The Micronutrient-Deficiency Control Program in Cambodia

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Cambodia is developing national programs for reducing deficiencies in iodine, vitamin A, and iron. These are quite recent, with broad application dating from the mid-1990s. Experience is still being gained, and results are preliminary. The development of the three programs is described here.

Program for iodine deficiency control

Efforts to establish a national program to address iodine deficiency were initiated recently in Cambodia, upon documentation of the extent of the problem of iodine deficiency in the country. The first national goiter survey was launched in 1996-1997. The survey sampled 35,418 schoolchildren 8 to 12 years of age throughout the country, and reported a total goiter rate of 17% for Cambodia. The results were important to the future of Cambodia's national nutrition program. The survey findings confirm the presence of iodine deficiency in Cambodia, and created a concern for the public health problem. The documented findings served as a catalyst for international agencies and governmental ministries in Cambodia to search for a solution to address the problem of iodine deficiency in the country.

In response to the survey findings, a national sub-committee for control of iodine deficiency (NSCIDD) was formed. Establishment of the sub-committee provided a body for support of actions related to addressing iodine deficiency in Cambodia. The sub-committee involves, among its delegation party, eight governmental ministries, twelve international agencies, and several local NGOs. Comprising the committee are representatives from the Ministry of Planning, Ministry of Mines, Ministry of Health, Ministry of Rural Development, Ministry of Education, Ministry of Industry, Ministry of Commerce, and the Ministry of Women's Affairs, as well as representatives from UNICEF, WHO, HKI, PFD, WFP, FAO, CARE, AusAid, UNFPA, ADRA, Action Nord-Sud, and World Vision International.

Upon establishment of the committee, potential short and long-term strategies for addressing the problem of iodine deficiency were identified. The short-term interventions consisted of iodized capsule distribution to women of childbearing age, and provision of iodine containers for wells. The short-term strategies began to be implemented in 1997, but, have primarily been implemented on a small scale, and, since 1997, have been implemented only intermittently. The long-term interventions identified by the committee were salt iodization and food fortification. Of these strategies, salt iodization has been the intervention identified as most feasible and effective for addressing iodine deficiency in Cambodia. Currently no food fortification (other than salt) with iodine is being pursued or implemented.

Cambodia's national program for salt iodization began in 1999. Formal implementation of the program began upon declaration for iodized salt from the minister. However, the minister did not sign a formal decree; only a circular from the National Council of Nutrition was issued. The national program for salt iodization aims for 100% coverage, that is, for all households in Cambodia to have access to iodized salt. The current standards recommended for salt iodization are 50ppm at the producer level, and 20ppm at the consumer level.

The national sub-committee for control of iodine deficiency (NSCIDD) plays an important role in implementation of the salt iodization program. The role of the national sub-committee involves issues related to legislation, monitoring and quality control of iodized salt, development of IEC and training materials to promote iodized salt use, and includes the responsibility for collaboration and negotiation with the private sector for production of iodized salt.

There is currently one factory site for large-scale production of salt in Cambodia. Since adoption of iodized salt as a national strategy for control of IDD in Cambodia, UNICEF has supplied this factory with the equipment, spare parts, and potassium iodate necessary for salt iodization. The factory produces all salt by solar methods, and has seven machines (though only two are reported to currently function) for spraying the salt with potassium iodate. Under normal conditions, the factory has the capacity to produce 40,000 tons of salt annually, this meeting half of the 80,000 ton salt requirement for Cambodia. However, in times of natural disaster, such as during the 2000 and 2001 floods, the factory's capacity for production is significantly lower. Because all salt is produced by solar methods, severe weather (such as heavy rains) can decrease production by as much as 30,000 tons of salt per year. As a result, Cambodia must import the balance from China, Vietnam, and Thailand. During a typical year only

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40,000 tons of salt may need to be imported, but in 2001 as much as 70,000 tons of salt is estimated to have to be imported.

The salt factory in Cambodia is privately owned, and though the factory owners generally cooperate with the protocol for producing iodized salt, there is, given the lack of legislation for non-iodized salt, a lack of incentive for full adherence to the standards recommended for salt iodization. In addition, there is a large price differential between the non-iodized and iodized salt available for purchase. While the cost of non-iodized salt ranges from 300-800 reil (1 USD = 3820 reil), the cost of iodized salt is nearly double, ranging from 500-1000 reil. As a result, the non-iodized salt is purchased more commonly among those consumers having a lack of awareness and about the health benefits of iodized salt.

