

NUTRITION BULLETIN

Vitamin A capsule distribution after the
NIDs – lessons learned from Cambodia

An alarming number of cases of nutritional blindness in the past year have brought into question the effectiveness of the current national vitamin A capsule (VAC) distribution program in Cambodia. From 1996-1997, when VAC distribution was integrated with the National Immunization Days (NIDs), coverage was high. However, now that VAC distribution has been integrated with routine EPI (Expanded Program for Immunization), because NIDs are no longer necessary, coverage has become much lower. Therefore, many Cambodian children are again at risk of going blind or dying from vitamin A deficiency.

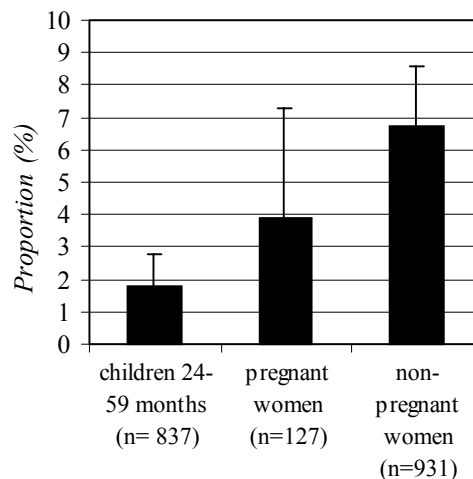
Vitamin A deficiency (VAD) is still a problem of public health significance among Cambodian children and women. In 1999, Helen Keller International (HKI) conducted a survey in 5 provinces (Takeo, Kratie, Steung Treng, Seim Reap and Kampong Thom), which found a prevalence of nightblindness, the first clinical sign of VAD, of 1.8% among children aged 24-59 months and of 4.3% and 6.8% among pregnant and non-pregnant mothers, respectively (see figure 1). Furthermore, hospitals are reporting clinical cases of vitamin A deficiency. This high prevalence and severity of VAD calls for immediate action. Assessment of the prevalence of VAD in the different areas of the country is urgently needed, and efforts to combat vitamin A deficiency, particularly through the distribution of high-dose vitamin A capsules, need to be improved.

Royal Government of Cambodia committed to eliminating vitamin A deficiency

In 1993, the Royal Government of Cambodia (RCG) made a commitment to achieve the World Summit Goals for chil-

Figure 1. Prevalence of nightblindness among children and women.

Bars indicate 95% CI (Confidence Interval) corrected for design effect.



dren which has, as a target, the virtual elimination of VAD by the year 2000. In 1994, the first National Vitamin A policy was adopted and in 1999, the RCG adopted the Resolution of the National Seminar on Food Security and Nutrition in Cambodia. As part of this, the Government made a commitment to adopt the Cambodian Nutrition Investment Plan (CNIP), with one of the objectives being the elimination of VAD over the next ten

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Facts about vitamin A deficiency

What vitamin A does¹

Vitamin A (VA), stored normally in the liver, is crucial for effective immune-system functioning, protecting the integrity of epithelial cells lining the skin, the surface of the eyes, the inside of the mouth and the alimentary and respiratory tracts. When this defence breaks down in a vitamin A-deficient child, the child is more likely to develop infections, and the severity of an infection is likely to be greater.

Depending on the degree of the deficiency, a range of abnormalities also appears in the eyes of vitamin A-deficient children. In the mildest form, nightblindness occurs. In more severe forms, lesions occur on the conjunctiva and cornea that if left untreated can cause irreversible damage, including partial or total blindness.

Consequences of vitamin A deficiency

Studies show that the survival chances of children aged 6 months to 6 years are dramatically increased by improving vitamin A status by twice yearly distribution of high-dose VA capsules. Risk of mortality from measles is reduced by about 50%, from diarrhea by about 40%, and overall mortality by 20-25%². Improved vitamin A status among deficient children also reduces the severity of infectious illnesses, particularly measles and chronic diarrhea, and is associated with reduced need for outpatient services, and therefore lowers the overall cost of health services³.

