

# A vitamin K prophylaxis survey among breastfeeding mothers

A survey was distributed among new breastfeeding mothers in northern England to gain insight into their experiences with different forms of neonatal vitamin K prophylaxis. Two-thirds of mothers were knowledgeable about the reasons for giving vitamin K and a quarter felt that they had not received adequate information on the subject. The importance of neonatal vitamin K prophylaxis must be fully explained by healthcare workers to all expectant parents.

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## Keywords

breastfeeding; vitamin K deficiency bleeding; vitamin K prophylaxis

## Key points

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1. Appropriate vitamin K prophylaxis prevents most cases of vitamin K deficiency bleeding, which is more common in breastfed infants.
2. Healthcare staff and new parents should be given more detailed information about the reasons for giving vitamin K to every neonate.

During the last century, great progress has been made regarding the prevention and treatment of infantile vitamin K deficiency bleeding (VKDB).<sup>1</sup> While there is consensus that every newborn would benefit from prophylactic vitamin K, this goal has not been achieved globally due to lack of resources in some regions. One milligram of vitamin K given intramuscularly at birth is considered the safest and most effective way to prevent VKDB,<sup>2</sup> however, other forms of vitamin K prophylaxis have been explored.<sup>3,4</sup>

The authors previously reported a survey among midwives on the tolerability and acceptability of an oral vitamin K regimen. It consisted of oral phytomenadione (Konakion MM Paediatric 1mg or Neokay capsule 1mg) for all healthy infants, followed by Neokay drops 50µg daily for three months for breastfed infants only. Preterm and sick infants received 0.5mg Konakion MM Paediatric intramuscularly.<sup>5</sup> This vitamin K policy has been successfully implemented in this hospital trust and neighbouring NHS Trusts for approximately five years. For the current study, which covered a larger population in the north east of England, a cohort of breastfeeding mothers was asked directly about their general knowledge and views on vitamin K prophylaxis and about the specific regimen of vitamin K used in their newborn infant.

## Methods

This project, conducted as part of a local child health service improvement programme, consisted of an anonymous, voluntary, cross-sectional parent survey. Formal ethics approval was not required;

however, the survey was registered with the Research Departments of NHS North of Tyne and Northumbria Healthcare NHS Foundation Trust. A four-page questionnaire was drafted, consisting of an introductory paragraph and 25 fixed-alternative and open-ended questions.<sup>6</sup> During a nine-month period, 150 questionnaires were distributed to new parents via 11 GP surgeries and five breastfeeding support groups, which were spread across the region. In addition, hospital databases were searched for numbers of deliveries and breastfeeding rates. The total population of the study area was approximately 800,000.

## Results

During the study period, 6,892 infants were born in the region and 2,826 of them (41%) were breastfed at 6-8 weeks of age. In all, 63 breastfeeding mothers returned the completed questionnaire, giving a response rate of 42%.

- 61 mothers (97%) were educated in the UK and of European origin.
- 16 mothers (25%) received standard school education (GCSE or A Level) and 47 (75%) graduated from higher education, for instance with a university degree.
- The women were divided into age ranges:
  - 20-29 years (16; 25%)
  - 30-39 years (45; 72%)
  - >40 years (2; 3%)
- The male to female ratio of the newborn infants was 0.8 (28 boys, 35 girls).
- 41 mothers (65%) were primiparas; 16 (25%) had two children; five (8%) had three children and one (2%) had four.
- 59 infants (94%) received vitamin K prophylaxis at birth.

The reasons for the four infants who did not receive vitamin K prophylaxis at birth were given as parental choice (2; 3%) and not having been offered by healthcare staff (2; 3%).

Vitamin K was administered at birth orally to 48 neonates (81%) and intramuscularly to 11 (19%). The importance of supplementing the vitamin K stores of newborn infants was explained to 50 mothers (79%) during or after their pregnancy, whereas 13 mothers (21%) were not given this information or did not recall it.

