

Evaluation of GAVI Immunization Services Support Funding Case Study: Cambodia

This report presents findings from one of six country case studies conducted as part of a Global Alliance for Vaccines and Immunization (GAVI) commissioned evaluation of the Immunization Services Support (ISS) funding mechanism. The ISS funding mechanism provides performance-based funding aimed at improving routine immunization. The goal of the evaluation was to assess the impact of ISS funding in furthering GAVI objectives and to identify ways to improve the ISS scheme. This report is a working paper that informs the final report. In addition to information from the six country case studies, the evaluation incorporated data from a desk review of 52 countries. It is recommended that this report be read in conjunction with *Evaluation of GAVI Immunization Services Support Funding*, which provides a full description of the background and methodology for the evaluation.

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1. Description of the Visit

The National Immunization Program (NIP) of the Ministry of Health of Cambodia received GAVI Immunization Services Support (ISS) funds starting in 2002. The purpose of the fund was to provide the NIP an additional financial resource to improve their routine immunization. It was a performance-based grant given to the NIP. After two years of funding, a study was commissioned by the GAVI Secretariat to understand the utilization of the ISS funds in multiple countries, including Cambodia, and to document lessons learned.

Natasha Hsi of Abt Associates and Mizan Siddiqi of the Academy for Educational Development (AED) visited Cambodia from April 19 to 29, 2004. The National Immunization Program was well prepared for the study team and prepared presentations for the consultants outlining NIP's use of ISS funds and the impact on immunization coverage. Consultants were given access to detailed expenditure records at the district, provincial and central level and monthly administrative routine immunization coverage by antigen from 1999 to 2003 for all provinces. In addition to conducting interviews at the national level, Hsi and Siddiqi traveled to Battambang Province and Mondulhiri Province.

2. Context

2.1. Country Background

With an estimated population of 12 million and size of 181,035 square kilometers, Cambodia is situated on the Gulf of Thailand and is bordered by the countries of Thailand, Lao People's Democratic Republic (PDR), and Vietnam. It is one of the poorest countries in Southeast Asia, with a Gross National Income per capita of only US\$ 270 and approximately 40 percent of households living below the poverty line. The adult literacy rate is 68%. The country is flat in the central area and mountainous on the borders of Thailand, Lao People's Republic (PDR), and Vietnam. The northwestern provinces of Rattanakiri, Mondulhiri and parts of Stung Treng, and the Cardmom Mountains in the southwest represent major mountainous areas. Two main waterways in Cambodia are Tonle Sap (Great Lake) and the Mekong River; their tributaries constitute the significant waterways in Cambodia. Some 84% of the population lives in the rural areas and most people in the country live along or near waterways. The climate is sub-tropical, with seasonal rains between April and November, a cool season from November to January and followed by a hot season in April and May.

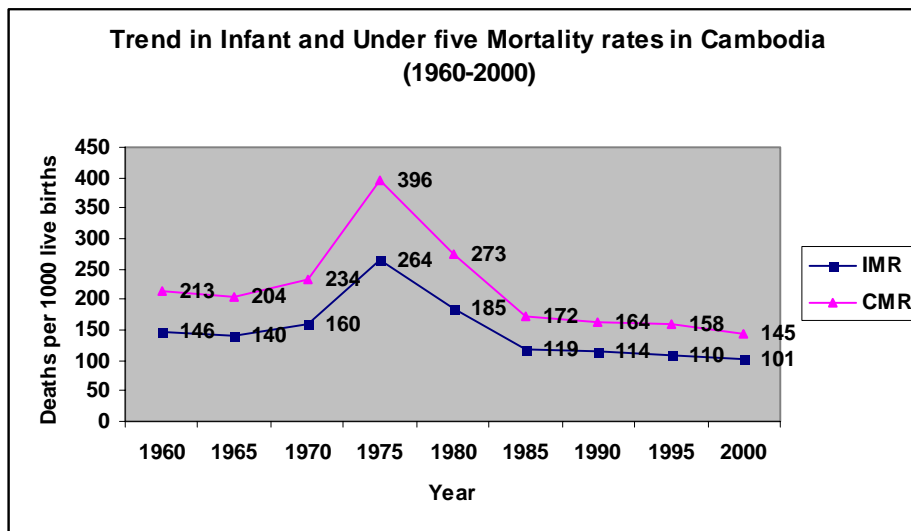
2.2. Population and Health

The average life expectancy at birth in Cambodia is 56 years and the annual population growth rate is 2.4%. Population density varies significantly between the densely populated plains and the sparsely populated mountain regions. The population density is 3,448 persons per square kilometer in Phnom Penh, averages 235 in the plains, and falls to only 17 in the mountains. In remote provinces such as Rattanakiri, the population density is less than 10 people per square

Cambodia Case Study

kilometer. Approximately 43 percent of the population is under 15 years while 13 per cent are under five years of old. Approximately 2.6 per cent are under one year of age.

Although Cambodia has observed a steady decline in IMR over the last twenty years, the health status of the Cambodian population is the lowest in the region. The Demographic and Health Survey conducted in 2000 reported an under-five mortality rate (U5MR) of 124.5, infant mortality rate (IMR) of 95.1, neonatal mortality rate (NMR) of 37.3, and post-neonatal mortality rate (PNMR) of 57.8 per 1000 live births. The trend in IMR and child mortality rate since 1960 is shown below:



Source: Health Statistics Report/Cambodia. Center for International Health Information

The 2000 DHS data showed that post neonatal mortality (PNMR) has increased from 35 per 1000 live births in 1990 to 58 in 2000 and constitutes 61% of IMR and 46% of U5MR while NMR decreased steadily from 44 per 1000 live births in 1990 to 37 per 1000 live births in 2000.

2.3. Vaccine preventable diseases

AFP surveillance system is the most sensitive surveillance system in the country. The data for measles and neonatal tetanus come from hospitals and sentinel sites in the community and data for pertussis is obtained from health facility information which is known to be grossly under reported. Since 1998, efforts have been made to improve measles and neonatal tetanus surveillance. The reported incidences of vaccine preventable diseases for the period 1999-2003 reported by the MOH are given below:

Table 1 : Incidence of Vaccine Preventable Diseases in Cambodia (1999-2003)

Disease	1999	2000	2001	2002	2003
Measles	13827	12327	3761	1361	653
Neonatal Tetanus	173	295	165	78	238
Pertussis	618	2068	4714	320	315
Poliomyelitis	0	0	0	0	0

Source: UNICEF/WHO JRF

Based on estimates, each year 7000 deaths are averted from neonatal tetanus, 2200 from pertussis and 3500 from measles while 1900 polio cases are prevented from occurring by the current immunization program. It is estimated that one quarter of neonatal deaths are attributable to neonatal tetanus. Vaccine-preventable diseases, particularly neonatal tetanus and measles, remained a significant contributor to childhood mortality. In order to have a major impact on U5MR, the coverage rate for all EPI diseases has to be improved.

2.4. Health Care Delivery System of Cambodia

Administratively Cambodia is divided into 24 municipalities and provinces. The municipalities and provinces are subdivided into districts and then communes. In provinces, the communes are further subdivided into villages. In Cambodia there are 183 districts, 1069 communes, and 13,406 villages (1999 census). As part of the health sector reform (HSR), 73 Operational Districts (ODs) have been created as the units responsible for providing health services to the population. The ODs were created based on population size and accessibility and are intended to provide a decentralized approach to service planning and delivery. ODs are different from the administrative units. Often they combine parts of different administrative districts and sometimes parts of communes and can cross provincial lines.

The health care delivery system is divided into three levels: central, provincial and operational districts, including health centers and hospitals. The central level consists of two training institutions, two institutes, six national centers and eight national hospitals. The provincial level consists of 24 Provincial Health Departments, four regional training centers and twenty-four hospitals. As mentioned above, there are 73 operational districts providing supervision to 929 health centers. The health centers provide a minimum package of activities including preventive and promotive services.

2.5. Health Financing

The NIP is housed administratively within the National Maternal and Child Health Center (NMCHC), and receives its allocation from the NMCHC. Each year, the NMCHC submits a funding request to the MOH in July and the MOH submits its ministry request to the Ministry of Economy and Finance (MOEF) in October. The Assembly makes a final decision on the overall government budget, and but MOEF funding disbursements do not begin until March or April of the following year, even though the fiscal year runs from January to December.

Cambodia Case Study

Funding for immunization at the operational district (OD) level comes from three primary sources. The Provincial Health Departments, (PHD) have a budget for printing, transport, maintenance, supervision and accommodations (per diem) to pay for the operational costs at the provincial and OD level. Although immunizations is supposed to obtain operational cost support from the PHD, it does not receive any significant funding during tight budget times. The PHD decides how to allocate its share from the MOH, and most of the PHD funding goes towards the reference hospitals and health center operational costs. Vaccines are channeled through the Central Medical Stores (CMS) and delivered to each OD. The OD also receives limited funding directly from the NIP, currently provided by GAVI ISS funding. Some ODs receive other kinds of funding instead of the normal funding from the PHD. These districts tend to receive a larger portion of their budget than other districts.