To address the issue, awareness campaigns, IEC materials, and workshops on the topic have been organized. Efforts to increase education about iodine deficiency, and the benefits of consuming iodized salt have been directed to individuals at all levels: government officials working at border points, provincial level health workers, and household members at the village level. To address the point further, Provincial Coordination Committees have recently been established. The Provincial Coordination Committee is oriented towards promoting education on iodine deficiency and the benefits of iodized salt to custom officers and health workers from each province. At the meetings, the attendees receive education and awareness training on iodine deficiency, are informed about the importance of monitoring salt iodization, and are provided with rapid color test kits to monitor the content of iodine in salt.

The Provincial Coordination Committees were formed in 2001, in an effort to increase program coverage. Currently only the provinces of Stung Treng and Kg Cham (near the border of Lao and Vietnam, respectively) have received the iodine deficiency and iodized salt training. By end of 2001, the program aims to have trained the custom officials and health workers stationed in all provinces bordering surrounding countries.

In addition, a new NGO in Cambodia, CSCS, plans to promote awareness about iodine deficiency and the benefits of consuming iodized salt. The NGO plans to organize CSCS committees that will be educated about the importance of iodine for maintenance of good health, and will be trained to provide out reach education at the household level. The committee members will also be provided with rapid color test kits by which to monitor iodine content at salt at the household level.

The degree to which the national program for iodized salt has been effective in Cambodia is not yet known. There is currently a lack of data on the coverage and impact of the program. The only outcome data available are the national goiter survey, for years 1996-1997, and the findings thus represent prevalence rates prior to program implementation. While the survey therefore provides important baseline data, no follow-up survey has yet been launched to assess potential program impact.

Likewise, for assessment of program coverage, routine nationwide surveys have not yet been implemented. Monitoring of the iodized salt program at the production and market level is the responsibility of the quality control team under the NSCIDD. The quality control team tests samples from the factory production site one time per week, and marketplace samples monthly. However, the sample design from the marketplaces is by convenience rather than providing a nationally representative estimate of the iodized salt quality.

The Demographic and Health Survey 2001 recently collected data on socio-economic status and health indicators, and with regard to the iodine deficiency program, provided estimates of program coverage, and iodine content in salt by rapid color test. Though the DHS survey is an important start, and, indeed, provides useful information about the coverage of the program for year 2001, it is the only national survey estimating coverage of the iodized salt program since program initiation. Preliminary analysis of the DHS data suggests a low rate of program coverage, in spite of smooth program functioning. The survey reports that 13% of households in Cambodia have access to adequately iodized salt. With a potential coverage of only 13% being achieved by the national program, in a year when no substantial obstacles were reported for program functioning, some research to understand better the implementation challenges of the program may be warranted.

Regular systems for documentation of iodine content in salt at both production and consumer level, as well as collection of outcome measures to assess prevalence of iodine deficiency (by goiter palpation and urinary iodine analysis) at a national scale are thus recognized as future needs. In recognition of this need, there are already plans to establish a more regular monitor system for the iodized salt program through the existing school system. The monitoring would be piggy backed to a child's rights program currently already implemented in schools in defined priority areas.

There are useful lessons that can be drawn from Cambodia's experience with national program implementation. Most lessons have revolved around the importance of promoting awareness and providing training to people at all levels in the salt iodization chain. In Cambodia, awareness promotion of iodine deficiency and the benefits of iodized salt have been achieved through multiple media sources, including television, radio, posters, and leaflets. Special committees have

been established, and training has been provided for salt producers, for district health workers, and for provincial authorities such as custom officers and trade officers in provinces bordering Thailand, Vietnam and Lao. In addition, in Cambodia there has been cooperation from the small-scale salt producers. By working with local NGOs in their areas, these small-scale producers have, in some select provinces, helped to increase demand for iodized salt.

Despite such pro-active measures for increasing awareness about the iodized salt program, the lack of a signed government decree remains a significant impediment to the effectiveness of the program implemented. Without a signed decree, there is no law established by which legislation for iodized salt can be enforced, thus allowing non-iodized salt to enter the borders, and non-iodized salt to be sold on the markets. The lack of legislation also makes it more difficult to encourage the salt producers in Cambodia to iodize all salt according to the recommended standards.

Future plans for the program include the development of a second factory in Kampot province. The factory will be privately owned, shared between China and Cambodia. The addition of the factory should help to diminish the amount of salt that will have to be imported, and hopefully will increase the availability of iodized salt on the markets.

Finally, in the future, it may be useful to consider implementing a complementary short-term strategy to help control iodine deficiency whilst the iodized salt program is achieving lower than optimal coverage. While it is recognized that distribution of iodine capsules is only a short-term strategy for control of iodine deficiency, the intervention could be important to help prevent in-utero birth defects and other irreversible cognitive impairments caused by iodine deficiency. Such a strategy for complementary short and long term interventions may be warranted to consider for the near future, this at least until the salt iodization program achieves a higher rate of national coverage, and a more sustainable program function.

