National Strategy Immuzation in Cambodia
(5 Year work plan 2001-2005)
December, 2000

Approval of the National Strategic Plan for Immunization Program in Cambodia, 2001-2005

The Ministry of Health appreciates the hard work and attention to detail that the staff of the National Immunization Program (NIP) have put into the preparation of this Strategic Plan. It is the result of careful epidemiological and program analysis, several meetings, a lot of work within the NIP, and sharing and exchange with all the NIP’s partners, government and NGOs and donors.

This Strategic Plan is welcome and approved, as all effective response to the serious problems that the Preventable Diseases are causing to Cambodia. It provides a framework within which Annual Operational work Plans for implementation can be prepared. Gaps in resources identified, requests for assistance shaped, and resources from all sources coordinated. But like all plans, it should be flexible.

The Ministry of Health would like the National Immunization Program to review the Strategic Plan after two years, and report on the achievements and progress.
FOREWORD

In Cambodia, the National Immunization Program (NIP) formerly known as the EPI Program was launched in 1986, and the program has previously made several national plans and reviews. The last review took place in 1992, and the last 5-year plan in 1997. Many changes in the situation and the structure of the immunization services have happened since that time. Therefore it is imperative to revise and formulate a new National Strategy on Immunization in Cambodia (5-year Work Plan 2001-2005). This new strategy accounts for recent developments in Cambodia's health system, eradication of polio, specific disease control initiatives, introduction of new vaccines, and injection safety issues.

The new National Strategy on Immunization in Cambodia contains objectives for routine immunization coverage, polio eradication, neonatal tetanus elimination, measles control, vitamin A deficiency, new interventions, injection safety, and vaccine wastage. The strategies and activities necessary for achieving these objectives are included in the new work plan. A time line for performing these activities is also in the work plan.

The NIP believes that following the proposed strategy will lead to obtaining the goal to improve child survival and child health by controlling, eliminating, or eradicating all vaccine preventable diseases targeted by the Program.

The NIP wants to thank all the national staff and international partners who have made the current immunization achievements possible. The NIP also at this time would like to acknowledge the contribution of UNICEF, WHO, and PATH/CVP personnel who assisted the Program with the development and preparation of the National Strategy on Immunization in Cambodia (5-year Work Plan 2001-2005).
I. BACKGROUND OF CAIMBODIA

1.1 GEOGRAPHICAL AND DEMOGRAPHIC FEATURES

Geographically the country is mainly flat in the central area, and is surrounded by mountains on the border of Thailand, Lao PDR and Vietnam. The north-western provinces of Rattanakiri, and parts of Stung Treng and the Cardamom Mountains in the Southwest represent the most significant mountainous areas. Generally the mountainous areas are forested and only sparsely populated. Cambodia also is a country of significant waterways. The main waterways are the Tonle Sap (Great Lake), the Torte Sao River which drains from the lake and merges with the Mekong River at Phnom Penh, the Mekong River itself, and its tributaries (including the Bassac River). Most of the people in the country live along or near waterways.

The climate is sub-tropical. With seasonal rains beginning as early as April in some parts of the country or lasting up to November or December. A cool season occurs from November to January, and is followed by a hot season in April and May. Much of the country is inaccessible by road during the peak of the rainy season.

Administratively Cambodia is divided into 24 municipalities and provinces. Municipalities and provinces are further subdivided into districts and then communes. In the provinces, communes are further subdivided in villages, which are discrete administrative units. In Cambodia there are 183 districts, 1609 communes, and 13,406 villages (1998 Census).

At the end of 1999, the population of Cambodia was estimated to be about 12 million persons. The annual population growth rate is almost 2.5%, while the average population density is 64 persons km$^2$. Significant variations exist between the densely populated plains and the sparsely populated mountain region. Population density is 3,448 persons km$^2$ in Phnom Penh, averages 235 persons km$^2$ in the plains region, and falls to only 17 persons km$^2$ in the mountains. In remote provinces such as Rattanakiri, the population density is less than 10 persons km$^2$.

