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# NATIONAL VITAMIN A POLICY GUIDELINES



NATIONAL NUTRITION PROGRAM  
NATIONAL MATERNAL AND CHILD HEALTH CENTER,  
MINISTRY OF HEALTH  
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## PREFACE

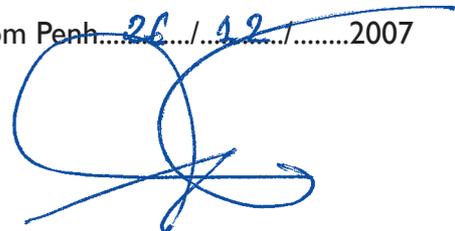
Although Cambodia has seen a decrease in under-five mortality the rate remains unacceptably high with infant mortality 65 per 1000 live births and under-five mortality 83 per 1000 live births. The Cambodia Child Survival Strategy (CCSS) outlines Cambodia's approach to reducing child mortality and achieving the Cambodia Millennium Development Goal 4, which aims to reduce under-five mortality to 65 per 1000 live births by 2015. Achieving universal coverage of a limited package of essential evidence based cost effective interventions will have a positive impact on child mortality. **Vitamin A supplementation is one of the twelve score-card interventions of the Child Survival Strategy.**

Vitamin A deficiency is a common problem in Cambodia. Deficiency of vitamin A remains the leading cause of preventable childhood blindness in the world and a leading contributor to morbidity and mortality among under –five children. Vitamin A supplementation dramatically improves conditions for survival, health and development for children aged 6-59 months. Vitamin A reduces the risk of measles mortality by about 50%, diarrhea by about 40% and overall mortality by 23% .

Although Cambodia has been implementing Vitamin A supplementation activities since 1996 and the Health Information System (HIS) data reports high coverage in some districts, there are wide variations in coverage between twice yearly distribution rounds and between districts and provinces. The most recent Cambodia Demographic Health Survey (CDHS 2005) reported 35% of children aged 6-59 months received vitamin A in the past six months and 27% of women received vitamin A post-partum. The Cambodian government's goal is to reach 90% coverage of vitamin A for children aged 6-59 months by 2015. As a long term sustainable strategy, public education activities and community based food approaches should be strengthened by all sectors involved in food production and nutrition promotion.

Cambodia now faces the critical challenge of mobilizing resources and support from both Government and health development partners to achieve a sustainable national standardized Vitamin A Program. The Micronutrient Technical Working Group chaired by the National Nutrition Program has revised and updated the National Vitamin A Policy Guidelines using the latest scientific evidence and country program experience. This updated policy guidelines document replaces the National Vitamin A Policy of February 2000.

Phnom Penh.....26...../.....12...../.....2007



Professor **Eng Huot**  
Secretary of State for Health



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## ACRONYMS AND ABBREVIATIONS

AOP	Annual Operational Plan
CCSS	Cambodia Survival Strategy Child
CSMC	Child Survival Management Committee
CDHS	Cambodia Demographic and Health Survey
IMCI	Integrated Management of Childhood Illness
CMDG's	Cambodia Millennium Development Goals
MoH	Ministry of Health
NIDs	National Immunization Days
NNP	National Nutrition Program
PCSMC	Provincial Child Survival Management Committee
SIAs	Supplementary Immunization Activities
SNIDs	Sub National Immunization Days
VACs	Vitamin Capsules A
VAD	Vitamin A Deficiency

## I. PROMOTING CHILD SURVIVAL: WHY VITAMIN A IS IMPORTANT

Vitamin A is essential for protection against common childhood diseases. Vitamin A is also needed for good vision and normal growth. Vitamin A deficiency (VAD) occurs when diets have insufficient vitamin A for the basic needs of growth and development and for periods of added stress due to illness.

Vitamin A deficiency is a major contributor to child mortality. Key messages for Vitamin A programs need to be updated from those of vitamin A for prevention of blindness alone. Resistance to common childhood diseases such as diarrhea and respiratory infections occurs long before symptoms of night blindness are reported. Weakened immune function from malnutrition accompanied by disease increases the risk of death.

Improving the vitamin A status of deficient children has been shown to improve resistance to disease and reduce illness and mortality significantly and at low cost. The elimination of vitamin A deficiency is essential to improving the survival, growth and development of children and the well-being of children and their families. Everyone has a right to good vitamin A nutrition.