A recent study in Nepal found a reduction of maternal mortality by 40-50% when women of reproductive age received a daily low-dose of vitamin A⁴. This emphasizes the need to not only focus on VAD among children but also among women, especially during pregnancy and lactation.

¹ Reprinted from *The State Of The World's Children 1998*, UNICEF, Oxford University Press, 1998, p76

² Beaton GH, Martorell R, L'Abbe KA, Edmonston B, McCabe G, Ross AC, Harvey B. *Effectiveness of vitamin A supplementation in the control of young child morbidity and mortality in developing countries*. ACC/SCN Nutrition Policy Paper. Geneva: United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition, 1993.

³ *Vitamin A Global Initiative – Strategy for Acceleration of Progress in Combating Vitamin A Deficiency*. (Consensus of an Informal Technical Consultation convened by UNICEF/MI/WHO/CIDA/USAID), December 1997.

⁴ West Jr KP, Katz J, Khatry SK, LeClerq SC, Pradhan EK, Shresta SR, Conner PB, Dali SM, Christian P, Pokhrel RP and Sommer A. *Double-blind, cluster-randomized trial of low dose supplementation with vitamin A or B carotene on mortality related to pregnancy in Nepal*. British Medical Journal 1999; 318: 570-5.

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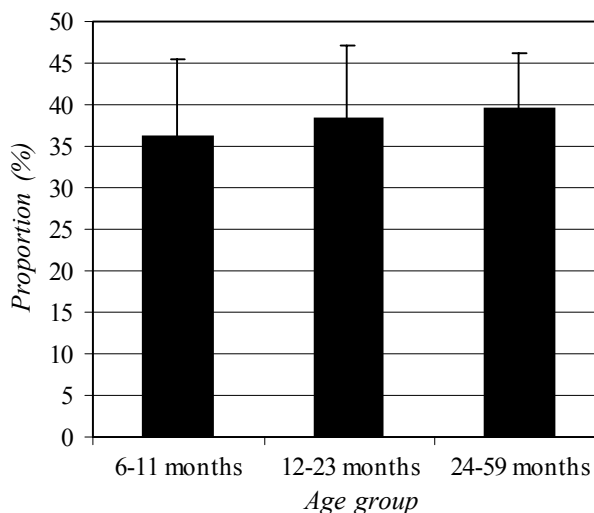
years. In order to reach this goal, awareness of the magnitude of the problem must be raised among policy makers, program managers and communities.

Vitamin A capsule distribution

Because the VAC distribution program in Cambodia already started in 1994, there is a general sense that the program is being implemented successfully. However, while coverage was high when distribution was integrated with the NIDS, it has become much lower since it became part of routine EPI in 1998. The 1999 HKI-survey found that only 35-40% of children aged 6-59 months had received a vitamin A capsule in the six months prior to the survey (see figure 2) and that less than 10% of the mothers interviewed had heard about vitamin A. Other data suggest that there is a strong relationship between place of residence and receipt of a capsule, with coverage being far higher in the capital city than elsewhere, and especially low in remote and isolated provinces.⁵

The data collected by HKI also showed that coverage among children aged 6-11 months was very similar among different villages (a small design effect was found), while the coverage among older children, particularly those aged 24-59 months, varied widely among different villages (a large design effect was found). Since the integration of capsule distribution with EPI, young children can be reached when they come for immunization, but older children need to be specifically targeted. The difference of design effect found indicates that among differ-

Figure 2. Vitamin A capsule coverage among children. Bars indicate 95% CI (Confidence Interval) corrected for design effect.



⁵ *National Health Survey 1998*. National Institute of Public Health/SAWA/Macro, 1999.

ent villages the performance of the EPI program is very similar, but that the exclusive targeting of older children varies widely among villages. Thus, VAC coverage has to increase among all children aged 6-59 months and the performance of the distribution system has to become more similar across villages.