2.6. National Immunization Program

In 1981, the Government of Cambodia adopted a strategy to immunize children against the six EPI diseases. The Program began in Phnom Penh and extended to all provinces within five years. As of 1985, the program was still limited to Phnom Penh and only 10% of children 12-23 months had been fully immunized. In October 1986, with support from UNICEF and WHO, Cambodia launched the Expanded Program on Immunization. By the end of 1988, the program extended to all 21 provinces. In February 1989, the program added tetanus toxoid (TT) vaccination for pregnant women.

2.6.1. Organization of the National Immunization Program

Between 1995 and 2000, the former EPI Unit and the Polio Eradication Units (PEU) functioned separately, with poor coordination between the two. In 2000, the MOH established the National Immunization Program (NIP), joining the two units into one organizational structure for better coordination within MOH and with external partner agencies.

2.6.2. Delivery of Immunization services: outreach sessions

Eighty percent of immunization services are provided through outreach sessions from the health centers. Immunization sessions are also held in fixed sites at the health centers. With assistance from the OD and PHD, each health center prepares an annual outreach workplan including the budget planned with the number of days for its catchment area; this is determined in association with community representatives from the villages to be visited. The aim is to reach all villages (except the one where the health center is located) at least six times per year and on average twelve times per year. A team of one or two health personnel, depending on the size of the catchment population the health center, goes out to the villages once per month. Since the time that health sector reform was put in place, outreach for immunization has been integrated with other preventive maternal and child health (MCH) services including vitamin A supplementation and mebendazole for periodic deworming. For each outreach session, a standard per diem, transport and cost for ice are provided and covered either from the income of the health center or the government allocation from the Provincial Health Department (PHD). In reality, the government money comes irregularly and in an untimely way, hampering outreach activities. Government funds often arrive late and must be spent very rapidly at the end of the fiscal year.

Cambodia Case Study

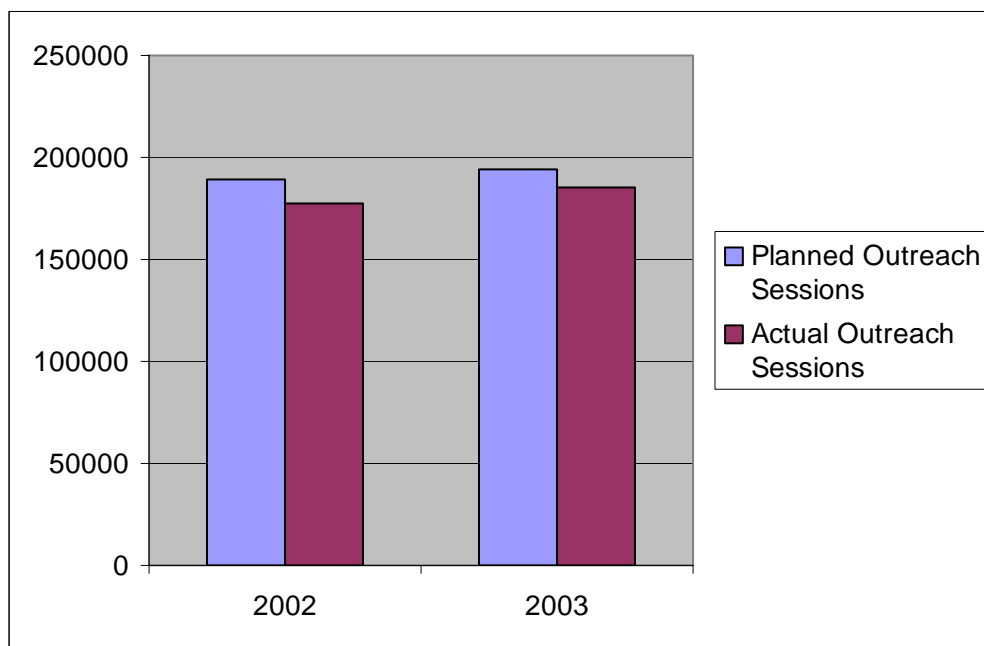
Oftentimes PHDs receive money from a previous fiscal year that must be returned to the Treasury because funds from one fiscal year cannot be spent in another fiscal year. Since health sector reform in 1994, many districts have relied on donor funding and NGOs to support immunization outreach sessions.

2.6.3. Delivery of immunization services: fixed sessions (infirmary, health center, hospital)

For vaccination services offered at fixed facilities, the frequency of sessions is estimated according to the number of children and women attending; that is, at least 5 children for OPV must show per vaccination session. If more than 15 children attend for OPV in one day then the number of immunization sessions is to be increased.

During the period between 2002 and 2003, the percentages of the sessions held as planned countrywide were 94% and 95% respectively (see figure below).

Planned versus Actual number of EPI sessions held in 2002 and 2003

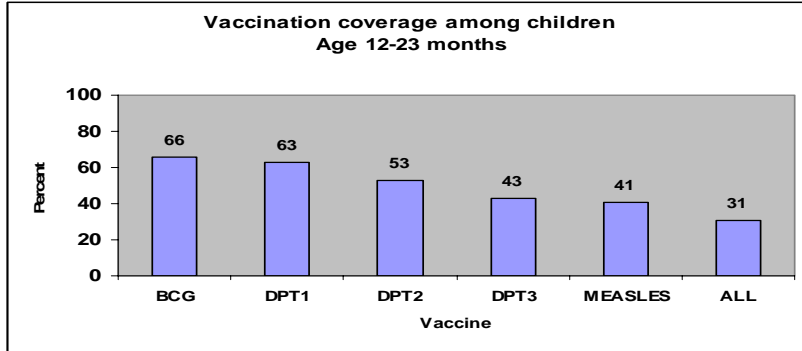


Source: National Immunization Program, Cambodia, 2004

2.6.4. Immunization coverage

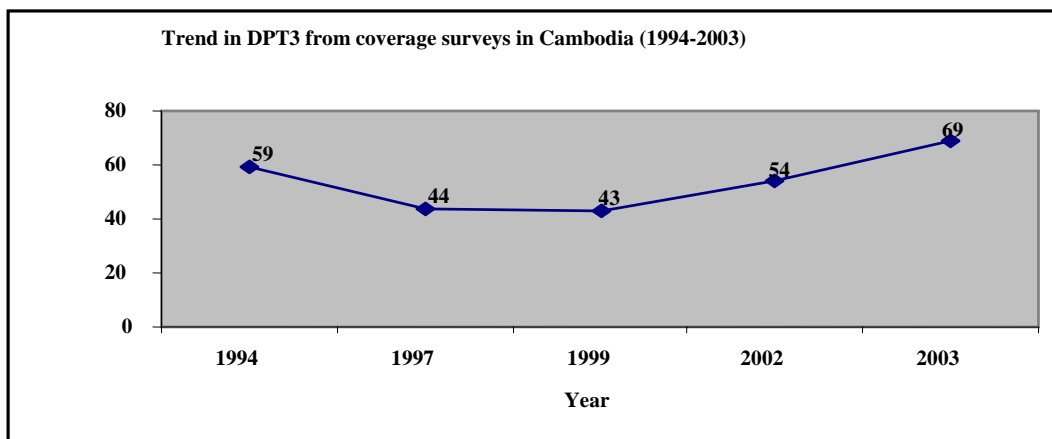
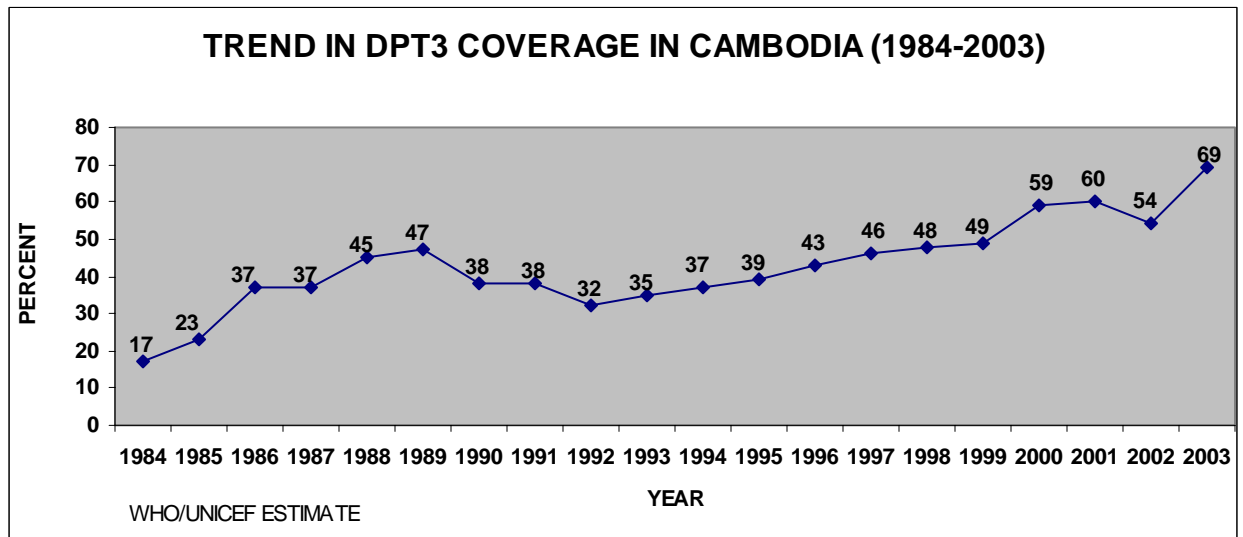
By 1994, the percent of children fully vaccinated was 53%. At that time, a major effort was undertaken to improve vaccination coverage. By the end of 1995, coverage had reached 75%, but after that, coverage declined. The Demographic and Health Survey (DHS) conducted in 2000 reported only one third of children fully immunized while 43 and 41 percent had received DPT3 and measles vaccinations, respectively.

