

FAQ #4

Maternal postpartum vitamin A dosing programs:

What are the expected impacts of a maternal postpartum vitamin A dosing program on the health and nutrition of the mother and the child?

How do these programs work?

What are the current guidelines for these programs?

FAQ #4

part 1

Maternal postpartum vitamin A dosing programs:

What are the expected impacts of a maternal postpartum vitamin A dosing program on the health and nutrition of the mother and the child?

- Postpartum dosing improves maternal vitamin A status and increases the vitamin A content of breast milk.
- Postpartum dosing improves infant vitamin A status and may help prevent vitamin A deficiency in high-risk infants.
- Postpartum dosing may decrease infant morbidity.
- Postpartum dosing may decrease infant mortality.
- Postpartum dosing may improve maternal health

Postpartum dosing improves maternal vitamin A status and increases the vitamin A content of breast milk.

Unlike most other components of breast milk which occur in relatively constant amounts, the vitamin A concentration of breast milk is highly dependent on the mother's nutritional status. In field trials, high-dose postpartum supplementation with vitamin A has consistently increased the vitamin A content of breast milk for at least six months. Improving the vitamin A status of the mother will increase the vitamin A content of breast milk and this will mean more vitamin A for the breast-feeding infant. The impact of postpartum supplementation on maternal vitamin A status, as measured by serum retinol, has been less consistent than the effect on breast milk. This is probably due to differences in dosage and the magnitude of the underlying subclinical vitamin A deficiency. See below for a fuller discussion.

Postpartum dosing improves infant vitamin A status and may help prevent vitamin A deficiency in high-risk infants.

Improved infant vitamin A status after postpartum dosing would be expected to result from consumption of breast milk with increased vitamin A content. In many countries, children first become eligible for routine vitamin A supplementation when they are six months old as part of a program for preschool children. Improving the vitamin A status of infants *before* this point in time may help to reduce their risk of vitamin A deficiency and enhance their vitamin stores up to six months when they begin to have a much higher risk of developing vitamin A deficiency.¹ For infants, this may be the most important outcome of postpartum dosing programs.

Postpartum dosing may decrease infant morbidity.

Three placebo-controlled postpartum dosing studies have specifically investigated this issue with inconsistent results. In Bangladesh, fever episodes were reported less frequently and respiratory tract infections ended faster among the six-month-old infants of mothers who had received a 200,000 IU dose of vitamin A after delivery.⁷ In India, the incidence of diarrhea and acute respiratory infections in six-month-old infants remained unchanged when mothers received a 300,000 IU dose after delivery.⁸ No effect of postpartum vitamin A supplementation on morbidity in older infants was found in the WHO multi-center trial.⁶

Postpartum dosing may decrease infant mortality.

So far, no postpartum dosing studies specifically designed to investigate this issue have been published. Studies of direct infant dosing have shown variable effects on mortality. In Indonesia, infant mortality was reduced by 64% when infants were given a 50,000 IU dose of vitamin A during the first day of life⁹. A similar benefit was not observed in Nepal when infants were given 50,000 IU during the first month of life¹⁰. The multi-center WHO trial mentioned above found no differences in infant mortality. Additional studies are underway to clarify this issue. If postpartum dosing programs can succeed in improving infant vitamin A status during the first six months of life, they may help to promote the health and survival of children during the high-risk second six months of life.

Postpartum dosing may improve maternal health.

Apart from the well-documented increase breastmilk vitamin A concentrations and less significant improvements in maternal vitamin A status, the additional health benefits of supplementing women with vitamin A after delivery remain largely unmeasured.

Recent studies from Nepal clearly indicate that poor vitamin A status during pregnancy and lactation is associated with adverse maternal health outcomes¹¹ and that supplementing women with *low-dose* vitamin A (7000 IU) on a weekly basis *before, during and after pregnancy* increased maternal serum retinol concentrations, reduced night blindness¹² and decreased pregnancy-related mortality by 40%¹³. These results may provide a further rationale for postpartum dosing to improve maternal health.

Administering vitamin A supplements to women according to the current recommendations during the early period of postpartum infertility (< 8 wk after delivery if lactating) is safe. To date, no adverse side effects have been reported from postpartum dosing trials. In addition, data from a recent study in Zimbabwe that was specifically designed to systematically assess the occurrence of side effects suggest that a dose of 400,000 IU (twice the current recommendation) is well-tolerated by women.¹⁴

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FAQ #4

part 2

Maternal postpartum vitamin A dosing programs: How do these programs work?

- Giving women vitamin A supplements after delivery will improve their vitamin A status and increase the vitamin A content of their breast milk.
- Infants who drink breast milk with a higher vitamin A content will have better vitamin A status, at least to 6 months, and may be able to build body stores for protection against deficiency later on.