Evidence suggests that postpartum vitamin A supplementation can improve the maternal stores of vitamin A, reduce maternal morbidity, improve breast milk vitamin A concentrations and improve infant liver stores of vitamin A.

### **Population groups at special risk of VAD and its complications:**

- Children under five years of age
- Pregnant women - because of the extra requirements during pregnancy and lactation
- Sick children and adults

### **Benefits of adequate vitamin A intake include:**

- Significant reduction in overall child mortality
- Reduced severity of infectious illness, especially measles and chronic diarrhea – with reduction in rates of hospital admissions and outpatient consultations
- Reduced prevalence of anemia
- Prevention of vitamin A deficiency blindness

Today, worldwide 127 million pre-school children and 7 million pregnant women are vitamin A deficient. Yet supplementation with vitamin A capsules is the single most cost-effective health intervention according to the World Bank and other global health experts. It only takes two doses a year to enhance disease resistance capacity, reduce under-five mortality and prevent blindness – at a cost of approximately \$1 per child per year.

<sup>1</sup> Rice, A. Postpartum Vitamin A Supplementation: Evaluating the Evidence for Action 2006

<sup>2</sup> J. Behrman, H. Alderman, J. Haddinnott (2004) Hunger and Malnutrition, Challenge Paper Copenhagen Consensus Meeting. [www.copenhagenconsensus.com](http://www.copenhagenconsensus.com)

<sup>3</sup> World Bank (2006) Repositioning Nutrition as Central to Development: A Strategy for Large Scale Action. [www.worldbank.org](http://www.worldbank.org)



## 2. CAMBODIA'S VITAMIN A PROGRAM

Two commonly used Khmer terms describing night blindness - “Kwak moin” (blind chicken) and “lo’ngget moin” (poor sighted chicken) - indicate that Khmer people are very familiar with the signs of advanced severe vitamin A deficiency.

Several surveys conducted since 1993 (MoH and HKI 1993; UNICEF/WFP, 1998; MoH and HKI 2000) demonstrated that Vitamin A deficiency is a serious public health problem in Cambodia. The National Micronutrient Survey (2000) found that seven of the ten rural provinces had a prevalence of night blindness among young children greater than 1%, which is the first clinical sign of VAD and the prevalence of low serum retinol levels ( $<0.70 \mu\text{mol/L}$ ) among children under five was 22.3%.

With the adoption of the National Vitamin A Policy in August 1994, the MoH started a national supplementation program. From 1996 Vitamin A supplementation activities were conducted as part of national and sub-national immunization days (NIDs and SNIDS) and in 1997 were integrated during routine EPI outreach.

Universal distribution three times per year (March, July and November) as part of routine EPI outreach services increased in 1998 to cover 14 provinces reaching 65% of the national population, and was implemented nationwide in 1999. In 1999 the National Vitamin A Policy Guidelines recommended the distribution of Vitamin A capsules for children aged 6-59 months to be conducted twice yearly around the months of March and November. Distribution of vitamin A supplements should be conducted through routine outreach and through supplemental immunization activities (SIAs) and through polio sub-national immunization days (SNIDs) and at health centers. Since 2001 the NNP with support from partner organizations has provided vitamin A to target populations within their assigned program areas. In 2002 the NNP revised the Policy Guidelines to include recommendations to distribute vitamin A capsules to postpartum women during the monthly outreach sessions as well as at health center level. By 2006, this working model succeeded in covering 72 of the 77 health operational districts.

In 2006 the NNP initiated discussions with health development partners to develop a plan for achieving a national coordinated sustainable vitamin A supplementation program. This coordinated program will include

- Integration of the vitamin A supplementation training into the National Minimum Package of Activities Training Curriculum (MPA 10/Nutrition Module) and revision and standardization of a national micronutrient training module for village volunteers
- Creation of one standard system for program monitoring and evaluation and strengthen the quality of recording and reporting of Health Information System (HIS) Vitamin A data
- Integration of Vitamin A supplementation activities and inclusion of budget allocation for nutrition activities into provincial and district Annual Operation Plans (AOPs)