Cambodia Case Study



Source: DHS 2000, card plus history

While the coverage declined until 1999, the coverage started improving thereafter. According to WHO/UNICEF reported official country estimates, DPT3 coverage for 2003 is 69 percent.



Source: 1994, 1997 National Health Survey, Cambodia, 1999, DHS 2000, 2002, 2003 UNICEF/WHO

Cambodia Case Study

The drop out rate in various provinces also varies. In 2003, more than half of the provinces had a DPT1-DPT3 drop out rate over 10%. The mountainous provinces had the highest drop out rate; this is attributed to the fact that in many areas there is no outreach for half the year due to inaccessibility during the rainy season.

2.6.5. Polio eradication and AFP surveillance

Cambodia launched polio eradication activities in 1994 and successfully conducted dozens of National Immunization Days (NID) and sub-NIDs. AFP surveillance was initiated at the same time and expanded nationwide by 1995. The last confirmed case of polio was reported in 1997. Cambodia was certified polio-free in the year 2000. However, Cambodia has to maintain high OPV coverage and must maintain the excellent AFP surveillance system now in place to detect any imported case of poliomyelitis.

2.6.6. Accelerated measles control

An accelerated measles control strategy was adopted by the NIP in 1999 to reduce measles cases in the country. The strategy includes: surveillance, measles campaigns, case outbreak response and improved routine coverage. Over 95% of children 9 months to 14 years old received a supplementary dose of measles during the measles campaign in 2003.

2.6.7. Maternal and neonatal tetanus elimination (MNTE)

A supplementary TT immunization campaign was conducted in 25 operational districts that had been identified as high-risk on the basis of surveillance data in 2002 and 2003.

2.7. New interventions

2.7.1. Introduction of Injection safety and Hepatitis B vaccine, cold chain

The introduction of AD syringes and safe injection practices plus the phased introduction of Hepatitis B were important new interventions taken up by the NIP over the past few years. A Task Force established in June 1999 developed national policy guidelines for safe injections; these guidelines were adopted by the Ministry of Health in 2000. Incinerators have been installed at various provinces for waste disposal. By early 2004, one quarter of ODs in the country had introduced combined DPT-HB vaccine; AD syringes have been used for all routine antigens since 2002. In 2003, 49 health centers and eight hospitals introduced a birth dose of hepatitis B vaccine. Training of staff at all levels, development of guidelines, training modules, communication materials and supervision and monitoring were major tasks related to these interventions. The NIP is now implementing a new cold chain policy that calls for one refrigerator per health center and the introduction of the multi-dose opened vial policy to optimize the utilization of vaccines.

2.7.2. Vitamin A and Mebendazole

In 1996, Vitamin A capsule supplementation was introduced as part of NIDs and subsequently, since the year 2000, it has been integrated with routine immunization. While the NID strategy

Cambodia Case Study

was successful achieving over 90% with vitamin A, the non-NID strategy has been less successful, achieving 50-60% coverage. Vitamin A capsules are also distributed during the measles campaign. Similarly, since 2001, all children from 12 to 59 months old are given a single dose of mebendazole twice a year.

2.7.3. Health sector reform and immunization service delivery

Integrated supervision, monitoring and training are the challenges the NIP is facing currently and has been addressing them over the last few years. Merging of the NIP information system with the national Health Information System (HIS) was an important landmark that was part of health sector reform. Also as part of health sector reform, vaccine supply has been integrated into the essential drugs management and distribution system. EPI outreach sessions from health centers are now held as an integrated outreach sessions with other MCH interventions. Over the last few years, the NIP was able to incorporate bottom-up planning from health center to national level as part of the HSR; this leaves the national, provincial, and district levels to provide technical and guided supervisory support rather than having direct responsibility for management and implementation. EPI outreach sessions from health centers are now held as part of integrated outreach with other MCH interventions.

3. GAVI-Associated Developments

3.1. Application process

The NIP prepared the GAVI application with its partners WHO, UNICEF and CVP/PATH. Cambodia originally applied for only the new vaccines sub-account in June 2000 in order to introduce hepatitis B vaccine. The current Immunization Coordination Sub-Committee (ICSC) was first constituted in November 1999, during which the GAVI application process was discussed by the ICSC members. A Technical Working Group, an ICSC subcommittee comprised of NIP staff, WHO, UNICEF and CVP/PATH, was formed in March 2000 to support the NIP. The technical working group of the ICSC recommended that Cambodia delay the application for the GAVI ISS account until NIP decided on the actual use of the ISS funds. The Cambodia application for ISS funds was subsequently submitted in October 2000. The five year multi-year plan, a prerequisite for the GAVI application was based on the 2000 EPI Review, and was developed specifically for the GAVI application.

3.1.1. Application targets

The targets for immunization coverage are based on the population statistics from the National Health Statistics Office. A population growth rate of 3.4% was extrapolated for the targets. Since the submission of the application, Cambodia has revised its targets by using a population growth rate of 2.6% which reflect the information collected during the National Immunization Days. However, there is still debate among ICSC members on the use of the 2.6% population growth rate as it would result in BCG coverage over 100% for certain districts.

4. National level

4.1. ISS planning and allocation process

NIP deliberately postponed the submission of the application for ISS funds until it could decide on the most effective allocation and use of ISS funds. When ISS funds were first received in February 2002, the NIP manager with his deputy managers decide to use the ISS funds for activities which had previously been underfunded by both the government and donors. As a result, 56% of the ISS funds spent in 2002 was allocated to Training of Trainers (ToT) for injection safety at the PHD level and training at the health center level. Another 19% of the 2002 funds were spent to design IEC materials to respond to the 2002 Knowledge, Attitudes and Practice (KAP) survey in Kampong Chhnang which indicated that there was a lack of knowledge in the community on immunization and a lack of materials available at the community level. The remainder of funding in 2002 was allocated for quarterly meetings, supervision and outreach in ODs.

After a review of the use of ISS funds in 2002 and the decline in coverage rate in 2002, NIP decided to invest further ISS funds into cold chain training and some follow-up health center training. It was agreed by the ICSC that ISS funds should be used to pay for outreach sessions during the first quarter of the fiscal year since the government has difficulties in releasing funds during that time. These funds in the first quarter are critical because many districts are only accessible for outreach during those months, which constitute the dry season.

In 2003, the NIP also decided to pilot a new strategy, the Reach Every District strategy which in Cambodia has been adapted and is called the Coverage Improvement Plan (CIP) (see section 4.3.5 for description). NIP received some technical assistance on this strategy from a WHO consultant based in Manila. NIP also planned to spend another portion of funding on the actual printing of IEC materials that were developed in 2002. These IEC materials were sent down to the provincial and OD levels.

4.1.1. Understanding of the shares system

At the national level, there is a clear understanding that GAVI funding is performance based, time limited and is given to countries to support the routine immunization program. The NIP understands clearly the performance aspect of the funding and the need to attain a Verification Factor score of 80% or more (“pass the DQA”) in order to obtain the reward shares. Most of the ICSC members and the Director of Maternal and Child Health were also knowledgeable about the performance based aspect of the GAVI funding.

4.1.2. Communication with districts and provinces

At the annual NIP workshop, the NIP manager presented the annual plan and the funding sources for activities. All PHD directors, Provincial EPI managers and OD chiefs attended the annual NIP workshop. The NIP explained to the participants the purpose of GAVI funding and how

Cambodia Case Study

each province and OD would be receiving various amounts of cash support for immunization activities. The planning and disbursement of all GAVI funding was done at the central NIP level.

The planning process of ISS funds differs from the normal planning process for health activities and specifically for immunization activities in that the normal planning process is bottom-up process. Through health sector reform, the OD level has been preparing annual district workplans which are submitted to the PHD level and up to the central MOH level. NIP receives a copy of all OD plans and assembles them together to formulate the national NIP annual plan. Although the OD develops budgets for the annual plan, they seldom receive the required funding from the PHD.

