

Benefits of postpartum vitamin A supplementation

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Lima et al.¹ report an interesting and novel finding regarding the increase of secretory immunoglobulin A (SIgA) concentration in colostrum within 24 hours after administering a high-dose vitamin A capsule (200,000 IU) to women on day 1 postpartum. The main finding was that while mean SIgA concentration in colostrum dropped from 829.1 mg/dL on day 1 to 343.9 mg/dL on day 2 in the control group (n = 44), its concentration only decreased from 827.3 mg/dL to 501.2 mg/dL in the intervention group (n = 52; p < 0.00001 for concentration differences on day 2).

High SIgA concentrations in colostrum provide the newborn infant with immediate immune protection against infections soon after birth, when its immune system is immature. The high-dose vitamin A capsule provided to the mothers is also likely to have increased breast milk vitamin A concentration. This effect would lead to an increase in the newborn's vitamin A intake during the first few months of breastfeeding, which could also enhance both the host innate immune system and the epithelial barrier function.

The authors did not report on serum or breast milk retinol concentration, which is surprising since the expected change of serum retinol concentration in the first month postpartum was used to calculate the required sample size of the study groups. It would have been useful to be able to compare serum and breast milk retinol concentrations to SIgA concentrations, possibly beyond the first 2 days postpartum.

Many studies have found that postpartum vitamin A supplementation can result in modest, short-term increases in maternal and child vitamin A status, measured as higher serum retinol concentrations, higher liver vitamin A stores, or higher breast milk vitamin A levels.² In 1997, the WHO/UNICEF/IVACG Task Force published guidelines recommending supplementation of postpartum women with 200,000 IU of vitamin A.³ In 2001, those guidelines were revised to recommend a higher dosage, of 400,000 IU, split into two doses of 200,000 IU at least 1 day apart. This measure was taken mostly because the effect of the single lower dose had been shown to have a limited impact on the vitamin A status of infants through the first 6 months of life.⁴ However, after considering systematic reviews of studies on postpartum vitamin A supplementation, which found no impact on maternal and infant morbidity and mortality,⁵⁻⁷ the new 2011 WHO guidelines do not recommend postpartum vitamin A supplementation as a public health intervention.⁸

The results reported by Lima et al. show that, in addition to the expected improvement in maternal and infant vitamin A status, as shown in previous studies, postpartum vitamin A supplementation can increase SIgA concentration in colostrum.¹ Whether this higher level of SIgA can lead to immediate improvements in terms of health and survival has not been investigated, but the finding is promising and underscores the importance of feeding colostrum to the newborn, which is not practiced in many settings.

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The apparent discrepancy between the findings of an improvement in vitamin A intake, and now an increase in SIgA concentration in breast milk as a result of postpartum vitamin A supplementation and the lack of a demonstrable impact on morbidity or mortality is unlikely to mean that postpartum vitamin A does not provide a health benefit to the infants. They rely on vitamin A in breast milk to build their vitamin A stores,⁹ and vitamin A deficiency increases the risk of morbidity and mortality. The latest meta-analysis concludes that vitamin A supplementation among children under 5 years old is associated with large reductions in morbidity, mortality and vision problems in a range of settings, and that further placebo-controlled trials of vitamin A supplementation in children between 6 and 59 months of age are not required.¹⁰

The discrepancy is more likely to be due to other reasons. Some of the studies on postpartum supplementation were not adequately designed or developed for the outcomes that were of interest for the review, i.e., morbidity and mortality. For example, Christian¹¹ pointed out in a commentary, to one of the three systematic reviews (by Gogia & Sachdev⁶) that informed the 2011 WHO guidelines, that three of the six studies reviewed were not developed to assess infant mortality as an outcome. Furthermore, most of the studies examining postpartum vitamin A supplementation effects on infant morbidity and mortality used doses less than 400,000 IU, with some providing high-dose capsules whereas others smaller, more regular dosages, including during pregnancy.⁸ Thus, it seems that the maternal vitamin A supplementation interventions that were reviewed were not uniform and overall did not demonstrate a reduction of morbidity and mortality, although they likely improved vitamin A status and immunity to some extent. Further research is recommended on the metabolism of high-dose vitamin A supplements provided at different times postpartum to determine whether effectiveness can be improved by changing the timing of dosage.⁸

Currently available evidence indicates that it is important to ensure adequate vitamin A intake by all individuals, including pregnant and lactating women, as well as their infants. However, the methods for improving maternal vitamin A status that confer greater benefits to the infants, including the reduction of morbidity and mortality, need yet to be found. Additionally, in order for the infants to fully benefit from the nutritional and immunological qualities of breast milk, they need to be exclusively breastfed for the first 6 months of life and receive colostrum. Where women are unlikely to meet the daily recommended intake of vitamin A of 850 µg retinol equivalents (RE), food fortification and low- and high-dose supplementation during the first 6 weeks after delivery can be useful strategies for improving vitamin A status, increasing breast milk retinol levels and thereby increasing infant vitamin A intake and immunity.

Building on the research by Lima et al.,¹ it would be very interesting to assess not only the metabolism of high-doses of vitamin A provided at different times postpartum for its impact on breast milk concentration of retinol, but also of SIgA, immediately and over longer periods of time after supplementation.

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References

1. Lima MS, Ribeiro PP, Medeiros JM, Silva IF, Medeiros AC, Dimenstein R. Influence of postpartum supplementation with vitamin A on the levels of immunoglobulin A in human colostrum. *J Pediatr (Rio J)*. 2012;88:115-8.
2. Rice AL. Postpartum vitamin A supplementation: evaluating the evidence for action. A2Z Project Technical Brief, Academy for Educational Development, Washington, DC, January 2007. <http://www.a2zproject.org/pdf/Postpartum-VAS.pdf>. Access: 28/02/12.
3. WHO, UNICEF, IVACG Task Force. Vitamin A supplements: a guide to their use in the treatment and prevention of vitamin A deficiency and xerophthalmia. 2nd ed. Geneva: World Health Organization; 1997.
4. Ross DA. Recommendations for vitamin A supplementation. *J Nutr*. 2002;132:2902S-6S.
5. Oliveira-Menegozzo JM, Bergamaschi DP, Middleton P, East CE. Vitamin A supplementation for postpartum women. *Cochrane Database Syst Rev*. 2010;(10):CD005944.
6. Gogia S, Sachdev HS. Maternal postpartum vitamin A supplementation for the prevention of mortality and morbidity in infancy: a systematic review of randomized controlled trials. *Int J Epidemiol*. 2010;39:1217-26.
7. Gogia S, Sachdev HS. Vitamin A supplementation for the prevention of morbidity and mortality in infants six months of age or less. *Cochrane Database Syst Rev*. 2011;(10):CD007480.
8. World Health Organization. Guideline: Vitamin A supplementation in postpartum women. Geneva: World Health Organization; 2011. http://whqlibdoc.who.int/publications/2011/9789241501774_eng.pdf. Access: 28/02/2012.
9. Stoltzfus RJ. Vitamin A deficiency in the mother-infant dyad. *SCN News*. 1994;11:25-7.
10. Mayo-Wilson E, Imdad A, Herzer K, Yakoob MY, Bhutta ZA. Vitamin A supplements for preventing mortality, illness, and blindness in children aged under 5: systematic review and meta-analysis. *BMJ*. 2011;343:d5094.
11. Christian P. Commentary: postpartum vitamin A supplementation and infant mortality. *Int J Epidemiol*. 2010;39:1227-8.

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