



CLINICAL PRACTICE GUIDELINE

Vitamin K administration: Neonate

This document should be read in conjunction with the [Disclaimer](#)

Aim

To provide administration of prophylactic Vitamin K₁ (phytomenadione) to prevent Vitamin K₁ deficiency bleeding in the newborn (VKDB).

Background information

Vitamin K prophylaxis given at birth has been shown to prevent VKDB.¹ The decline of vitamin K levels after birth leads to increased risk of VKDB for the neonate. The colonisation of the intestine by bacteria required to synthesise vitamin K does not occur until milk feeding is established.² Blood clotting factors II, VII IX and X require vitamin K to convert into active clotting factors, and because Vitamin K is poorly transferred across the placenta any stores are quickly depleted after birth.³ Human breast milk contains relatively low concentrations of vitamin K, therefore exclusively breast fed neonates are at increased risk for VKDB. Infant formula is supplemented by law with additional vitamin K.⁴

VKDB is classified according to the age of presentation⁴:

Early VKDB

Occurs within 24 hours and confined to neonates whose mothers have received medications that interfere with vitamin K metabolism.⁵ These include anticonvulsants phenytoin, barbiturates or carbamazepime the anti- TB medications rifampicin or isoniazid, and vitamin K antagonists such as warfarin and phenprocoumarin.⁴

Classical VKDB

Occurs from one to seven days after birth and is more common in neonates who are unwell at birth or who have delayed onset of feeding.⁴

Late VKDB

Occurs from 8 days to 6 months after birth and is almost always associated with fully breastfed infants. Approximately half of these infants have underlying liver disease or malabsorption problems.⁴

In 1990 a study described an association between intramuscular (IM) administration of Vitamin K and childhood cancer and leukaemia. This led to Australia introducing oral doses of Vitamin K which resulted in late cases of VKDB appearing. However,

later studies have failed to confirm association with childhood cancer.⁵ No randomised studies have been conducted about this.⁶ The use of IM Vitamin K is again common practice in Australia.

The rate of VKDB in infants without prophylaxis treatment of vitamin K has been reported as between five and 20 per 100,000 births, with a mortality rate of about 30%.⁴

Key points

1. Exclusively breastfed neonates and neonates with malabsorption problems or liver damage are at increased risk for VKDB unless supplemented with vitamin K.⁴
2. Antenatal women who are prescribed medication known to interfere with vitamin K absorption should be offered 20mg of vitamin K daily for at least 2 weeks prior to birth. Neonates born to these mothers should be offered vitamin K **within 4 – 6 hours** after birth.⁴
3. All antenatal women should be provided with written information about prophylactic vitamin K, and options of IM or oral administration.⁴
4. A single IM injection of Vitamin K can prevent haemorrhagic disease of the newborn.¹
5. A single IM dose of Vitamin K soon after birth provides higher plasma levels of vitamin K in the first few weeks of life when risk of VKDB is highest, compared to oral vitamin K. Multiple doses of oral vitamin K results in higher plasma levels at two weeks and two months compared to a single oral dose.¹
6. Written consent on the 'MR216 Information & Consent for Newborn Care (Vitamin K, Hepatitis B, Newborn Screen Test)' must be obtained prior to administering Vitamin K to neonates.
7. All neonates should be given vitamin K prophylaxis following maternal consent within 24 hours of birth.⁴
8. The preferred route of administration is IM. Alternatively, if this route is declined, oral administration of vitamin K should be offered.
9. IM administration of vitamin K requires no additional dosages.
10. While oral doses are non-invasive, three doses are required to obtain similar levels to an IM dose, and this requires parental compliance to ensure all doses are administered.⁴
11. Neonates with a birth weight of less than 1500g require a smaller dose of 0.5mg (0.05mL) of IM Vitamin K.⁴
12. Parents should be informed that unexplained bleeding or bruising in infants is abnormal, and prompt review by a medical practitioner is recommended.⁴

Dosage and administration

Prior to administration of Vitamin K ensure written maternal consent is completed on the 'MR 216 Information & Consent for Newborn Care' form. A pamphlet is available for parents about vitamin K.

Intramuscular administration (neonate >1500g)

Administer 1 mg (0.1mL) of Konakion® MM intramuscularly at birth.