Giving women vitamin A supplements after delivery improves their vitamin A status and increases the vitamin A content of breast milk.

The magnitude of improvement in women's vitamin A status varies, possibly in relation to women's underlying subclinical VAD and the supplement dose. A 200,000 IU dose may not increase the mothers stores of vitamin A enough to correct their underlying subclinical VAD and to confer them protection throughout lactation. The impact on the content of vitamin A in breast milk tends to be more consistent.

Unlike most other components of breast milk which occur in relatively constant amounts, the vitamin A concentration of breast milk is highly dependent on the mother's nutritional status.¹ The average breast milk vitamin A concentration of women in developing countries is ~1.40 mmol/L, approximately half that of women in developed countries.²

Supplementing women with vitamin A after delivery improves maternal vitamin A status and increases the vitamin A content of breast milk. Placebo-controlled studies using a single postpartum vitamin A dose of 200,000 IU to 300,000 IU have been conducted in Bangladesh,^{3,4} India,⁵ Indonesia,⁶ and Thailand.⁷ Larger and longer lasting improvements in milk vitamin A content were observed when higher doses were used.

An increase in breast milk vitamin A improves the vitamin A status of the infant although this effect has not been demonstrated beyond six months of age.

All infants, even those of well-nourished mothers in developed countries, are born with very limited body stores of vitamin A (~two-weeks worth). In developing countries, infants depend primarily on the vitamin A in breast milk to build their stores during the first few months of life. Children who are not breast fed are more likely to suffer from xerophthalmia than children who are even partially breast fed.^{8,9} Breast milk vitamin A concentrations of 1.05 mmol/L (common among women in developing countries) are just sufficient to meet an infant's immediate needs during the first six months of life, but higher concentrations are needed to build body stores and protect the infant from deficiency later on.¹⁰

The impact of postpartum dosing on infant's vitamin A status has been less consistent than that on breast milk retinol. Four placebo-controlled postpartum dosing studies have measured breast milk concentrations and infant vitamin A status at six months of age. Breast milk vitamin A concentrations were increased and body stores of vitamin A were improved up to six months of age among the infants of supplemented mothers in Bangladesh³ and Indonesia,⁶ where mothers were given 200,000 IU and 300,000 IU of vitamin A after delivery, respectively.

In the WHO trial¹¹ in Ghana, India, and Peru, women were given 200,000 IU of vitamin A after delivery and their infants received a 25,000 IU dose of vitamin A along with each of three diphtheria-tetanus-pertussis and polio immunizations. The proportions of infants six months of age with low serum retinol and reduced vitamin A liver stores were somewhat lower in the vitamin A group than in the control group, but the difference was only significant in the former. At 9 and 12 months of age there were no differences in vitamin A indicators between the groups. The infants in this study benefited from maternal postpartum vitamin A supplementation, but the effect was not sustained beyond six months of age. Data on breast milk vitamin A concentrations have not yet been published.

In a double blind prospective study in India, a 200,000 IU dose of vitamin A provided to postpartum women significantly increased breast milk retinol for only a short period and no impact on infant's serum retinol levels was observed.¹²

These results show that although maternal supplementation is beneficial, the optimal dosage needed to achieve breast milk vitamin A concentrations and the eventual need for other interventions that will allow nearly all infants to attain adequate vitamin A status by six months of age needs further investigation.

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FAQ #4

part 3

Maternal Postpartum Vitamin A Dosing Programs: What are the current guidelines for these programs?

Guidelines for areas where vitamin A deficiency is a problem		
Population group	Dose	Time frame
Mothers who are breastfeeding	200,000 IU orally	Within 8 weeks postpartum
Mothers who are not breastfeeding	200,000 IU orally	Within 6 weeks postpartum

Source: International Vitamin A Consultative Group (IVACG). Safe doses of vitamin A during pregnancy and lactation: IVACG Statement, June 1998.

In 1998, WHO¹ recommended that “mothers who are not breast-feeding will benefit from a high-dose supplement given safely during the first 28 days (four weeks or onemonth) postpartum. Mothers who are breast-feeding will benefit from a high-dose supplement given up to 60 days (eight weeks or two months) postpartum, as will their nursing infant – through higher levels of vitamin A in breast milk”. An IVACG statement in June 1998² suggested the guidelines for postpartum dosing in the table above.

The effectiveness of the recommended dose (200,000 IU) has been questioned by some in view of the inconsistent results from several trials. The safety of large doses up to 400,000 IU has been confirmed³. The impact of 300,000 IU on mother and infant vitamin A status has been demonstrated in two studies^{4,5}.

Because postpartum dosing is a relatively new intervention, more work will be done to optimize this approach. In March 2000, WHO convened an informal expert consultation to review the guidelines and update them as needed. A summary of these proceedings will be posted on the MOST Web site as soon as is it available to us.

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