



The Global
Alliance
for Vitamin A



POST-PARTUM VITAMIN A SUPPLEMENTATION (VAS)

Studies show that post-partum vitamin A supplementation (VAS) can result in modest, short-term increases in higher breast milk vitamin A levels, higher infant liver stores and improved maternal and child vitamin A status.

BACKGROUND

Studies show that post-partum vitamin A supplementation (VAS) can result in modest, short-term increases in higher breast milk vitamin A levels, higher infant liver stores and improved maternal and child vitamin A status (Villard L, 1987; Stoltzfus R, 1993; Tanumihardjo SA, 1996). These findings led to the initial WHO recommendation in 1997 to give breast feeding women 200,000 IU of vitamin A within the first six weeks' post-partum (WHO, 1997). Since then, WHO has modified its guidelines. In 2001 WHO recommended giving a higher dose of 400,000 IU, split into two doses of 200,000 IU separated by at least 1 day because the single lower dose showed limited impact on the vitamin A status of infants (Ross, J 2002). In 2011, WHO no longer recommended post-partum VAS as a public health intervention to reduce morbidity or mortality (WHO, 2011) because it lacked evidence on reducing the risk of illness or death in mothers or their infants (Oliveira-Menegozzo JM, 2010; Gogia S, 2010; Gogia S, 2011).

However, many countries that have implemented post-partum VAS in the last 20 years still continue to do so. This "Technical Brief" is intended to assist countries in deciding whether to continue or stop post-partum VAS by summarizing what is known, identifying information gaps and highlighting considerations for policy makers.

KEY MESSAGES

- Based on current evidence, WHO does not recommend post-partum VAS as an intervention for reducing the risk of maternal or infant mortality and morbidity.
- In vitamin A deficient populations, post-partum VAS can be expected to modestly improve the vitamin A concentration of breast milk and the liver stores of breast feeding infants although these benefits may be short-lived.
- Whether or not a country chooses to continue post-partum VAS, other interventions are needed to improve maternal VA intake and status in settings where maternal vitamin A deficiency and undernutrition are common.

WHAT IS KNOWN

→ **1. ALL INFANTS ARE NATURALLY BORN with low body stores of vitamin A and depend upon vitamin A-rich colostrum and breast milk to meet their physiological need for vitamin A** and other nutrients for proper growth and development (Butte, 2002). The dietary reference intake for

All infants are naturally born with low body stores of vitamin A and depend upon vitamin A-rich colostrum and breast milk to meet their physiological need for vitamin A and other nutrients for proper growth and development.




lactating women is 1,300 Qg per day, which is 85% higher compared to non-pregnant and non-lactating women (Institute of Medicine, 2001). This higher requirement for lactating women is needed to ensure adequate vitamin A levels of breast milk because breast milk is the single most important source of vitamin A for breast fed infants.

→ **2. A WOMEN'S DIETARY INTAKE OF VITAMIN A influences her vitamin A status and the levels of vitamin A in her breast milk.** Studies show that maternal dietary intake is an important determinant of vitamin A status and breast milk vitamin A concentrations (Butte, 2002). Intervention trials show that vitamin A concentrations of mothers and/or their breast milk can be achieved by providing low-dose vitamin A or beta-carotene supplements to women before, during, and after pregnancy (West, 2011), through food fortification

programs (Das, 2013) and through food-based interventions (de Pee S, 1998). Available evidence also suggests that high-dose postpartum supplementation results in modest, short-term improvements in maternal and child vitamin A status (Stoltzfus R, 1993; Bahl R, 2002; Vinutha B, 2000; Rice A, 1999; Bhaskaran P, 2000). The effectiveness of these approaches varies and appears to be influenced by women's underlying vitamin A status. Women who are more severely deficient tend to be more responsive to intervention.

→ **3. POST-PARTUM VAS can result in modest, short-term increases in higher breast milk vitamin A levels, higher infant liver stores and improved maternal and child vitamin A status** (Stoltzfus R, 1993; Bahl R, 2002; Vinutha B, 2000; Rice A, 1999; Bhaskaran P, 2000). But the results of studies vary in terms of the duration of benefit on maternal serum or breast milk vitamin A levels, and on infant vitamin A levels, liver stores and prevalence of adequate vitamin A status.

→ **4. POST-PARTUM VAS does not appear to reduce the risk of illness or death in mothers or their infants.** A 2016 Cochrane review on postpartum high dose VAS (200,000 IU) found no evidence that it reduced the risk of maternal or infant mortality, and non-conclusive evidence on its effects on maternal or infant illness (Olivera JM, 2016). Most of the studies reviewed, however, were not designed to measure the impact of postpartum VAS on maternal or infant morbidity and mortality. In one study, postpartum VAS increased an important immune factor (immunoglobulin A or SIgA) found in breast milk, but the study did not investigate its link with improved child health or survival. (Lima, 2012).



Adequate maternal vitamin A status is vital for ensuring young breast-fed infants receive enough vitamin A to meet their physiologic needs.

INFORMATION GAPS

Information gaps about post-partum VA remain. Research is needed to assess whether the effects of post-partum VA by maternal VA status at dosing, the dose (i.e. 200,000 IU, 300,000 IU, or 400,000 IU), and timing (i.e. immediately after birth or 6-8 weeks after child birth) of the dose. There remains much to learn about the factors that influence levels of absorption and metabolism of vitamin A, and the best single or combination of bio-markers for measuring the effects of post-partum VAS on maternal and infant VA status and immune function.