4.2. Management of ISS funds

All GAVI support is held in a separate Ministry of Health account with the cashier in the Ministry of Health as a signatory. Cash from the injection safety account, the new vaccine introduction account and the ISS account are all kept in the same bank account. At the NIP, a full-time administrator and accountant handles all donor cash funding (CVP/PATH, UNICEF, WHO, Rotary) and is responsible for the disbursement of cash and the reconciliation of expenditures.

The NIP prepares a request for ISS funds showing the proposed activities and the budget required for the activity. The Director General receives the request, approves it and passes it to the Minister of Health who then approves the request to withdraw cash from the MOH GAVI account. The NIP receives the requested amount in cash from the bank.

For activities at the district level, the districts come to the NIP in Phnom Penh to receive the cash advance for the immunization activity. When the activity is completed, receipts are forwarded back to NIP where they are reconciled with the monthly bank statement by the NIP accountant. There has not been any external audit of this bank account.

There have been no problems with disbursements of GAVI ISS funds, and ISS funds have been regarded as particularly useful for fast disbursements of cash needed for outreach activities at the OD level.

Subsequent to the development of the Financial Sustainability Plan, CVP/PATH and the World Bank sponsored the NIP administrator to obtain further training in accounting. As a result, the NIP has detailed information about each donor participating in immunizations, their funding level, and adjust the NIP's use of ISS funds in certain districts so as not to duplicate activities and funding at the district level. Since 2002, the NIP has maintained detailed records on immunization expenditures by each donor that has given cash support to the NIP. By keeping detailed records of the actual expenditures at the district level, the NIP has also been able to conduct their own internal analyses to assess the effectiveness of the ISS funds at the district level. The GAVI team was particularly impressed about the availability of the information and how the NIP was using the data it was collecting to reassess its strategies to improve immunization coverage.

4.3. Use of ISS fund

The ISS funds allowed the NIP team at the national level to identify and support areas of intervention required to improve the coverage in the country. For the first time the NIP had direct access to a resource that is quickly available without going through the regular government mechanism. It made them confident and responsible to implement certain activities nationwide. The funds also challenged them to innovate and identify areas of weakness in the program that required action. The GAVI application process made them fully aware of the conditions associated with ISS funds and the consequences. The NIP also for the first time was challenged with the reward sharing system in terms of performance that is quantifiable and understood by the team at the national, provincial and district level EPI managers. The team had to track the routine data on a regular basis and provide feedback to the province and the districts.

During the period between 2002 and 2003 the NIP identified the following areas to use ISS funds in order to improve the coverage:

1. Support immunization outreach sessions at the health center level
2. Support supervision and monitoring at the provincial, district and health center level
3. Develop a communication strategy and production of communication materials
4. Improve knowledge and skills of health workers through training in new areas (injection safety, AD syringes) and update them on routine immunization (policies, cold chain etc.)
5. Special initiatives (described in section 4.3.5)

4.3.1. Support immunization outreach sessions at the health center level

The NIP identified that outreach sessions were not held regularly in many health centers, as MOH funding was not available to them on a regular basis. The NIP used ISS funds to support outreach activities in the first quarter of 2003 because, as mentioned earlier, government funding is traditionally not available to ODs due to low disbursements of government funds at the beginning of the fiscal year. This first quarter is a critical time for outreach as it is the dry season, and many areas are impassable during the rainy season. During the last two years the ISS funds supported 53 ODs; of them, 37 ODs had standard per diem and transport costs for routine outreach activities. The standard costs include a standard per diem for staff and transportation regardless of travel distance. The other 18 ODs received the per diem and fully reimbursable transport costs in addition to special initiatives called Coverage Improvement Planning (CIP) and the pilot scheme. The rest of the 20 ODs were supported by UNICEF (18 ODs) and CVP (2 ODs).

4.3.2. Support supervision and monitoring at the provincial, district and health center level

Because supervision and support from the province and district levels were lacking, the NIP decided to use ISS funds to strengthen supervision. The MOH integrated supervision was not adequate to support immunization-specific issues at the district and below. Furthermore, the visits were not held due to lack of funds for transport and per diem. During the year 2002 and 2003 the provincial and district staff made regular supervisory visits to the district and health center and

Cambodia Case Study

addressed issues related to immunization services. The provincial staff went to every OD for 3 days every two months and provided support and supervision using a checklist. A summary report was made by each province and sent to the NIP every quarter. Similarly, District EPI managers provided support and supervision to health center one day per health center every two months. A checklist was used to assist the supervisor during the visit.

Quarterly review meetings at the district level were supported using ISS funds. Key staff from the health center level (chief of health center and immunization staff) and PHD (Director and provincial EPI manager) attended the meetings and discussed the achievements for the last quarter, planned for the next quarter and learned of updates of EPI policies and program activities.

4.3.3. Development of communication strategy and production of communication materials

ISS funds were used to develop a communication strategy, to structure health education, and to include volunteers from the community in the dissemination of immunization messages. This was a new initiative which was tested in six of the 13 districts where CIP was implemented. The health education component was operationalized with defined roles and responsibilities for the Provincial Health Department, the Operational Districts and the health center level. Two volunteers per village was selected from the community and provided training by the health center staff. They assisted health center staff during the EPI session, informed mothers about vaccination sessions, and attended monthly meetings at the health center. The volunteer program was implemented in these 6 districts (subset of the 13 CIP districts) and 47% higher DPT3 vaccination rate was achieved in these ODs compared with DTP3 coverage in 2002.

Prior to the advent of GAVI, the NIP did not produce materials for routine immunization. During the last two years several new interventions (injection safety, hepatitis B) were added to NIP strategies and activities. There were no materials available to communicate all of this new information to the community. ISS funds were used to develop several materials for use in multiple channels. These included: tee-shirts for volunteers, birth register booklet, leaflets, posters, banners, stickers, flash card, audiotape, TV and radio spots. They were disseminated widely in the country.

4.3.4. Improve knowledge and skill of health workers through training in new areas (Injection safety, AD syringes) and update them on routine immunization (policies, cold chain etc.)

Several training programs were supported by the ISS funds in 2002 and 2003. The need for such training came from the supervision conducted by district managers and introduction of newer interventions (injection safety). About 210 participants from NIP, province, district, and health center levels attended 4 training of trainers (ToT) courses on Injection Safety in 2002; subsequently 3,230 health center personnel were trained on injection safety by OD staff. Some 136 provincial and district staff were supported with ISS funds to attend six ToT courses on cold chain management in 2003.

4.3.5. Special initiatives

Several innovative initiatives were undertaken by the NIP with ISS funds in order to improve immunization coverage and quality of data. In the absence of ISS funds, these initiatives could not have been undertaken by the NIP. The flexibility inherent in the use of ISS funds has made this possible. These initiatives included a combination of training, outreach, IEC, quarterly meetings and supervision.

Coverage Improvement Planning (CIP)

During the first half of 2002, the NIP was not sure what activities to undertake, using the ISS funds. As a follow-up of the Reach Every District (RED) approach of WHO and with technical assistance from the Regional WHO office, NIP initiated the CIP strategy in 13 districts in 2003. Districts were selected based on the highest number of unimmunized children. A five-step process was developed and implemented in order to improve performance in targeted areas. This included: consultations at national, provincial and district level, development of a budgeted coverage improvement plan, making performance agreements between government levels, and financing, implementing and monitoring the plan. The NIP selected 13 ODs to implement this strategy. An increase from 32.4% to 42.7% in DPT3 coverage from the second semester of 2002 to the second semester of 2003 was observed at an additional cost of US\$2.5 to \$4 per child.

The main features of CIP at the community level are: mobilizing Village Health Volunteers (VHW), meeting with the community leaders and authorities, support for outreach sessions for remote areas (paying actual costs compared to standard cost determined by the NIP), additional outreach sessions in populous areas, catch-up campaigns and providing various communication materials.

Post Assessment Activity (PAA)

This activity was initially carried out as part of the CIP to improve data quality and validate EPI reports from the health centers. In the selected districts, two health centers were randomly selected and then one village from each health center was randomly chosen. The vaccination status of children vaccinated in the most recent outreach session was checked against the EPI report. The PAA was used in all the ODs supported by GAVI to validate reported coverage. The PAA strategy was also used by NGOs in several districts. UNICEF used this strategy to validate projected denominators of under-one year children versus actual numbers of infants in several districts. It was found that in most cases, the denominators used to target under-one children are higher than those actually found in the district.

Pilot reward scheme

A pilot reward scheme was initiated in five districts to improve immunization coverage of women and infants. An incentive of US\$0.50 per fully immunized mother (TT2+) and fully immunized child was paid to the health worker. This has resulted in improved data quality and record keeping and also coverage in some but not all pilot districts. However, the scheme was time-consuming to administer and took a long time (approximately 18 months) to complete per mother (9 months) and child (9 months). The health worker would need to keep track of the mother and the child for a period of 18 months in order to obtain the reward payment of \$0.50. The amount

Cambodia Case Study

of effort to administer the scheme and the improvement results did not prove to be cost-effective, so the NIP discontinued this pilot scheme.