Program for vitamin A deficiency control

The national program for vitamin A deficiency control in Cambodia began in 1996. The process leading up to program implementation, however, began much earlier. The need to establish a program to address vitamin A deficiency was first considered in 1988, when the World Health Organization suggested that there was high probability of significant vitamin A deficiency in Cambodia. At that time no national data yet existed for estimation of the prevalence of vitamin A deficiency in the country. In response to WHO's suggestion of high prevalence of deficiency in the country, a national workshop on vitamin A was organized in 1990, and soon after, in 1993, the Ministry of Health and Helen Keller International together launched the first vitamin A survey in Cambodia.

The findings from the 1993 national survey[1] confirmed the warning made by the World Health Organization. Indeed, vitamin A deficiency was highly prevalent in Cambodia. The results showed a range of 1.9 to 9.2% of night blindness among the provinces sampled. The average rate of night blindness was estimated as 5.6% and the prevalence of Bitot's Spots as 0.60%, each of these indicators higher than the standard defined for classification as a public health problem. In addition, extremely high prevalence rates of night blindness were recorded for two of the four rural provinces surveyed. In Takeo and Kg. Thom province the rate of night blindness was estimated as 9.2% and 9.1%, respectively, rates that indicated a presence of vitamin A deficiency warranting urgent public health attention.

Following the results of the survey, HKI and UNICEF supported the second national vitamin A workshop in Cambodia, and in 1994, the first national vitamin A policy and implementation document was adopted by the government. The policy recommended universal vitamin A capsule supplementation to children between the ages of 6 months and six years two times per year.

Implementation of the policy began at a pilot level in 1993, and has, since then, gradually expanded in scale. Different systems for distribution of the capsules have been utilized since the policy's implementation. During the first year of supplementation activities, capsules were provided in conjunction with data collection for the 1993 survey. Because distribution through survey implementation was obviously not a routine method available for implementation of the vitamin A policy, following 1993, other systems for distribution had to be considered.

With the introduction of National Immunization Days (NIDs) in 1995, a potential distribution system for vitamin A capsules was provided. The capsules were, at this time, distributed in only one pilot district and provided to children only one time per year, this during the second round (March) of NIDs. After the pilot trial, it was decided that the NID provided an effective mechanism by which to reach the vitamin A program's target population. As a result, vitamin A capsule distribution was fully integrated into NIDs in March 1996. By 1997, the program was implemented nationwide, with vitamin A capsule distributed two times per year (November, March) via NIDs to children under five throughout the country.

[1] This report is not available. However, recent data are available from the 2002 Questionnaire, at: www.tulane.edu/~internut/Countries/countrypage.htm

Coverage data indicate that distribution of vitamin A capsules through the system of the NID was an effective means of reaching the target population. Forty one percent of children between the ages of 1-5 years were reported to have received vitamin A capsules at least two times in one year during 1996. In 1997, it was estimated that as many as 80% of the target population received vitamin A capsule twice per year. However, with virtual elimination of polio, NIDs have, since 1998, been phased out in Cambodia.

Alternative systems for effective distribution of vitamin A capsules began to be considered in 1996, when the eventual phase-out of NIDs was already a known possibility. To facilitate identifying a strategy for future distribution of capsules, an inter-agency working group was established. The group was comprised of the Nutrition and EPI Unit of the Cambodia Ministry of Health, UNICEF, WHO, and HKI. They concluded the most promising mechanism for future distribution of VAC to be via routine immunization outreach. In 1998, the system was tested: In areas where immunization days had already been phased out, distribution began to be linked with routine immunization outreach. In areas where Sub National Immunization Days (SNIDs) continued to be implemented, the former system of distribution was still utilized**.**

While routine immunization outreach provides a feasible mechanism for capsule distribution, there are considerable constraints and foreseeable challenges to distributing vitamin A capsules through this system. Routine immunization outreach relies on the motivation of health workers to reach every household for distribution of capsules. Whereas the national immunization days are well recognized and generally achieve high coverage by household taking pro-active behavior, routine immunization outreach, on the other hand, relies on the work of the health staff to access each household individually. Moreover, during NIDs, health workers receive some incentive, such as payment of per diem. For routine immunization outreach, there is no additional payment for the work, and thus less incentive for the health workers to reach every household. Due to the lack of incentive for health workers, and more work required for distribution of the capsules, it is suspected that the program coverage with routine immunization outreach is much lower than was achieved by NIDs.

By 1999, NIDs were completely phased out in Cambodia, and routine immunization outreach thus served as the sole channel for distribution of vitamin A capsules. In recognition of the constraints for good coverage through routine EPI, distribution of vitamin A capsules was recommended three times (March, July, November) rather than two times per year, as previously.