### 3. POLICY FRAMEWORK FOR REDUCTION OF VITAMIN A DEFICIENCY

In the last 15 year several policy and planning documents relating to child survival and the elimination of vitamin A deficiencies have been approved and signed by the Cambodian government including:

- The Convention on the Rights of the Child in 1992
- The National Vitamin A Policy document adopted by the MoH in August 1994
- The National Plan of Action for Nutrition adopted in January 1997. Elimination of vitamin A deficiencies is one of the priority areas for action
- The Cambodian Nutrition Investment Plan adopted in March 1998 provided a strategy framework for an investment plan for nutrition
- The National Seminar on Food Security and Nutrition, chaired by the Prime Minister in April 1999, adopted resolutions supporting elimination of vitamin A deficiency (Resolution 7)
- In 1999 the National Vitamin A Policy was revised to recommend 1 capsule with 100,000 IUs (blue capsule) for children 6-11 months and 1 capsule with 200,000 IUs (red capsule) for children 12-59 months every six months. Post-partum women should receive 1 capsule with 200,000 IUs (red capsule) within eight weeks after delivery
- In 2002, revisions were made to the National Vitamin A Policy to allow the health center staff to carry VACs with them on outreach EVERY month for post-partum women within 8 weeks of delivery
- In 2005 the Sub-decree for the Marketing of Products for Infant & Young Child Feeding was passed and the MoH developed a comprehensive BCC strategy to promote early initiation and exclusive breastfeeding for the first six months of the infant's life and continued breastfeeding for two years and beyond. Support for breastfeeding is a key element of reducing vitamin A deficiency among young children
- In 2006 the Cambodia Child Survival Strategy<sup>4</sup> (CCSS) was finalized and outlines Cambodia's approach to reduce under-five mortality to 65 per 1000 live births by 2015<sup>5</sup>. **Vitamin A supplementation is one of the twelve score-card interventions of the Child Survival Strategy.**

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<sup>4</sup> Cambodia Child Survival Strategy 2006

<sup>5</sup> Cambodia Millennium Development Goals 2000

## 4. ADDRESSING VITAMIN A DEFICIENCY IN CAMBODIA

### MAIN STRATEGIES FOR ELIMINATION OF VAD

**A variety of several strategies are needed to treat and prevent VAD:**

1. Vitamin A capsule supplementation using multiple channels
2. Dietary modification - promoting behavior change for better nutrition
3. Food fortification
4. Prevention and timely treatment of disease

### STRATEGY I : VITAMIN A CAPSULE SUPPLEMENTATION

#### I.1- Universal supplementation

Universal supplementation (periodic distribution of vitamin A capsules) to children and post-partum women is the main strategy in Cambodia due to the high rates of VAD.

The main operational strategies for vitamin A supplement distribution are through outreach activities and at health centers, national and referral hospitals:

- Vitamin A supplementation for children 6-59 months and mebendazole distribution for children from 12 - 59 months twice per year (during the months of May and November) as part of regular outreach services
- Vitamin A supplementation of post-partum women within 6 weeks after delivery (as part of a comprehensive package of services for postpartum women)
- Screening and administration at any contact with routine health services, including immunization and maternal health services
- Supplemental distribution during campaigns when VAC distribution is feasible, such as supplementary immunization activities and other campaign-like activities in remote areas (Protocols for universal vitamin A supplementation are detailed in annex I.)

#### I.2- Disease-targeted supplementation

Disease-targeted supplementation protects individuals at highest risk of VAD-related disease and complications.

Priority target groups are:

- Children 6 months to 12 years with:
  - clinical measles or at risk of contracting measles
  - severe protein-energy malnutrition (PEM)
  - Persistent diarrhea (diarrhea > 14 days)
- Individuals, especially children and women of reproductive age with clinical manifestation of VAD (night blindness, Bitot spots, xerophthalmia)

Pregnant or non pregnant women of childbearing age with signs of xerophthalmia (acute corneal

lesions) should be treated following the regular protocol for xerophthalmia, because the consequences of untreated VAD for the woman and the fetus are far more serious than the possible negative effect of a high dose of vitamin A.