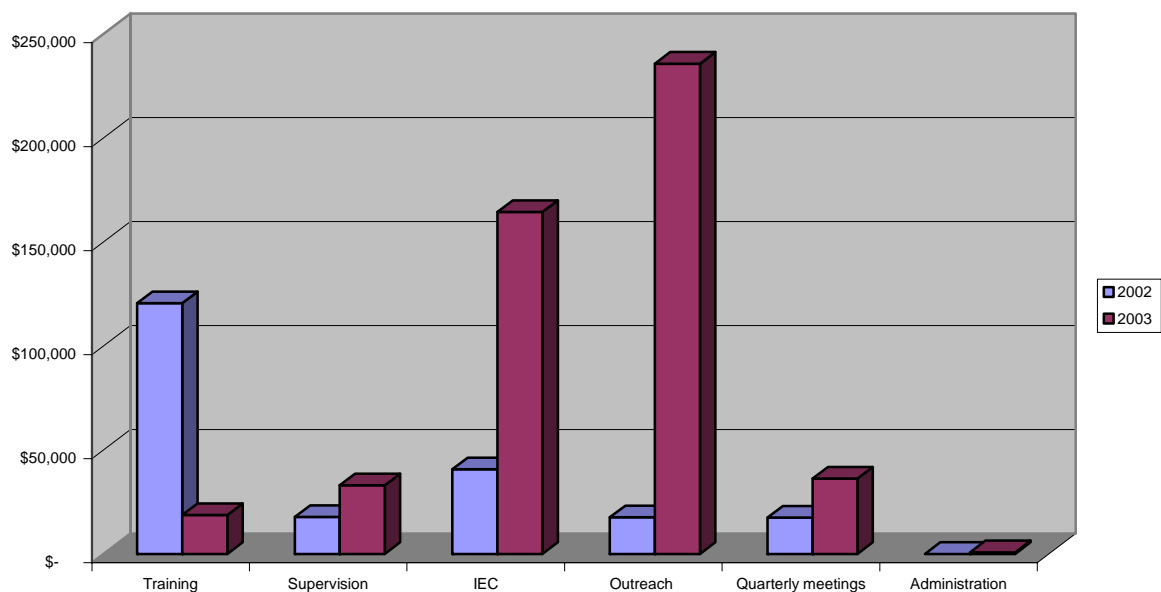
4.3.6. Trends in spending ISS Funds

In terms of trends, considerable funding was spent in the first year of ISS funding for training activities because the NIP had not had significant funding for training in past years; thus, they used the opportunity of ISS funds to build capacity of EPI staff at the provincial and health center level. As described above, a considerable amount of funding was directed at designing and producing IEC materials for immunization. In 2003, the funds for IEC were used for producing and distributing the IEC materials to the PHD and OD level. These IEC materials were available in the ODs visited by the study team.

Table 2 : Allocation of ISS funds in 2002 and 2003

	2002	2003
Training	\$120,557	\$ 18,699
Supervision	\$ 17,751	\$ 33,031
IEC	\$ 40,700	\$164,411
Outreach	\$ 17,613	\$235,670
Quarterly meetings	\$ 17,500	\$ 36,217
Administration	\$ -	\$ 790
Total	\$214,121	\$488,818

Allocation of ISS funds in Cambodia



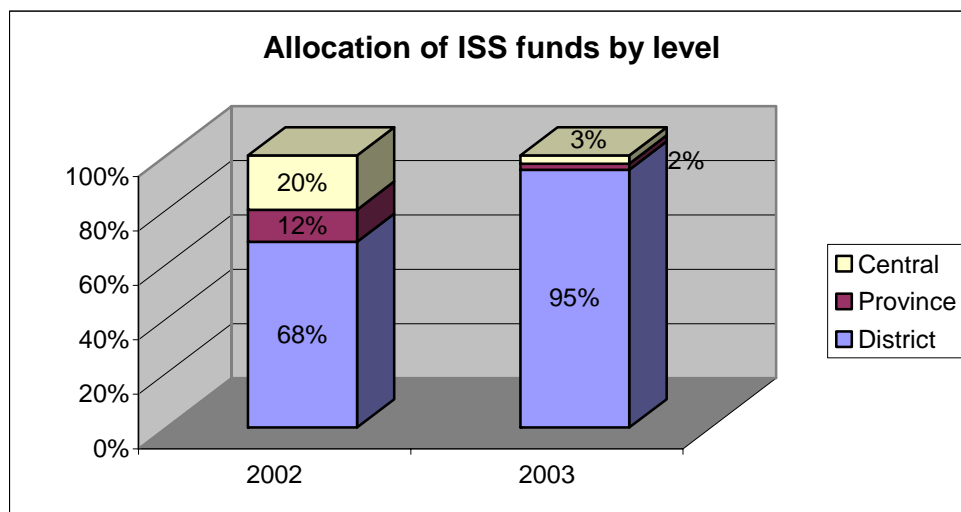
ISS funds began to be disbursed in July 2002. A greater percentage of ISS funds were spent at the central level in 2002 because ISS funds were being used for NIP central staff training PHD staff and the development of IEC materials. The shift in 2003 to the district level is caused by the

Cambodia Case Study

increases in spending on outreach sessions and the availability of IEC materials at the district level. The production of IEC materials and the training for the district level staff are counted as district level spending because they benefited the district level.

Table 3 : ISS spending by level

	2002	2003
District	\$145,919	\$463,018
Province	\$ 25,240	\$ 10,940
Central	\$ 42,714	\$ 14,860
Total	\$213,873	\$488,818



5. District Level

The study team visited two districts, Battambang and Monduliri. Battambang is the second largest city in Cambodia and is located approximately 5 hours by road from Phnom Penh. Monduliri is a remote, mountainous province, with very low population density; many parts of the district are inaccessible during the rainy season. Immunization outreach sessions are conducted between December and April. A lot of children are missed due to the limited number of sessions held in these few months of the year and the DTP1-3 drop out rate is the highest in the country (50%). The geography of the province affects all activities from planning to management to implementation.

5.1. Planning and allocation process

The allocation process for ISS funds at the provincial and district levels were prescribed by the central NIP, and therefore the provinces and districts did not go through a separate planning and allocation process at their respective levels.

5.2. Understanding of ISS funds at the operational level

The PHD Director and the EPI manager at the provincial level, and the OD Chief and the OD EPI staff in both districts visited, were well aware of the GAVI funding for immunization. They understood the performance-based aspect of the funding and the limited duration of the availability of funds. Their knowledge about GAVI stemmed primarily from the annual NIP workshop and the fact that GAVI funds have paid for outreach sessions which, traditionally, have been under-funded.

5.3. Management of ISS funds

The PHD director receives GAVI ISS funding from the NIP. Each PHD Director physically goes to the NIP office in Phnom Penh to receive cash from the NIP accountant for GAVI ISS funded activities at the PHD and OD level. Although this may not be the most efficient way of transferring funds to the PHD and OD level, it has allowed the operational levels to have access to cash needed to conduct outreach sessions. All receipts are returned to the NIP accountant who reconciles the expenditures with the bank statement. NIP is currently investigating options for wiring the funds directly from the NIP GAVI account to the district accounts in the districts.

5.4. Use of ISS funds in Battambang District

Battambang operational district located in Battambang Province, benefited from ISS funds through the CIP strategy. The selections of the CIP districts were based on population size and the location of the highest numbers of unimmunized children. Volunteer involvement and catch-up campaigns for routine immunization were the key to improve coverage. The post-assessment activity (described above) also helped identify unimmunized children. ISS funds were primarily used for quarterly meetings, transport costs and per diem for outreach, ice and media. Health Center Tuol Taek, located in the town of Battambang, was visited by the team. This health center does not conduct fixed-site immunization sessions because it does not have a refrigerator. The health center chief explained that he obtained his vaccines from another nearby health center in order to conduct his outreach sessions. Due to the lack of a refrigerator, there are missed opportunities for mothers and children who frequent this health center but do not have the opportunity to receive vaccinations during their visits.

The study team visited another health center, Phnom Sampov, which is located about 2 hours by road from the town of Battambang. This health center conducts fixed site immunization sessions every Monday and outreach sessions 10 times per month (or once per village per month). As a beneficiary of the CIP strategy, the health center received funds for transport and per diems for outreach sessions. The health center chief cited the nomadic population as a major barrier to increasing coverage in the catchment area.

5.5. Use of ISS funds in Mondulkiri District

Mondulkiri District did not benefit from the CIP strategy. It received outreach funds for the first quarter of 2003 as did all ODs in Cambodia, as well as cash for supervision visits and quarterly meetings.