1.2 HEALTH STATUS

The maternal mortality rate is 173 per 100,000 live births, compared to a regional average of 120 per 100,000 live births. The mortality rate of children under 5 is 115 per 1000 live births, compared to the regional average of 50 per 1000 live births. The main causes of child death are diarrhoeal disease, acute respiratory infections, dengue fever, vaccine preventable diseases, protein-energy malnutrition and micronutrient deficiency.

Malaria remains a major cause of morbidity and mortality in all age groups of the population. HIV prevalence rates have been increasing since 1991. In 1998, there were an estimated 150,000 people living with HIV. Hepatitis B is endemic in Cambodia. In 1998, the prevalence of carriers of this virus among blood donors was 7.5%.

The reported incidence of NTP target diseases for Calendar Year 1999, as presented in the WHO/UNICEF Joint Reporting Form on Vaccine Preventable Diseases is provided below

<table>
<thead>
<tr>
<th>Disease</th>
<th># Reported Cases</th>
<th>Source of Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>No Reports</td>
<td></td>
</tr>
<tr>
<td>Measles</td>
<td>13,827</td>
<td>Polio Eradication Unit. MoH</td>
</tr>
<tr>
<td>Neonatal Tetanus</td>
<td>173</td>
<td>EPI Unit. MOH</td>
</tr>
<tr>
<td>Total Tetanus</td>
<td>425</td>
<td>EPI Unit and HIS, MOH</td>
</tr>
<tr>
<td>Pertussis</td>
<td>618</td>
<td>HIS, MOH</td>
</tr>
<tr>
<td>Poliomveliris</td>
<td>0 (192 AFP)</td>
<td>Polio Eradication Unit. MOH</td>
</tr>
</tbody>
</table>
1.3 HEALTH SYSTEM

Since 1994, health sector reforms have begun the process of establishing a comprehensive basis for the Ministry of Health to effectively engage these pressing population health issues. As part of health sector reform (HSR), Operational Districts (ODs) have been created as the units responsible for providing health services to the population. ODs are different from the administrative geopolitical units. Often they combine parts of different administrative districts. The development process to establish fully functioning ODs is still in the implementation phase.

The health system in Cambodia is divided into three levels Central, Provincial and Operational District including health centers and referral 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 and four regional training centers. There are 73 Operational Districts, which will manage 929 Health Centers (HC) when the Health Coverage Plan is fully implemented (of which approximately 678 are currently established) and 63 Referral hospitals of which 23 are Provincial Referral Hospitals.

Presently, the number of health professionals is sufficient to meet the population needs except a significant shortfall for the midwifery staff and to a lesser degree for nurses but there is a huge problem of distribution of staff. There is significant over-representation of all health professions in Phnom Penh and in most provincial towns, leaving rural and remote areas under-staffed with many staff under-qualified.

Recent re-organization of the health system based on criteria of population and accessibility has resulted in a more decentralized approach to service planning and delivery. The Operational District is the new focal point for service management, providing a comprehensive approach to primary care. Health Centres overseen by the Operational District provide a Minimum Package of Activities (MP PA), including preventive, promotive and curative services.

II. HISTORY OF IMMUNIZATION ACTIVITIES

2.1 ESTABLISHMENT OF IMMUNIZATION PROGRAM (1986-1999)

2.1.1 Organization of Immunization Services 1986-1999

With UNICEF collaboration, Cambodia officially launched an Expanded Program on Immunization (EPI) in October 1986. By the end of 1988, EPI activity had been extended to all 21 existing provinces. In February 1989, the program began immunizing pregnant women against tetanus. During this period, the immunization program was managed by the central level as a vertical program with provincial, district, and commune counterpart managers. This facilitated implementation of EPI because the existing health infrastructure especially in rural areas was too poor to be significantly decentralized.

In 1995, an independent Polio Eradication Unit (PEU) was set up to accelerate polio eradication activities. Although the PEU had functions that overlapped with the EPI Unit; it conducted activities separately from the EPI Unit. While wild poliovirus transmission persisted, polio eradication activities including AFP surveillance fully occupied the PEU personnel. so separation of PEU activities from the EPI Unit did not present a major problem However, the separate and independent functioning of the two units does not represent the most effective model for building a stronger national immunization program.