The main operational strategies for disease-targeted supplementation are:

- Diagnosis of disease and administration of vitamin A during consultation in health centers, national and referral hospitals and during outreach
- Diagnosis of disease and administration of vitamin A during measles outbreak investigation and response

(Protocols for disease-targeted vitamin A supplementation are detailed in annex 2)

## **STRATEGY 2: DIETARY DIVERSIFICATION - PROMOTING BEHAVIOUR CHANGE FOR BETTER NUTRITION**

Inadequate dietary intake is an immediate cause of malnutrition and thus food and agriculture activities along with behavior change approaches contribute to improvements in nutrition and micronutrient status (1). Food based strategies such as home gardening, animal husbandry, poultry production, lead to better food production and consumption.

The vitamin A supplementation program targets preschool children and post-partum women while vitamin A deficiency also affects other groups of the population including women, adolescents and school-age children. Dietary diversification approaches using local foods rich in micronutrients are one of the strategies for combating micronutrient deficiencies including Vitamin A (2) and it is a affordable and sustainable strategy for Cambodia.

Vitamin A is found in foods of animal origin such as liver, breast-milk and milk products, fish and meat and from orange and yellow fleshy fruits and vegetables and dark green leafy vegetables.

A broad-based multi-sectoral approach is needed to promote better care and feeding practices in the home. In addition to Ministry of Health staff, influential partners include– Commune Councils (Ministry of Interior), Council for Agriculture and Rural Development (CARD), Ministry of Rural Development (MRD), Ministry of Agriculture, Forest and Fishery (MAFF), Ministry of Women's Affairs (MoWA), Ministry of Education, Youth and Sports (MoEYS) and supporting development partners.

Dietary diversification strategies include:

- Communication strategy to raise awareness about the effects of VAD and to increase consumption of vitamin A rich foods
- Breastfeeding promotion, protection and support to reduce disease and prevent VAD. The early initiation of breastfeeding, the promotion of exclusive breastfeeding until the infant is six months old and continued breastfeeding beyond 2 years are critical for prevention of VAD
- Increase the availability and access to micronutrient rich foods from both plant, poultry and animal sources through promoting and strengthening interventions through household and community based food production system
- Strengthening the counseling skills of health staff and community volunteers on micronutrient deficiencies and the importance of a healthy diet

### STRATEGY 3: FOOD FORTIFICATION

Food fortification has received increasing attention as a strategy to prevent and control micronutrient deficiencies. The MoH and other line ministries in collaboration with relevant partners will continue to explore the potential of food fortification with vitamin A.

### STRATEGY 4: DISEASE PREVENTION

There is a significant correlation between vitamin A deficiency and overall disease burden. Public health measures such as immunization and sanitation services that address diarrhea diseases, measles, helminth infections and malnutrition contribute both directly and indirectly to VAD reduction and will be strengthened. In 2007 the MoH and partners are revising and updating the Community-IMCI training curriculum and working towards strengthening linkages between community volunteers and health center staff for health promotion.

## 5. VITAMIN A PROCUREMENT AND SAFETY

### Vitamin A Supplement, Preparations and Procurement

The Department of Drugs and Food of the MoH is responsible for procurement of the vitamin A supplement. The NNP is responsible for forecasting, submitting the annual request and monitoring the stock of vitamin A supplements. All Vitamin A supplements should be procured through recognized producers of high quality capsules according to international recognized standards. The capsules must be produced and packaged in compliance with the global WHO recommendations. The international recommendation for presentation of vitamin A capsules is the following.

200,000 IU	Red capsule
100,000 IU	Blue capsule

### Safety of vitamin A supplement

High-dose supplementation of vitamin A is safe when administered in recommended dose. Minor side-effects may occasionally occur but are transitory and do not require specific treatment.

Toxicity of vitamin A from excessive ingestion is an extremely minor concern compared to the devastating effects of vitamin A deficiency. Even if a child is inadvertently given twice the recommended dose of vitamin A within a short period of time, any side effects that may occur will be minor, will resolve themselves without specific treatment and will not have any long-term consequences.

Combination of high dose supplementation and daily intake of vitamin A fortified foods is not associated with any risk of toxicity.

## Supplementation to children

Supplementation of high-dose vitamin A capsules is without risk when the four month recommended<sup>6</sup> interval between age-specific doses is respected. Doses as low as 25,000 IU given to infants under 6 months with DPT vaccines can provoke a bulging fontanel in up to 10% of children, but this condition resolves itself rapidly and has not been found to be associated with any long-term effects. Supplementation to children below six months is currently not recommended.