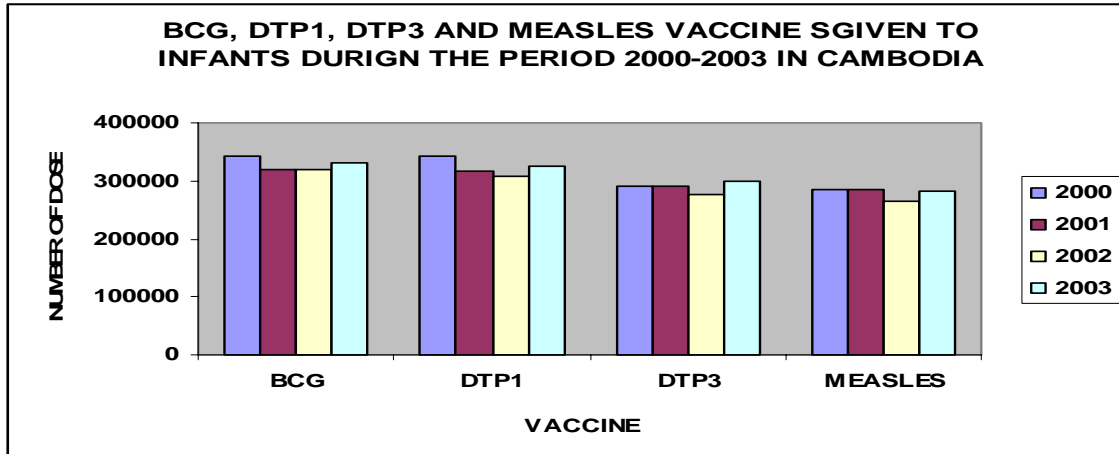
In Oreang Health Center, there are fixed facility immunization sessions every day as it serves the town of Sen Moronom, which is the capital of Mondulkiri District and has the highest population density in Mondulkiri District. There are also outreach sessions conducted to 13 villages. Outreach depends on the availability of funds. Due to the large distances between the health center and the villages, the standard allocations for per diem and transport for outreach are not sufficient. Health center staff often have to use their own money to pay for outreach. GAVI ISS funds have been used in this health center for outreach and supervision which the government was supposed to be funding, but hasn't been able to fund either due to a lack of funds or unreliable timing of funds. Despite the difficult situation in this province, the data availability and collection is very good.

In addition to visiting the Oreang Health Center, the study team visited a health post (Andong). Health posts were recently built and equipped in Mondulkiri to increase the access of populations to health services. The health post is staffed by a health post chief and maintains a stock of essential drugs. Health post staff is mobilized for outreach conducted by the respective health center staff. There is potential for the health post to be a fixed site for immunization if it had the cold chain equipment.

6. Changes in outcomes associated with use of ISS funds

6.1. Changes in coverage 2000-2003

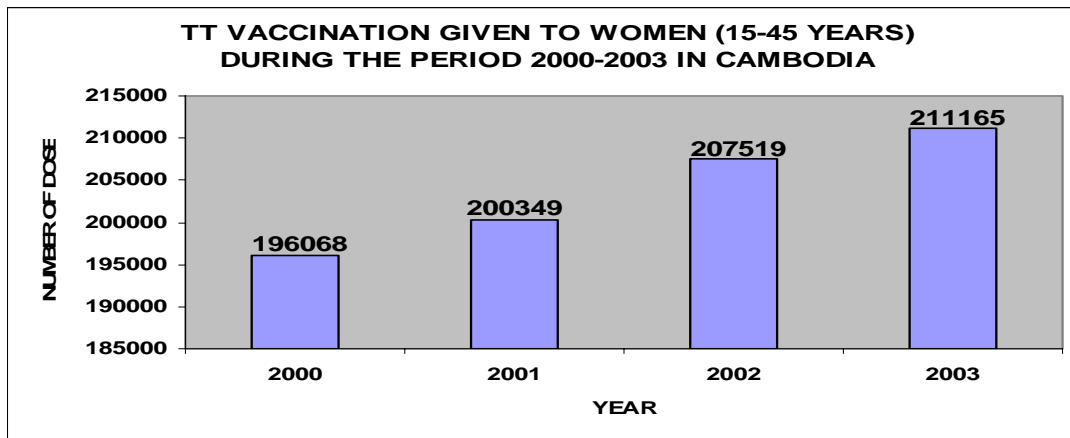
The figure below shows the number of doses given during the period 2000-2003 for BCG, DTP1, DTP3 and Measles. In terms of doses given, only the number of DTP3 doses increased since 2000. Although there was a 3.5 percent increase in DTP3 numbers compared to 2000, more children had DTP3 in 2003 compared to other years. In 2003 an additional 24,696 infants received DTP3 compared to 2002. The study team believes that the increase in DTP3 can be explained by the fact that NIP used ISS money in a conscious manner to increase DTP3 coverage in the country at all levels. The managers understood that the fund was performance based and the indicator was DTP3 coverage. Despite a measles campaign (as part of the accelerated measles control strategy), routine measles coverage has been at a steady level since 2001.



Source: National Immunization Program (NIP), Cambodia (Joint Reporting Form on Vaccine Preventable Disease, WHO/UNICEF)

6.2. TT vaccination

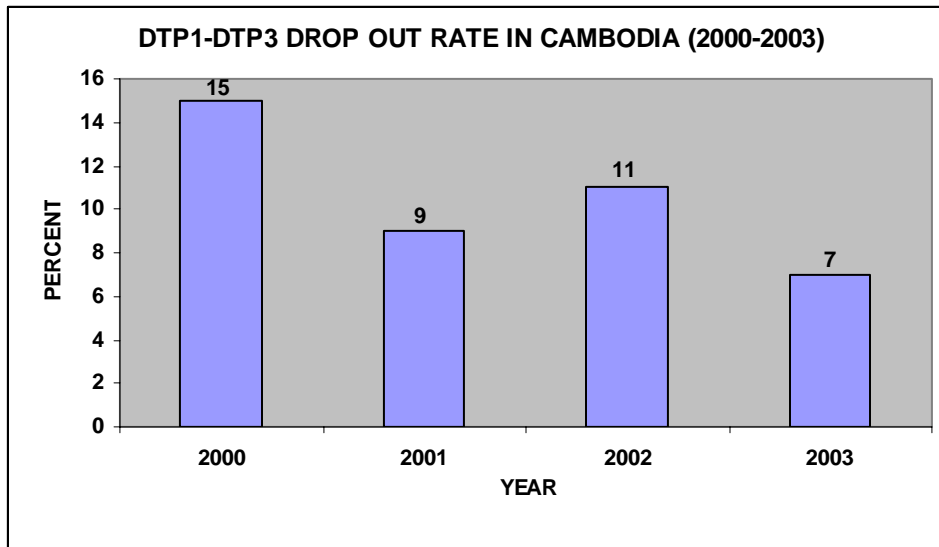
Although the current TT2+ vaccination coverage is only 46 percent during the period 2000 to 2003 there has been a gradual increase in TT2+ vaccination among women in Cambodia. Compared to 2000 there was a 7.7 percent increase in the number of TT doses given in 2003. This increase has been largely due to MNT campaigns conducted for the last three years. The figure below shows the number of TT doses given since year 2000. The support for MNT campaigns largely came from UNICEF.



Source: National Immunization Program (NIP), Cambodia (Joint Reporting Form on Vaccine Preventable Disease, WHO/UNICEF)

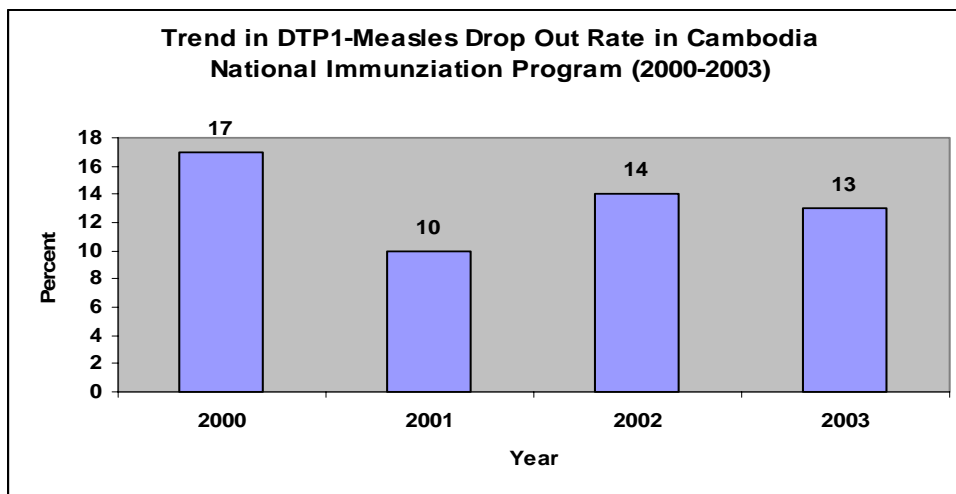
6.3. Drop-out rate: DTP1-DTP3 and BCG-Measles

The DTP1-DTP3 drop-out rate has declined between 2000 and 2003 and reached its lowest level for these years in 2003 at 7%. The decrease in drop-out may have been due to increased attention given by the NIP to improve DTP3 coverage in the country using ISS funds.