2.1.2 Activities of Immunization Program 1986-1999

Reported national coverage for fully immunized children by the age of 12 months remained in the 30% to 35% range until 1994, when a major effort to expand immunization activities to all districts of the country was initiated. By the end of 1994 reported coverage for fully immunized children (as measured by measles coverage) reached 53%. By the end of 1995, the reported coverage reached 75%. Since that time coverage
has decreased slightly. At the end of 199 reported national coverage was estimated at 63%.

Cambodia's first disease-specific initiative, aimed at eradicating polio, was launched in 1994, with successful Sub-National Immunization Days (SNIDs) in Phnom Penh Municipality and Kandal Province (20% of the national population). In 1995, 1996 and 1997, two rounds of National Immunization Days (NIDs) were conducted during February and March of those years. Since March 1997, 10 additional rounds of supplementary OPV immunizations (4 of them national rounds) have been conducted, the last in November December 1999.

AFP surveillance was initiated in Phnom Penh in 1994 and expanded to 1.11 districts of the country in 1995. The laboratory component of the surveillance system reached maturity by the end of 1996. By the end of 1997 the surveillance system: achieved the necessary standards of excellence to allow the system to switch from a clinical to a virological case classification system. The last laboratory-confirmed case of poliomyelitis occurred in March 1997. Cambodia expects to be certified polio free by the end of 2000.

Beginning in 1996, Vitamin A capsules have been offered to children aged 12-59 months during selected supplementary OPV immunization rounds. In 1996 an effort was initiated to integrate the routine provision of Vitamin A into the system for delivering immunizations.

2.1.3 Funding Support for the Immunization Program 1986-1999

Over the years, Cambodia's immunization activities have benefited from the support of many organizations. In recent years material and financial support from the Governments of Japan, Australia and the United Kingdom have been substantial. Rotary International has provided substantial support for the polio eradication initiative. UNICEF has continued to provide both technical and material support. WHO began its support for the Cambodia EPI in 1992, and since the beginning of the polio eradication initiative has provided substantial technical support as well as some material support.

2.2 CURRENT SITUATION OF THE NATIONAL IMMUNIZATION PROGRAM (2000 AND BEYOND)

2.2.1 Organization of the National Immunization Program

In November 1999, the Immunization Coordination Sub-Committee (ICSC) of the Later-Agency Coordinating Committee was created to provide an advisory body to the Ministry of Health for matters concerning immunizations. The National Immunization Program is identified as the MOH Unit that relates directly to the ICSC, providing information, proposals and progress reports for the consideration/comment of ICSC members. The ICSC is supposed to meet at least quarterly. To facilitate the working relationship of the NIP and the ICSC the MOH has established a Technical Working Group on Immunizations, chaired by the Deputy-Director General of Health and composed of members of the NIP plus several technical people employed by ICSC members. The Technical Working Group meets frequently and greatly facilitates the flow of information between the NIP and the ICSC.

The MOH established the new National Immunization Program (NIP) in 2000, joining the EPI Unit and Polio Eradication Unit into one organizational structure. This will better prepare immunization services to meet future challenges as well as to co-ordinate better within the MOH and with external partner agencies. The challenge for the: VIP is to implement the reorganization and to function effectively under the new structure by the end of the Year 2000.

2.2.2 Activities

2.2.2.1 National Immunization Program in Relation to Health Sector Reform

NIP will need to transition from current operational planning and supervision activities to the provision of policy guidance and technical support in order to be consistent with Health Sector Reform initiatives. Concerning this latter point, the current finalization of a MoH "Guidelines for outreach services from health centers" and the establishment of a growing number of health centres delivering the MPA should lead to a
Revision of the current EPI policy especially concerning the frequency of the immunization outreach activities. A strategic shift from current level of outreach activities (80% of the coverage was reached through outreach activities in 1996) to more fixed sites activities should occur with the establishment of more HC. There should be more emphasis on creating greater demand for immunization services.

Specifically, as Provincial Technical Bureau personnel assume responsibility for oversight of reporting and feedback, stock requisition and management and integrated supervision, and as OD staff assume responsibility for provision of that integrated supervision to HC staff, the NIP will assume a policy development and standards-setting role, as well as a technical advisory and supplementary auditing role. In addition, the National Office will become an information resource center for management and technical information beyond the scope of the integrated system, and a center for innovation, effectively functioning as the national reference office for expert technical advice and guidance in all areas of immunization policy and practice.