## Supplementation to women of reproductive age

The major risk of high-dose vitamin A supplementation is the potential teratogenicity during the early stages of pregnancy. This is the reason why women of reproductive age (here defined as >12 years) should never receive high-dose vitamin A capsules, except within six weeks after delivery (the woman is still in a non-ovulating period) and for treatment of severe signs of xerophthalmia.

## 6. PROGRAM MANAGEMENT

### Roles and responsibilities

Vitamin A capsules are requested by health centers and Operational Districts through the regular Essential Drugs Management System and are distributed by the Central Medical Stores.

### National Level

The National Nutrition Program (NNP), MoH, is responsible for formulating policies and operational strategies, developing technical guidelines/protocols and for coordinating and monitoring vitamin A supplementation activities. An action plan should be prepared each year together with concerned MoH departments, other line ministries and external partners detailing strategies and assigning responsibilities.

The National Nutrition Program annually reports on progress (including Vitamin A supplementation) to the National Council for Nutrition, which is chaired by the Ministry of Planning.

The National Child Survival Management Committee (CSMC) is responsible for planning and coordination of scale up of the priority evidence based child survival interventions (vitamin A supplementation is one of the twelve score-card interventions of the Child Survival Strategy)

**National Hospitals:** are responsible for ordering, ensuring stock and distributing Vitamin A capsules within their facility and reporting to MoH (National Hospital reporting form).

### Provincial Level

Provincial Child Survival Management Committee's (PCSMC) are responsible for planning, coordination and monitoring of scale up of child survival interventions at provincial and operational district level.

<sup>6</sup> Cambodia IMCI Revised Guidelines 2007

The nutrition focal point person ( usually the person responsible for Maternal and Child Health activities) at provincial health department level is responsible for ensuring that operational districts have adequate supplies of vitamin A supplement; supporting the operational district nutritional focal point persons to plan and coordinate vitamin A supplementation activities, monitor, supervise and evaluate supplementation activities at district and health center level and compile, analyze and provide feedback to operational districts relating to vitamin A supplementation, data. The provincial focal point person is responsible to ensure that HIS data ( PRO 4) is submitted in a complete and timely fashion to the MoH.

## **Operational District Level**

The operational nutrition focal point person (usually the person responsible for Maternal Child Health activities) at district level is responsible for ordering Vitamin A capsules from CMS, ensuring the OD, referral hospital and health centers have adequate stock of vitamin A supplement; supporting and coordinating health center staff to plan and implement vitamin A supplementation activities; monitor, supervise and evaluate supplementation activities at health center and village level, and compile, analyze and provide feedback about vitamin A supplementation data to the health centers and forward HIS data to the provincial level nutrition focal point person in a complete and timely manner (HO2, DO3).

## **Health Center Level**

The health center chief is responsible for planning and coordinating vitamin A supplementation activities in the health center catchments area including ensuring the health center has an adequate supply of vitamin A supplement, planning outreach activities so that each village is reached during the month of vitamin A supplementation, and that vitamin A supplement is routinely carried by health center staff during monthly outreach activities and from fixed site and provided to postpartum women within the first six weeks of delivery. Health center staff are responsible for recording vitamin A supplementation activities on the HCI and sending the report to the operational district every month.

## **Community Level**

- Village health support groups provide support to health center staff for vitamin A supplementation activities at community level; this includes: documenting the names and number of children 0-59 months and postpartum women within six weeks after delivery in the community; providing health education, mobilizing the community during outreach activities and supporting health center staff for mopping up activities at community level
- On request from and in collaboration with health center staff community volunteers can distribute vitamin A supplements to children 6-59 months during mopping up activities at community level and to postpartum women within six weeks of delivery

## 7. PRIVATE SECTOR

High-dose vitamin A capsules (i.e. products containing > 25,000 IU/unit) must not be sold in pharmacies and drug stalls due to increased risk of misuse and danger to the clients.

The private health facilities should be encouraged to conform to national policies and guidelines.

## 8. MONITORING AND EVALUATION

The NNP has the main responsibility for monitoring and evaluating the effectiveness and impact of the Vitamin A Program implementation.