Source: National Immunization Program (NIP), Cambodia (Joint Reporting Form on Vaccine Preventable Disease, WHO/UNICEF)

The DTP1-measles drop-out rate started showing a decline from 2001 when the measles campaign started in the country in a phased manner in high risk areas.



Source: National Immunization Program (NIP), Cambodia (Joint Reporting Form on Vaccine Preventable Disease, WHO/UNICEF)

Cambodia Case Study

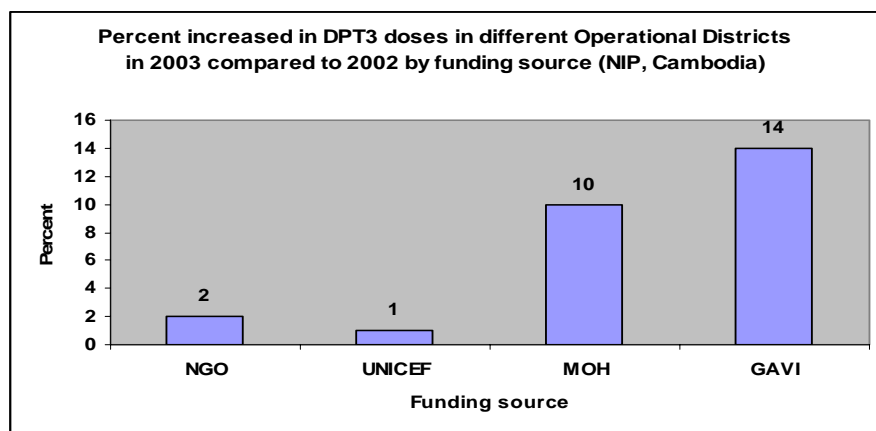
The fact that NIP was able to do concurrent activities such as maintaining excellent AFP surveillance, strengthening routine immunization using ISS money, conducting the MNT campaign, undertaking accelerated measles control, and introducing hepatitis B vaccine and AD syringes was mostly attributed to the availability of experienced central level staff working for many years in the NIP and taking responsibility of each of these interventions along with continuous technical and financial assistance from the donors.

6.4. Innovative strategies to improve routine immunization

6.4.1. DPT3 Coverage

Overall, the country vaccinated more children for DPT3 in 2003 compared to 2002 (300,252 versus 275,556). In 2003, an additional 24,696 children received DPT3 which is an increase of 9% over 2002. According to NIP, Cambodia, this increase in DPT3 is mostly due to the support received from ISS funds for several nationwide activities (IEC, Supervision and Monitoring, Quarterly Review meetings and support to the outreach sessions not covered by MOH or other partners).

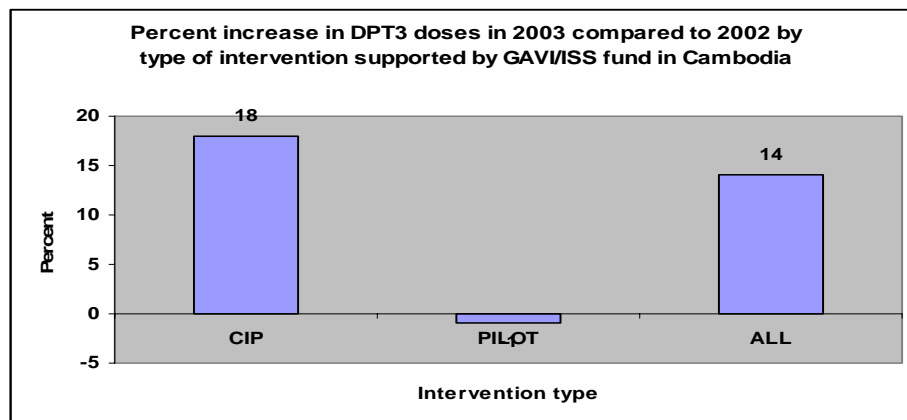
The figure below compares the change in DPT3 doses in 2003 compared to 2002 by different funding sources via NGO, UNICEF, MOH and GAVI. The GAVI-supported districts had the highest increase at 14% followed by 10% in MOH districts. It was reported that the performance in the GAVI districts was higher than the others primarily because GAVI districts pursued the CIP strategy.



Source: National Immunization Program (NIP), Cambodia, 2004

The GAVI districts include two main strategies: CIP and the fully immunized child pilot scheme, previously described in this report. The figure below compares these two strategies and the resulting increases in DPT3 doses. The increase from 2002 to 2003 increased in the 18 districts supported by GAVI/ISS in 2003. Of these 18 districts, 13 used the CIP strategy and five used the fully immunized child pilot program to reach mothers and infants.

Cambodia Case Study



Source: National Immunization Program (NIP), Cambodia, 2004

There was an overall increase in DPT3 doses by 14% in 2003 from 2002 in GAVI/ISS supported ODs. However, districts implementing the CIP strategy showed an increase of 18% while the pilot reward program showed small declines in coverage. The CIP strategy appeared to have a positive impact on coverage.

6.4.2. Improvement in Data Quality

Over the last few years, the NIP made good progress in improving the quality of administrative data. Regular supervision and technical guidance were provided at different levels and quarterly operational districts meetings were held with health center participation; these are thought to have contributed to the accuracy of the administrative data. Post Assessment Activities (PAA) carried out by the ODs to validate whether the health center reported immunization data match the finding of household assessed data in selected villages has further contributed to the accuracy of reporting. ISS funds were used in 2002 and 2003 for these activities.

The improvement of the administrative data was further documented by the Data Quality Audit (DQA). Cambodia conducted two DQAs, in 2001 and 2002, both of which were conducted by an external agency. A Verification Factor (VF) of 0.84 was found in 2001. In 2002, the VF had improved to 0.98 making the administrative data similar to WHO/UNICEF official estimate. Table 4 below shows the comparison between administrative data and official estimates for the period 2000-2003.

Table 4 : Comparison between official estimate and administrative data on immunization coverage for the period 2000-2003 in Cambodia

	2000		2001		2002		2003	
	OFFICIAL	ADMN.	OFFICIAL	ADMN	OFFICIAL	ADMN.	OFFICIAL	ADMN.
BCG	81.4%	83	63.8%	78	63.0%	75	76%	76
DTP1	78.0%	83	65.1%	77	60.5%	72	74%	74
DTP3	58.5%	71	59.6%	71	53.8%	64	69%	69
MEASLES	40%	69	58.8%	70	47.9%	62	65%	65
TT2+	40%	46	40.3%	48	36.1%	43	43%	43

Notes on the calculation of official estimate:

2003 - The official estimate is the same as the administrative data. DQA 2002 VF of 0.98 was applied.

2002 - Multiplying the administrative coverage by VF of 0.84 taken from DQA 2001

2001 - 2001 DQA VF of 0.84 was used to calculate official estimate.

2000 - DHS 2000 data were used for official best estimate

Source: National Immunization Program, Cambodia

6.4.3. Improved supervision and monitoring and capacity building

The ISS funds also improved supervision and monitoring of the program on a regular basis. The review meetings at the OD level allowed all the health center, district, and provincial staff to review the program and take actions. Also, the review meetings provided the EPI managers with a forum for sharing new EPI policies and give information about new interventions. Several training programs conducted using ISS funds also developed capacity building of staff in such areas as cold chain and injection safety.

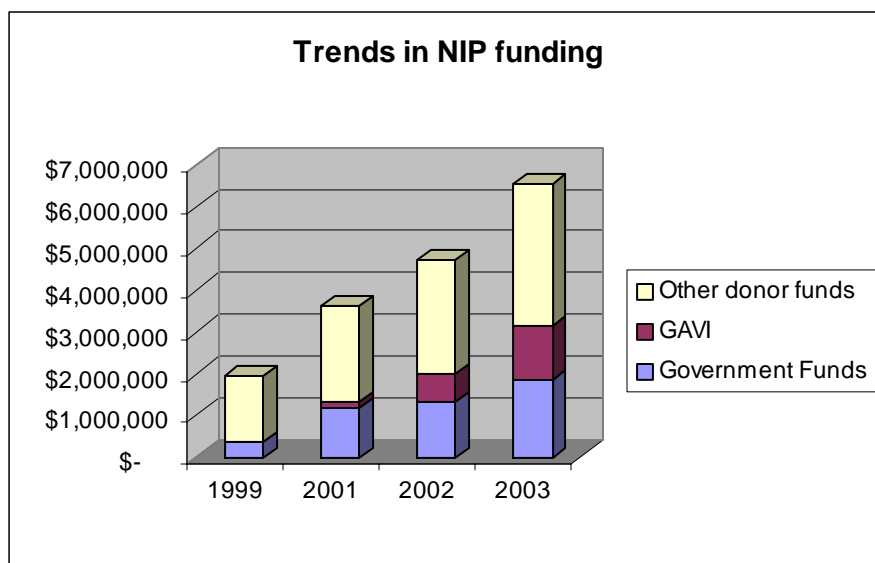
7. Immunization financing past, present, future

There was a deliberate allocation from NIP to fund outreach, which had not been funded by the government due to government bureaucracy and delays in actual releases of funds. As a result, districts obtained ISS funding during the first quarter of 2003 to fund outreach. These are outreach sessions that would normally not have been conducted because of the lack of government funds, despite their traditional inclusion in district workplans. Therefore, although the ISS funding can be seen as replacing government funding, they are in fact additive because districts were not conducting outreach during the first quarter of the year for the last couple of years.

