and signed on the Oral Vitamin K Administration Record. Vitamin K must be supplied labelled with the baby's details. Suitable pre-packs are available on the postnatal wards at WPH and FPH.
- Details of the ampoule of vitamin K given to the parents must be added to the neonatal postnatal discharge summary by the midwife discharging family.
- If the baby is exclusively breastfeeding at one month of age, the parents should take the baby to the GP for the third dose of vitamin K. The Oral Vitamin K Administration Record should be signed and it should remain in the Child Health Record.

3.4 Documentation vitamin K administration

- Administration of vitamin K should be signed on the baby's MAR.
- This information will automatically collate on the neonatal postnatal discharge summary on EPIC.

4. INFORMATION TO BE GIVEN TO PARENTS IF VITAMIN K PROPHYLAXIS IS DECLINED

- Vitamin K is an essential vitamin that the body needs to form clots and to stop bleeding [3].
- Babies who do not get enough vitamin K are at risk of bleeding excessively over the first few days, weeks, and months of life. This is called Vitamin K Deficiency Bleeding (VKDB) [3].
- The bleeding can occur anywhere inside or outside of the body. Babies with VKDB often bleed into their intestines or brain, which can lead to brain damage and even death [3].
- In most cases of VKDB, there are no warning signs before a life-threatening event starts. However, they may develop any of the following signs [3]:
    - Bruising, particularly around the head and face
    - Bleeding from the nose or umbilical stump
    - Pale skin colour. For darker skinned babies, the gums may appear pale.
    - After the first 3 weeks of life, the white part of the baby's eyes may turn yellow.
    - Stool that has blood in it, or vomiting blood
    - Irritability, seizures, excessive sleepiness, or a lot of vomiting
- While breastfeeding is the healthiest way to feed your baby, breast milk contains very little vitamin K. The majority of VKDB occurs among exclusively breastfed babies, babies fed with soya-based formula milk and babies with malabsorption disorders or liver disease [3].
- VKDB is preventable by giving the baby vitamin K at birth via in intramuscular injection [3]. For this reason, Frimley Health maternity units recommend this treatment for all babies.
- Vitamin K given by mouth is not as effective as the intramuscular injection [6] and a number of babies each year are reported to have had bleeds because some doses were missed, because the baby vomited shortly after the dose was given or because the vitamin K did not get absorbed due to liver disease in the baby. We therefore recommend intramuscular vitamin K as the safest option. However, if parents do not want the intramuscular injection, then oral treatment can be offered.
- VKDB within the first week of life occurs in 1 in 60 to 1 in 250 babies [9-11].
- VKDB within the first week to 6 months is rarer and occurs in 1 in 14000 to 1 in 25000 babies [9-11].
- Babies with specific risk factors including liver disease, prematurity or those born to mothers who are on medicines for epilepsy are at a much higher risk and treatment of these babies with vitamin K is essential [3].

5. AUDITABLE STANDARD

Vitamin K is offered to all babies at birth.

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Appendix 1 Oral Vitamin K Administration Record

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Baby's Name: Date of Birth: Address: Hospital No. Hospital

All babies should have Vitamin K at birth to prevent vitamin K deficiency bleeding (VKDB). **This is normally given as a single intramuscular injection at birth, but if an oral dose is chosen then breast fed babies will need a total of 3 doses and formula fed babies require a total of 2 doses for complete protection.**	**ORAL VITAMIN K – KONAKION MM** **1. at birth** 2mg orally **2. 4- 7 DAYS** 2mg orally
For breast fed babies	**BREASTFED BABIES ONLY UNLESS PRESCRIBED SPECIALLY:** **3. 1 month** 2mg orally

PLEASE KEEP IN YOUR BABY'S CHILD HEALTH RECORD

Oral Vitamin K	Date Due	Dose	Route	Date Given	Signature
Age 1. Birth					
2. 4-7 days					
3. 1 month **3rd dose breastfed babies ONLY**					

Full version control record

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This guideline is for use in Frimley Health NHS Foundation Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version History

Version	Date	Guideline Lead(s)	Status	Comment
1.0	October 2020	J Cruse, Inpatient Matron (WPH); T Santcaterina, Inpatient Matron (FPH)	Final	First cross-site version
1.1	January 2024	S Williams, Lead Postnatal Midwife, WPH	Draft	Scheduled review
2.0	January 2024	S Williams, Lead Postnatal Midwife, WPH	Final	

Related Documents

None.