### Monitoring VAD control programs

Process indicators indicating program effectiveness should be selected and data collected for each key program strategy (supplementation, dietary modification, food fortification, general disease prevention).

The core indicators are:

- Vitamin A supplementation in the past six months with the appropriate quantity of vitamin A for children aged 6-59 months
- Post-partum vitamin A supplementation
- Breast-feeding
- Variety of food groups consumed (24 hour recall)
- Vitamin A intake from food (24 hour recall)

The sources of data on vitamin A supplementation come from:

- The Health Information System (HIS)
- Nationally representative surveys (CDHS)
- Data collected during measles outbreak response (data from NIP)
- Smaller post supplementation validation surveys
- 24-hour food recall surveys

### Recording and reporting tools

Health workers should always screen those in the target populations for past doses of vitamin A capsules and possible eligibility for a new dose. The use and retention of family-held recording cards (Yellow Card, Mother's Book) needs to be reinforced to ensure improved monitoring of vitamin A supplementation and avoid overdosing. The minimum interval for high-dose supplementation is once every four months. Women who have not attended antenatal care during their pregnancy may not have a Mother's Book or pink card (mother's vaccination record of tetanus toxoid). In this case the health worker should provide the mother with a Mother's Book and record the Vitamin A supplement on the card.

Supplementation of vitamin A capsules in health facilities and during outreach is monitored through the Health Information System (HIS). Tally sheets are used during outreach activities.

## Identifying high-risk areas and target populations for interventions

As long as U5MR > 70, the whole country should be considered to be at high risk for vitamin A deficiency. As surveys are resource-intensive, it is in addition important to assess factors that can be used as proxy for VAD in order to identify priority areas for interventions, such as nutrition and diet-related indicators, illness-related indicators (including ocular manifestations of VAD and measles case fatality rate), immunization coverage as well as socio-economic demographic and ecological indicators.

VAD prevalence is assessed through surveys, which provide data for monitoring change in vitamin A status over time and evaluating overall impact of VAD reduction programs. (See annex 4 for WHO Xerophthalmia Classification)

The core indicators are:

- Night blindness prevalence during the last pregnancy
- Night blindness prevalence in children (24-71 months)
- Biochemical indicators such as serum retinol

## Annex I - Protocols for universal vitamin A capsule supplementation

<b>Screen all children and mothers coming for any reason to health centers or referral hospitals.</b>		
Give vitamin A to children (6-59 months) that have not received a dose in the previous four months.	Children 6-11 months	100,000 IU
	Children 12-59 months	200,000 IU
Give vitamin A capsule <u>once</u> to mothers, irrespective of their mode of infant feeding, within six weeks after delivery - if they did not receive vitamin A at delivery.		200,000 IU
<b>For all children during outreach services around May and November</b>		
Give vitamin A capsule to children (6-59 months) that have not received a dose in the previous four months	Children 6-11 months	100,000 IU
	Children 12-59 months	200,000 IU
<b>For all post-partum women within 6 weeks after delivery during any outreach services every month throughout the whole year</b>		
Give vitamin A capsule once to mothers, irrespective of their mode of infant feeding, within six weeks after delivery - if they did not receive vitamin A at delivery.		200,000 IU

- Before giving vitamin A, always check if the child already has received a dose in the previous four month. If yes, do not give a second dose.
- The health worker should always explain to the care taker that the child is receiving Vitamin A and that Vitamin A strengthens the child's resistance to common childhood illnesses and reduces child mortality.
- Always record on the child's Yellow Card and on the Mother's Book the dose and the date VAC was given.
- Remind the mother/caretaker to keep the health card in a safe place and always to bring it when going to the health centre or hospital.

## SPECIAL DISTRIBUTION OF VITAMIN A SUPPLEMENTS

### During measles outbreaks

ACTION	TARGET GROUP	DOSE
Give one preventive dose of vitamin A to all children 6 months - 12 years living in areas of measles outbreak that have not received a dose in the previous four months	Children 6-11 months	100,000 IU
	Children 1-12 years	200,000 IU
Give vitamin A treatment to all children with active measles or who have had measles within the past three months,	Children 6-11 months	Day 1: 100,000 IU Day 2: 100,000 IU
	Children 1-12 years	Day 1: 200,000 IU Day 2: 200,000 IU

→ Record these doses on the Yellow Card of the child (when available) and on the special measles outbreak response tally sheet.