Forty women (63%) had some understanding of why vitamin K prophylaxis was given, eg 'helps with blood clotting' or 'prevents bleed in brain'. The other 23 (37%) gave an incorrect or no answer. Only 37 parents (59%) reported receiving a leaflet containing details about vitamin K.

Forty-five infants out of 48 (94%) were issued with one bottle of vitamin K drops to be taken daily for three months after discharge from hospital. All 45 mothers forgot to give vitamin K occasionally:

- 20 (44%) on less than five days
- 5 (12%) on 5-10 days
- 20 (44%) on >10 days.

Thirty-seven mothers (82%) found the oral preparation easy to administer. Eight women (18%) stated that remembering to give it was a problem or that their infant spat it out.

The 18 infants (28%) that were not given drops to take home included those injected with vitamin K intramuscularly and those whose parents declined prophylaxis.

Almost three-quarters (46) of surveyed mothers (73%) intended to exclusively breastfeed for a period of 6-12 months. The majority of children were less than one year of age and none of them had suffered a serious illness since birth (birth dates were not provided in this anonymous survey).

A significant proportion of women (16; 25%) felt that they had not been given sufficient information regarding vitamin K prophylaxis. Ten out of 11 mothers (91%) whose infants had received intramuscular vitamin K were overall satisfied with this form of preventative treatment.

Acceptability and tolerability of the oral vitamin K supplement among the studied women and children was similarly high (45 out of 48; 94%). However, some mothers would have preferred a better tasting oral solution that could be given less frequently (weekly or monthly) or an injection for convenience and to increase compliance.

## Discussion

For this survey, 63 new breastfeeding mothers were asked about their opinions on vitamin K prophylaxis. Their white British background was fairly typical for this region of England where ethnic minorities account for approximately 5% of the population.<sup>7</sup> The observation seen here, that breastfeeding mothers tend to be older and better educated than the average new mother, is confirmed by two recent large studies from Scotland and the USA.<sup>8,9</sup>

The Chief Medical and Nursing Officers of the UK have advised that vitamin K is given intramuscularly or orally to all neonates.<sup>10</sup> Injections are more effective but also more distressing, whereas the main issue with repeated oral supplementation is a lack of compliance. In the study presented here, four in every five children received vitamin K orally and one in five, by injection. This result differs from the national figures, reported in a survey of 230 maternity units in Great Britain and Ireland: 60% administered vitamin K intramuscularly, 24% orally and 16% gave the parents a choice.<sup>11</sup>

According to this relatively small survey, prophylactic vitamin K was not given to four out of 63 infants (6%), which is concerning. The daily vitamin K requirement for infants below six months of age is 10µg. Formula-fed infants typically receive 50µg vitamin K daily but breastfed infants only 1µg daily.<sup>5</sup> This explains why VKDB is more common in breastfed infants who are not supplemented.<sup>4</sup>

Although overall satisfaction of the participating mothers with the respective vitamin K prophylaxis was >90%, this survey revealed several areas for improvement:

- One third of women did not have adequate knowledge about vitamin K and its importance for blood clotting
- At least 20% stated that they were not provided with such information during pregnancy
- 40% did not receive written information.

Recently, doctors and midwives in New Zealand were interviewed regarding their attitudes towards prophylactic vitamin K.<sup>12</sup> It was found that a significant proportion of midwives did not feel the need to give vitamin K to all newborn infants. This demonstrates a knowledge gap that must be closed as it has consequences for parent education. A large survey investigating the

communication processes of parents and staff on a NICU emphasised the importance of good communication between health professionals and families.<sup>13</sup> A number of parents preferred to receive medical information from doctors directly, implying that family physicians and obstetricians as well as midwives, have a role to play in educating parents according to national recommendations.

The majority of breastfeeding mothers in this survey were white primiparas in their thirties who had higher qualifications. To obtain a bigger picture, studies similar to this one should be performed in different regions, including mothers of breastfed and formula-fed infants.

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