CONCLUSIONS

Adequate maternal vitamin A status is vital for ensuring young breast-fed infants receive enough vitamin A to meet their physiologic needs. Evidence shows that post-partum VAS can improve maternal vitamin A status, the concentration of vitamin A in the breast milk, and the vitamin A intake and stores of breast fed infants in vitamin A deficient populations. But there is no conclusive evidence that these outcomes translate into lower risks of death or illness among mothers or their infants.

CONSIDERATIONS FOR POLICY-MAKERS

Countries still implementing post-partum VAS need to balance the costs and benefits against available resources and their program goals. In vitamin A deficient settings and where the cost of the supply of vitamin A capsules is not a barrier, countries may want to continue implementing this intervention to improve short-term vitamin A status in lactating women and breastfed infants.

Based on current evidence, WHO does not recommend post-partum VAS as an intervention for reducing the risk of maternal or infant mortality and morbidity. But, post-partum VAS can be expected to modestly improve the vitamin A concentration of breast milk and the liver stores of breast feeding infants although these benefits may be short-lived. Whether or not a country chooses to continue post-partum VAS, other interventions are needed to improve maternal VA intake and status in settings where maternal vitamin A deficiency and undernutrition are common.

REFERENCES

1. Bahl R, Bhandari N, Wahed MA, Kumar GT, Bhan MK; WHO/CHD Immunization-Linked Vitamin A Group. Vitamin A supplementation of women postpartum and of their infants at immunization alters breast milk retinol and infant vitamin A status. *J Nutr*. 2002 Nov;132(11):3243-8.
2. Bhaskaram P, Balakrishna N. Effect of administration of 200,000 IU of vitamin A to women within 24 hrs after delivery on response to PPV administered to the newborn. *Indian Pediatr*. 1998 Mar;35(3):217-22.
3. Butte NF, Fox MK, Briefel RR, Siega-Riz AM, Dwyer JT, Deming DM, Reidy KC. Nutrient intakes of US infants, toddlers, and preschoolers meet or exceed dietary reference intakes. *J Am Diet Assoc*. 2010 Dec;110(12 Suppl):S27-37.
4. Das JK, Salam RA, Kumar R, Bhutta ZA. Micronutrient fortification of food and its impact on woman and child health: a systematic review. *Syst Rev*. 2013 Aug 23;2:67.
5. de Pee S, Bloem MW, Gorstein J, Sari M, Satoto, Yip R, Shrimpton R, Muhilal. Reappraisal of the role of vegetables in the vitamin A status of mothers in Central Java, Indonesia. *Am J Clin Nutr*. 1998 Nov;68(5):1068-74.
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. Institute of Medicine. Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc. Washington, DC: The National Academies Press, 2001.
9. 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
10. Oliveira, J.M., Allert, R., East, C.E., 2016, Vitamin A supplementation for postpartum women, *Cochrane Database of Systematic Reviews 2016, Issue 3*
11. Oliveira-Menegozzo JM, Bergamaschi DP, Middleton P, East CE. Vitamin A supplementation for postpartum women. *Cochrane Database Syst Rev*. 2010;(10):CD005944.
12. Rice AL, Stoltzfus RJ, de Francisco A, Chakraborty J, Kjolhede CL, Wahed MA. Maternal vitamin A or beta-carotene supplementation in lactating bangladeshi women benefits mothers and infants but does not prevent subclinical deficiency. *J Nutr*. 1999 Feb;129(2):356-65.
13. 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
14. Ross DA. Recommendations for vitamin A supplementation. *J Nutr*. 2002;132:2902S-6S.
15. Stoltzfus RJ, Hakimi M, Miller KW, Rasmussen KM, Dawiesah S, Habicht JP, Dibley MJ. High dose vitamin A supplementation of breast-feeding Indonesian mothers: effects on the vitamin A status of mother and infant. *J Nutr*. 1993 Apr;123(4):666-75
16. Tanumihardjo SA, Muherdiyantiningsih, Permaesih D, Komala, Muhilal, Karyadi D, Olson JA. Daily supplements of vitamin A (8.4 mumol, 8000 IU) improve the vitamin A status of lactating Indonesian women. *Am J Clin Nutr*. 1996 Jan;63(1):32-5.
17. Villard L, Bates CJ. Effect of vitamin A supplementation on plasma and breast milk vitamin A levels in poorly nourished Gambian women. *Hum Nutr Clin Nutr*. 1987 Jan;41(1):47-58.
18. Vinutha B, Mehta MN, Shanbag P. Vitamin a status of pregnant women and effect of post partum vitamin a supplementation. *Indian Pediatr*. 2000 Nov;37(11):1188-93.
19. West KP Jr, Christian P, Labrique AB, Rashid M, Shamim AA, Klemm RD, Massie AB, Mehra S, Schulze KJ, Ali H, Ullah B, Wu LS, Katz J, Banu H, Akhter HH, Sommer A. Effects of vitamin A or beta carotene supplementation on pregnancy-related mortality and infant mortality in rural Bangladesh: a cluster randomized trial. *JAMA*. 2011 May 18;305(19):1986-95.
20. 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.
21. 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.