### During supplementary immunization activities such as SNIDs/NIDs

Give a vitamin A capsule to children (6-59 months) that have not received a dose in the previous four months	Children 6-11 months	100,000 IU
	Children 12-59 months	200,000 IU
Give a vitamin A capsule to mothers, irrespective of their mode of infant feeding, within six weeks after delivery if they did not receive vitamin A at delivery.		200,000 IU

→ Record these doses on the tally sheet.

## Annex 2 - Protocols for disease-targeted vitamin A supplementation

### Treatment of xerophthalmia (night blindness and active corneal lesions)

All age groups except women of reproductive age (>12 years)		
Infant <6 months of age	Immediately: Next day: At least 2 weeks later:	50,000 IU* 50,000 IU* 50,000 IU*
Children 6-11 months	Immediately: Next day: At least 2 weeks later:	100,000 IU 100,000 IU 100,000 IU
Individuals 12 months and older	Immediately: Next day: At least 2 weeks later:	200,000 IU 200,000 IU 200,000 IU
Note : * Give half of the 100,000 IU		

Women of reproductive age (>12 years)		
With night-blindness or Bitot's spots	Daily for 30 days	10,000 IU**
With severe signs of active xerophthalmia (acute corneal lesion), whether or not pregnant	Immediately: Next day: At least 2 weeks later:	200,000 IU 200,000 IU 200,000 IU
Note : ** 10,000 IU not yet available in Cambodia		

→ Individuals with acute corneal lesions must be referred to a specialized unit as an emergency.

### Treatment of measles

Give a vitamin A capsule treatment to all children with active measles or with measles within the past three months.	Children 6-11 months	100,000 IU on Day 1 100,000 IU on Day 2
	Children 1 – 12 years	200,000 IU on Day 1 200,000 IU on Day 2

### Treatment of persistent diarrhea (>14 days) and severe malnutrition

Give a vitamin A capsule to all children with persistent diarrhea or severe malnutrition.	Children 6-11 months:	100,000 IU
	Children 1 – 12 years:	200,000 IU

## Annex 3 - Cambodia Child Survival Scorecard

Table 1: Cambodia Child Survival Scorecard Interventions and Progress

Intervention	Coverage					Target		
	CDHS 2000	2002	2003	2004	CDHS 2005	2007	2010	Universal coverage
Early initiation of Breastfeeding	11%	-	2% <sup>1</sup>	25% <sup>2</sup>	35%	35%	60%	99%
Exclusive Breastfeeding	11%	-	2% <sup>1</sup>	-	60%	25%	80%	90%
Complementary Feeding	76%	-	88% <sup>1</sup>	-	82%	95%	95%	99%
Vitamin A	29%	46%	59%	75%	35%	80%	85%	99%
Measles vaccine	55%	52%	65%	65%	77%	80%	92%	99%
Tetanus toxoid	30%	45%	43%	51%	54%	70%	80%	99%
Insecticide Treated Nets	9% (3-38%) <sup>3</sup>	-	-	20% <sup>4</sup>	4.2% (11-37%) <sup>5</sup>	80%	80%	99%
Vector control (Aedes aegypti) <sup>6</sup>	181 sites	-	-	-	-	<10 sites	<10 sites	<10 sites
Oral Rehydration Therapy (ORT)	74%	-	45% <sup>1</sup>	-	58%	80%	85%	99%
Antibiotic for pneumonia	35%	-	75% <sup>1</sup>	-	48% <sup>7</sup>	50%	75%	99%
Malaria Treatment	62% (2%) <sup>8</sup>	-	-	31% <sup>4</sup>	0.2% (0.3-3.3%) <sup>9</sup>	85%	95%	99%
Skilled Birth Attendance	32%	20%	22%	32%	44%	60%	70%	99%