Table 5 : Financing of Immunizations 1999-2003

	1999	2001	2002	2003
Government Funds	\$ 380,010	\$ 1,176,284	\$ 1,329,586	\$ 1,840,037
GAVI	\$ -	\$ 157,000	\$ 686,571	\$ 1,298,421
Other donor funds	\$ 1,567,540	\$ 2,280,088	\$ 2,718,449	\$ 3,403,900
Total	\$ 1,947,550	\$ 3,613,372	\$ 4,734,606	\$ 6,542,358

Source: Financial Sustainability Plan 2001, Update 2003



Since 2002, NIP has tracked cash sources for its activities in a systematic manner. CVP/PATH provided funding for the NIP administrator to receive accounting training which has enabled her to set up systems at NIP to track the WHO, UNICEF, CVP/PATH and GAVI ISS funding. Although the Financial Sustainability Plan development process was long and difficult, the NIP found the exercise valuable enough that it decided to set up systems to keep track of the various sources and uses of funds for immunizations. This system has allowed NIP to examine where individual districts do not receive cash support from donors and to use ISS funds to fill in that gap. Prior to 2002, NIP would not have been able to determine whether UNICEF was paying for supervision or outreach in a particular district. Since 2002, NIP has played an active coordinating role with NGOs working in particular districts on immunization (e.g. paying for outreach, village health volunteers or supervision) and donor agencies which enable it to adjust funding for particular districts. For example, in the first quarter of 2004, NIP is funding outreach in 36 ODs with ISS funds because the other ODs were being funded either by UNICEF, CVP/PATH, GTZ, RHAC, RACHA and other contracting mechanisms. In addition, NIP has requested that the NGOs that support immunization in particular districts fund the same package of activities as NIP, specifically outreach, supervision with PAA and quarterly EPI meetings.

8. Comparison of GAVI with GFATM application process and implementation, and their effects on the health system

A brief interview was held with the focal point of the GFATM who is also the director of communicable disease of Ministry of Health. To date, Cambodia has been approved for a total of \$47 million for AIDS, TB and Malaria, with about \$8 million having been disbursed. The funds are being managed by the Ministry of Health and the local fund agent is KPMG. The process for accessing the GFATM funds is separate from the normal MOH funding mechanisms just as it is for the GAVI funds. This has enabled GFATM funds to be disbursed in-country much more quickly than treasury funds from the MOH. GFATM produces quarterly reports and requests for funding administered by KPMG.

8.1.1. Similarities between GAVI and GFATM

The application process for the GFATM involved WHO, UNDP and UNAIDS, with USAID providing four consultants to work on the various applications. External consultants played a key role in the application process. Key partners such as WHO and CVP/PATH provided external consultants to NIP to complete the GAVI application. The CCM for the GFATM encompasses a broad stakeholder base whereas the ICSC includes a much smaller group of donors and an even smaller technical working group. As the local fund agent, KPMG is responsible for keeping the financial statements of the disbursements, whereas NIP is itself responsible for the accounting of GAVI funds with other donor funding.

9. Discussion and Conclusions

9.1. Main findings

9.1.1. Knowledge and understanding of GAVI ISS funds

Knowledge and understanding of GAVI ISS funds was widespread at the central NIP level, higher levels of the Ministry of Health and among ICSC members. At the provincial and OD levels, the staff were aware of GAVI funding and its conditions.

9.1.2. Innovative interventions

GAVI/ISS fund helped to develop innovative interventions for routine immunization such as the Coverage Improvement Plan, increasing outreach sessions during the first quarter of the fiscal year, pilot reward program for increasing the number of fully immunized children and the Post Activity Assessment activity. Although not all interventions will be continued past the availability of ISS funding, the NIP is actively seeking support from other donors for certain interventions such as the Post Activity Assessment and the Coverage Improvement Plan.

9.1.3. Availability of GAVI ISS funds

The availability of ISS funds and the ease of access to cash for provincial and district staff meant that outreach sessions were increased in districts that received ISS funds. By not relying on the government allocations for outreach, which existed on paper but not in hard cash, OD staff were able to reach more children.

9.1.4. Coordination role

The NIP played an active coordination role with all NGOs working in immunization to ensure that ISS funds would not fund activities that had already been funded by other NGOs or donors. As a result, ISS funds were used to support activities that had not been funded by other donors, such as training for health center staff and the production of IEC material.

9.2. Challenges

9.2.1. Funding for outreach sessions and other recurrent costs

In Cambodia, 80 percent of immunization coverage in Cambodia is being achieved through outreach. In theory, outreach is funded out of the PHD budget, however this does not always occur due to insufficient and unreliable funding from the government. In practice, NGOs and now ISS funds are being used to fund outreach for immunization. Although the ISS funds have served as a temporary funding source, especially for the first quarter of the fiscal year, NIP is well aware that this is not a sustainable situation. One of the strategies that NIP is pursuing is the creation of a line item for outreach within the PHD budgets. While this would help ensure that the PHD allocate funding for immunization outreach, it would not solve the delay in receipt of government funding at the PHD level, nor would it solve the inadequacy of the level of funding provided for outreach. The standard rates for transport and per diem for outreach sessions are inappropriate for certain remote districts, and health center staff cannot be expected to absorb the additional costs of reaching those remote villages. CIP demonstrated immunization coverage could improve dramatically if health center staff were reimbursed for actual transport and accommodation costs.

It has been estimated that approximately \$700,000 would be needed to fund actual costs for outreach sessions to all villages. In 2003, NIP used \$230,000 to fund outreach. Although it's been acknowledged that funding actual reimbursable costs for all villages is not feasible, certain villages will certainly not have any outreach sessions if the actual costs of conducting outreach are not reimbursed. Most likely, a sum between \$230,000 and \$700,000 would be needed to fund outreach sessions through a combination of standard outreach payments and actual cost reimbursement for the remote villages.

9.2.2. Equity

GAVI ISS funds were primarily targeted at provinces and districts with the most number of unimmunized children. These also happen to be districts with the highest population densities.

Cambodia Case Study

Remote districts with low population densities, and therefore not as many children, have not received significant amounts of ISS funds and will not be able to increase their coverage without additional funds. The standard outreach allotment of \$2 per person per village per outreach session is unrealistic for mountainous areas which are not accessible during the rainy season. Although increasing resources in these areas may not dramatically increase the number of children immunized in the entire country, for the purposes of reaching the hard to reach, these districts need to receive more funding.

Annex 1

Contact List

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Ly Nareth, NIP Deputy Manager
Dr. Nasy, RACHA Deputy Director
Thazin OO, UNICEF Head, Health and Nutrition Programme
Nlek Sakun, Tuol Taek HC Chief
Duong Sarak, CVP/PATH M & E Officer
Svay Sarath, NIP Deputy Director
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Sok Touch, Director MOH Communicable Disease Control Department, GFATM focal point
Mao Viteny, Tuol Taek HC EPI Manager
Mel Yuong, Battambang PHD
Tsuyoshi Yusa, JICA

Annex 2

Schedule of Visit

- 4/19 Meetings at NIP
- 4/20 Meetings at NIP, NMCHC Accountant
- 4/21 Meetings with CVP/PATH, WHO, UNICEF, RHAC, RACHA, USAID
- 4/22 Travel to Battambang province (5 hours away)
- 4/23 Battambang Provincial Health Department, Battambang Operational District, Tuol Taek Health Center, Phnom Sampov Health Center
- 4/24 Travel from Battambang province to Phnom Penh
- 4/25 Travel to Mondulhiri province (7 hours away)
- 4/26 Mondulhiri Provincial Health Department, Mondulhiri Operational District, Oreang Health Center, Ondong Kralong Health Post
- 4/27 Travel from Mondulhiri to Phnom Penh
- 4/28 Meetings at NIP, Global Fund, MOH DG
- 4/29 Departure

Annex 3

Documents consulted

GAVI application

GAVI progress report, 2002, 2003

Financial Sustainability Plan, 2002

Report on Introduction of Implementation Coverage Improvement Plan in Cambodia, MOH, June 2003

Monitoring and Management Support Strategy, NIP, June 2003

Financial Sustainability Planning Immunization Services in Cambodia, Update 2003

Powerpoint presentation. Improving Routine Immunization Activities through ISS Fund. NIP, April 2004.

Annual Financial Report, NIP, for 2002 and 2003.