- At KEMH this injection is generally given on admission to the postnatal ward following transfer from the Labour and Birth Suite. This avoids increased risk for potential medication errors in the Labour and Birth Suite.
- It may be administered in the Labour and Birth Suite if the mother has a prolonged stay or if is being discharged home directly from the Labour and Birth Suite.

Oral administration

- Oral administration is given as 3 separate doses.
- If the neonate vomits or regurgitates the oral Paediatric Konakion® MM within one hour of dosage, the oral dose can be repeated. While in KEMH discuss with the paediatrician if the neonate regurgitates, vomits, or has diarrhoea after this time and within 24 hours of the dose. They will determine if a repeat dose is required or IM injection is recommended.
- KEMH pharmacy also produces a leaflet 'Vitamin K Information for Parents' which contains instructions for administration of oral doses of Paediatric Konakion® MM. This leaflet (from the [MIMS product information](#)) advises parents that if the infant spits out, vomits, or has diarrhoea within 24 hours after being given the dose, then a repeat dose is recommended. However, parents must be informed to seek medical advice if regurgitation, vomiting and diarrhoeas continues to occur. Review may determine that IM injection is recommended in some cases.

Oral Vitamin K Administration Regimen

- **First dose:** given at birth. Give 2mg (0.2mL) of Konakion® MM orally⁴ with the first feed.
- **Second dose:** given 72-120 hours after birth (0.2mL) of Konakion® MM orally⁴.
- **Third dose:** give 2mg (0.2mL) of Konakion® MM orally at four weeks. The last dose is not required for neonates who are predominantly formula fed. The third dose should be given no later than four weeks post birth as the effect of the earlier doses diminishes over time.⁴
- For more information refer to: [Neonatal Medication Protocol: Phytomenadione \(Vitamin K\)](#)

Arranging oral vitamin K doses for administration after discharge

- The paediatric team orders the oral Vitamin K on the 'MR811 Neonatal Inpatient Medication Chart'. The ward pharmacist is paged for a discharge medication review before sending the chart to pharmacy for dispensing. On weekends, the chart may be sent down without a pharmacist review. Pharmacy will provide the Vitamin K Information for Parents' leaflet.

- The second dose is normally administered by the Visiting Midwife Service (VMS). Alternative arrangements may be made prior to discharge for women who are not remaining within the VMS visiting area when the second dose is due. In these cases, a GP may need to administer the dose.
- Instruct the mother on the regime for follow-up doses of oral Vitamin K. Provide her with the KEMH card for 'Oral Vitamin K administration for baby' Advise the mother to take the dose of oral Vitamin K to the GP for administration of the third dose.

Documentation

1. Document the initial administration of Vitamin K on the 'MR410 Neonatal History' form.
2. Document the initial administration of Vitamin K on the Neonatal Inpatient Medication Chart MR 811
3. Subsequent administration of oral doses should be documented:
 - on the KEMH 'oral administration vitamin K for baby' card supplied for the mother.
 - on the 'MR811 Neonatal Inpatient Medication Chart' if given as an inpatient (doses are written up by the paediatric team, and documented/signed for administration by nursing/midwifery staff) .
 - in STORK

References and resources

1. Puckett RM, Offringa M. Prophylactic vitamin K for vitamin K deficiency bleeding in neonates. **Cochrane Database of Systematic Reviews**,. 2009(1).
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3. Greig C. Trauma during birth, haemorrhage and convulsions. In: Fraser DM, Cooper MA, editors. **Myles textbook for midwives**. 15th ed: Churchill Livingstone; 2009. p. 58975.
4. National Health and Medical Research Council. Joint statement and recommendations on Vitamin K administration to newborn infants to prevent vitamin K deficiency in infancy. **NHMRC Statement and Recommendations**. 2010.
5. Van Winckel M, De Bruyne R, Van De Velde S, et al. Vitamin K, an update for the paediatrician. **European Journal of Pediatrics**. 2009;168:127-34.
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Keywords:	vitamin K, neonate, phytomenadione, vitamin k deficiency		
Document owner:	Obstetrics Gynaecology and Imaging Directorate (OGID)		
Author / Reviewer:	O&G Evidence Based Clinical Guidelines		
Date first issued:	09/2001		
Last reviewed:	March 2018	Next review date:	March 2021

Endorsed by:	MSMSC	Date:	06/03/2018
Standards Applicable:	NSQHS Standards: 1  Governance, 4  Medication Safety		
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