1. UNICEF, Seth Koma Follow-up Survey 2003; for ORT it includes only ORS and RHF
2. Cambodia Socio-Economic Survey (CSES) Health and Access to Medical Care in Cambodia 2004
3. 9% is the national average; in the provinces with high malaria transmission (Koh Kong, Kratie, Mondulkiri, Preah Vihear, Ratanakiri and Stung Treang) insecticide-treated net coverage ranged from 3 to 38%
4. Report of the Cambodia National Malaria Baseline Survey 2004
5. 4.2% is the national average; in the provinces with high malaria transmission – Preah Vihear/ Stoung Treng, Mondulkiri/Ratanakiri, Oddar Mean Chey, Kratie, Koh Kong – the use varied from 11-37%
6. Given the increasing contribution of dengue fever to under-five mortality in Cambodia the Child Survival Steering Committee has decided to include vector control in the Scorecard; vector control for *Aedes aegypti* is the most important public health intervention to prevent dengue fever. The indicator used is the Breteau Index defined as: number of positive breeding sites per 100 houses (%) surveyed. Effective vector control is achieved when there are less than 10 breeding sites per 100 houses surveyed (<10%)
7. 48% represent a proportion of children under 5 with signs of ARI (cough and fast breathing) taken to a health facility or provider
8. 62% of children in three provinces (Preah Vihear, Pursat) with malaria transmission received any antimalarial drug, but only 2% received the recommended artemisinin-based combination therapy
9. 0.2% is the national average; in the provinces with high malaria transmission – Preah Vihear/ Stoung Treng, Mondulkiri/Ratanakiri, Oddar Mean Chey, Kratie, Koh Kong – the proportion of children who received anti-malarial treatment varied from 0.3-3.3%

## Annex 4 - WHO Xerophthalmia Classification (1982)

( Somer & Davidson .J Nutr 2002 )

X N	Night blindness	(>1%)*
X IB	Bitot's spots	(>0.5%)
X 2	Corneal xerosis or	
X 3	Corneal ulceration/Keratomalacia	(>0.01%)
XS	Corneal scarring	(>0.05%)
	Serum retinol (<.70 umol/L/20 ug/dl	(>15%)

\*Who minimum criteria for public health significance

## Annex 5 - On going research and possible future directions for vitamin A supplementation

### Newborn vitamin A supplementation

Ongoing research into newborn dosing within a few days after delivery with 50,000 IU have reported reductions in infant mortality in Indonesia and Southern India by 64% and 24 % respectively, but another trial in Zimbabwe with infants born to both HIV- and HIV+ mothers failed to reduce infant mortality and increased mortality by two fold in infants who presumably became HIV infected postnatally. These mixed findings indicate the need for further research<sup>7</sup>.

### Vitamin A supplementation for Pregnant Women

When maternal biochemical vitamin A deficiency or night blindness exceeds tentative cutoffs of 15% and 5% respectively, prophylactic supplementation of up to 10,000 IU daily or 25,000 IU weekly has been recommended during pregnancy<sup>8</sup>. In 1999 in Nepal, in a chronically vitamin A population, routine weekly vitamin A supplementation with vitamin a (23,300IU) either preformed or as beta – carotene reduced pregnancy related mortality by more than 40 percentage. This is the first trial to link vitamin A supplementation to improve maternal survival and reductions in morbidity. Additional efficacy trails are currently underway in Bangladesh and Ghana and are expected to generate evidence to guide the development of future maternal supplementation recommendations.

Experiences from many countries have shown that vitamin A supplementation in the recommended doses is safe. However women of reproductive age (here defined as >12 years of age) should not receive high-dose vitamin A capsules (200,000 IU) - due to the risk of danger to the fetus if the woman is pregnant. The only exceptions are supplementation to post-partum women within six weeks after delivery and for the treatment of severe xerophthalmia during pregnancy.

<sup>7</sup> Klemm, R et al. Defining the Issues for Vitamin A 2006

<sup>8</sup> Christian, P et al, Nightblindness during pregnancy and subsequent mortality among women in Nepal. 2000

## Annex 6 - References

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### Footnotes:

<sup>i</sup> Cambodian Demographic and Health Survey, 2005

<sup>ii</sup> Cambodia Millennium Development Goals 2000

<sup>iii</sup> Cambodia Child Survival Strategy 2005

<sup>iv</sup> Sommer, A.; West, K . Vitamin A Deficiency : Health, Survival and Vision 1996

<sup>v</sup> Rice, A et al . Vitamin A Deficiency. In Comparative quantification of health risks: global and regional burden of disease attributable to selected major risk factors. WHO, 2004

<sup>vi</sup> Beaton et al, 1993