Among mothers, who should receive a vitamin A capsule within 8 weeks of delivery, coverage was below 5%.

History of National Vitamin A Program

In 1993, a survey was conducted by the Ministry of Health/Center for Hygiene and Epidemiology (MOH/CNHE) and HKI in four rural provinces and in urban slums of Phnom Penh. In total, 10,116 children aged 12-71 months were examined for clinical signs of VAD. In every site, except Phnom Penh, their prevalence either matched or exceeded WHO cut-offs for classifying VAD as a public health problem: Bitot's spots, 0.6%, and night blindness, 5.6%⁶. The survey also found that consumption of vitamin A-rich foods was inadequate, especially during the dry season.

Immediately after the results of the 1993 MOH/HKI survey became known, a national VA workshop supported by HKI and UNICEF was held, which was attended by representatives from all provincial health departments. As a result of the workshop, a national vitamin A working group was formed, which drafted a National Vitamin A Policy that was adopted by the RCG in 1994. A national VA supplementation program was launched to provide VACs to all children 6-71 months of age every 3-6 months.

In 1996, following a pilot in 1995 by the MOH, WHO, UNICEF and NGOs, including HKI, VAC distribution became fully integrated into the National Immunization Days (NIDS). And in 1998, VAC distribution was fully integrated into the National Expanded Program for Immunization (EPI) in 15 major provinces with distribution three times per year and coordinated with SNIDS (sub-national immunization days). In 1999, a revised national vitamin A policy was drafted with target groups for universal supplementation being children 6-59 months of age and women up to eight weeks post partum. The strategy includes improving VAC coverage through routine immunization outreach twice a year.

⁶ Results of Vitamin A Deficiency Survey, May-August 1993. MOH/CHNE/HKI. Phnom Penh, 1994.

Dietary vitamin A intake

With respect to dietary vitamin A intake, the 1999 HKI survey found that total vitamin A intake of children was around 80 RE/day, which is much lower than the recommended intake of 350 RE/d. Mothers' total vitamin A intake was found to be around 185 RE/day, which is also much lower than the recommended allowance of 500-850 RE/day (non-pregnant non-lactating, and lactating, respectively). The survey was conducted at the beginning of the rainy season, which coincided with the end of the mango season. During this time, vegetable consumption is low, consumption of foods of animal-origin is average, and fruit consumption, especially of mangoes, is high.

Conclusion

Vitamin A deficiency is a serious problem among pre-school aged children and women in Cambodia. Dietary vitamin A intake is far below the recommended daily allowance and vitamin A capsule distribution only reaches a small proportion of those that need it.

The best strategy for combating the problem is improving the national VAC distribution program. In order to do that successfully, information is urgently needed on the prevalence of VAD in different parts of the country, on current channels of VAC distribution, and on possible mechanisms for achieving high capsule coverage.

Recommendations

- A **national vitamin A survey** to assess the prevalence of vitamin A deficiency, capsule coverage and VAC distribution mechanisms is necessary.
- Effective strategies to **improve vitamin A capsule coverage among children aged 6-59 months** nationwide need to be developed and tested.
- Mechanisms to **improve vitamin A capsule coverage among women up to 8 weeks post partum** need to be piloted.

CAMBODIA

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Projects carried out by HKI-Cambodia in collaboration with the Ministry of Health, Royal Cambodian Government (MOH/RCG); the Adventist Development and Relief Agency (ADRA), Chamran Cheat Khmer (CCK), Partners For Development (PFD), Southeast Asian Outreach (SAO), the United Nations Children's Fund (UNICEF); and the World Health Organization (WHO) are funded by the United States Agency for International Development (USAID).

This publication was made possible through support by the USAID/Cambodia Mission under the terms of Award No. 442-G-00-95-00515-00. The opinions expressed herein are those of the author(s) and do not necessarily reflect the views of the US Agency for International Development.