In 2000, a new policy for the vitamin A program in Cambodia was adopted. The new policy recommended that vitamin A capsule distribution occur only two times per year to children aged 6 months to five years. Supplementation is advised to occur during the months of March and November, these being the months of least rain, when outreach work is most feasible for health workers. The revised policy for addressing vitamin A deficiency in Cambodia includes an additional target group of lactating women. The policy recommends provision of a megadose (200,000IU) supplement to lactating women within eight weeks after delivery, this both to increase the mother's level of vitamin A stores, as well as that of her infants - through increased vitamin A content in the mother's breastmilk.

Under the recent adoption of the Health Coverage Plan, the health system in Cambodia has been restructured so that each health center is responsible for an area of households in a more accessible region. The new plan assigns each health center the responsibility for a population of 10,000 persons, rather than for an area of one or two communes, as previously. The new health system allows every household to be within a one hour walk of the health center, and requires that no more than ten villages to be the responsibility of each health center. The new system is expected to help increase coverage of the vitamin A program. Because all capsule distribution now occurs through routine immunization outreach, coverage of the vitamin A program therefore relies heavily on the outreach work of the health center.

Previously two of the staff at each health center received training for outreach work and capsule distribution. To help increase capacity of health centers to address micronutrient problems, all six to eight health workers working at the center will now be trained to provide immunizations and micronutrient supplementation. In addition, the ministry has located funds to begin providing a per diem to the health workers for days of outreach work. It is anticipated that by providing a per diem to the health workers and by using the restructured health system to visit households, increased distribution of vitamin A capsules will be achieved.

In addition to the operational strategy of distribution through routine EPI outreach, two complementary mechanisms for distribution were identified, and are defined in the 2000 National Policy. The additional operational strategies identified are via routine health services, including immunization and maternal health services, and during supplemental distribution campaigns such as school health days and bed-net distribution interventions.

Program for Iron deficiency anemia control

Most data on anemia in Cambodia are from small studies. Nationally representative data on anemia are from the Demographic and Health Survey [1] and the National Micronutrient Survey [2]. All surveys report a

high prevalence of anemia in Cambodia. The 2000 survey estimated a 60-80% rate of anemia.

The national program to address iron deficiency is supplementation of iron tablets to pregnant women. The program is considering expansion to additional target groups such as non-pregnant women of reproductive age and children. Distribution of iron to pregnant women is currently through the antenatal care system. At the first antenatal visit the woman is given 60 tablets of iron, at the second visit 30 tablets, but this depends on her accessibility to the clinic and planned schedule of visits. Reported constraints this program faces are a problem of compliance. Women report side effects and may not take the tablet regularly.

Recognizing that anemia is a serious problem in Cambodia, in 2001 the Ministry of Health in co-operation with the Ministry of Social Affairs (Occupational Health Department) and with the support of WHO and UNICEF started implementation of a one-year iron study.

The objectives of the study are:

- To introduce a program of preventive supplementation to women of reproductive age with weekly doses of 60mgs elemental iron and 3.5mgs of folate in the workplace (garment factories), secondary schools and rural communities through the application of social marketing and participatory approaches.

- To assess the effectiveness of weekly iron/folate supplementation in improving the knowledge attitudes and practice as well as iron status of women of reproductive age and secondary school girls in the program areas.

In August 2001, a baseline KAP survey with hemoglobin testing was conducted on a total of 1,300 women of reproductive age in eight factories in and around Phnom Penh. The total number of women of reproductive age who participated in the baseline KAP and hemoglobin testing were divided into three groups. The first group will receive health education about an iron rich diet, weekly iron and folic acid supplement and stool test. This group will also receive mebendazole at six monthly intervals. The second group will receive weekly iron and folic acid supplement and health education about the importance of an iron rich diet. The third group will receive only health education about an iron rich diet in the first three months of the study. In the fourth month after a mid-term assessment they will start to receive the iron supplement. The monitoring and evaluation part of the project will look at changes in knowledge attitudes and practices of the study women in all project locations, compliance and the prevalence of side effects, assessment of hemoglobin levels and the prevalence and intensity of hookworm infection. This staggered approach of having group three only receiving health education in the first three months of the study will allow the measurement of KAP only, as well as the effects of WIF with deworming.

In late November it is planned to do a baseline assessment and commence social marketing and selling of the iron supplement to secondary school girls of reproductive age in five schools and to women of reproductive age in selected communities in two districts of Kompong Speu province. Plans for the marketing and selling of the supplement, and for conducting health education activities at community level, will be developed and managed by community committees.

It is anticipated that by August 2002, the end of project assessment will show an improvement in the hemoglobin levels of women of reproductive age having participated in the study. With successful social marketing strategies, health education and community involvement in this project, it is hoped that women of reproductive age will have improved nutrition knowledge and practices and be willing to buy the iron supplement on a long term basis, recognizing the benefits it offers toward improving and maintaining good health.

References

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