The challenge is to change the role of the, VIP, from the former, more direct, managerial involvement to policy guidance and technical support.

2.2.2.2 Vaccination Coverage

Between 1995 and 1993, reported coverage for BCG, DPT 3, measles, OPV3 and TT2 declined. The decline stopped by 1999, although coverage rates remain lower than targets. Statistics indicate that the immunization coverage in 2000 should be higher than 1999. There are discrepancies, however, between administrative coverage figures and 1993 National Health Survey (NHS) coverage survey data. These suggest that coverage is over-reported.

The challenge will be to raise and maintain true coverage to sufficiently high levels to impact on target diseases. Another challenge will be to improve the reliability and the quality of the monitoring system, mainly through the routine reporting with the Health Information unit, with the Essential Drug Bureau (EDB) and with the integrated supervision system of the MoH.

2.2.2.3 Interruption of Wild Polio Virus Circulation

The last confirmed case of poliomyelitis had a date of onset of March 1997. Since that time, with excellent surveillance for acute flaccid paralysis (AFP), no evidence of circulating wild poliovirus has been detected. Cambodia has now completed the required three-years without polio that is required for being considered polio-free. In July 2000 Cambodia submitted documentation to a Regional Certification Commission, with the recommendation that Cambodia's polio-free status be certified. It is expected that certification will be granted by November 2000.

Polio eradication activities cannot be stopped until global certification of polio eradication is achieved. It is likely that global certification will not be achieved before 2005. Therefore, Cambodia must continue high quality AFP surveillance and assure high levels of OPV3 coverage, to assure that any imported case of poliomyelitis can be detected quickly and to assure that secondary spread of disease from an imported case would be minimal and quickly contained.

2.2.2.4 Integration of NIP Surveillance activities

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Until recently, only AFP surveillance was sufficiently reliable to guide program activities. Active measles surveillance started in 1999 in part of the country and resulted in the detection of more than three times as many cases as reported in previous years. Unlike AFP surveillance, which is quite sensitive to reporting the true number of cases, it is estimated that the true number of measles cases in 1999 was more than 3 times the reported number. In 2000 active measles surveillance was extended to all areas of the country.

Neonatal Tetanus data comes from active surveillance of pediatric hospitals in Phnom Penh and community based reporting in several provinces. Surveillance for neonatal tetanus is being expanded. Neonatal tetanus is a serious public health problem in Cambodia and is grossly under-reported. It is planned that integration of measles and NNT surveillance with AFP surveillance should improve overall surveillance for these diseases. Pertussis reports are obtained from the facility based Health Information System and is thought to be under-reported. The extent of diphtheria, another NIP target disease, is not currently known.

*The challenge is that AFP reporting and response standards are maintained and that measles and NNT surveillance activities are improved to a standard allowing use of the information to guide effective program decisions. A further challenge is to incorporate the use of surveillance data and routine program data into decision-making at all levels.*

### 2.2.2.5 Vitamin A Supplementation through the Immunization Program

Currently, vitamin A capsules are delivered to children 12-59 months during periodic supplementary immunizations and two times a year to children 6-59 months through the routine immunization program. The NTDs and SNIDs have been very successful. Consistently achieving between 39% and 95% reported coverage. Vitamin A supplementation in the routine program has had more modest success usually averaging 50%-60% estimated coverage. The nutrition program rather than the immunization program, estimates the target population and monitors vitamin A delivery. Vitamin A is also distributed as part of measles outbreak investigations.

The NTP has found it difficult to assist the ODs to deliver vitamin A effectively two times a year due to poor road conditions. In addition, most of the target group for vitamin A is outside the main priority target group for childhood immunizations. There has also been difficulty in reaching the target group of lactating women within 8 weeks of delivery.

But the "Guidelines for Outreach services from Health centers" are now being finalized including delivery of immunizations and Vit A. These guidelines will clearly allow to use more resource from the Government budget to organize the outreach sessions. It is expected that: his will improve Vit A supplementation activities.

*The challenge is to achieve and maintain high prevention coverage according to national vitamin A policy through routine immunization services in the absence of National Immunization Days and Sub-National Immunization Days, with a special emphasis on high risk and difficult-to-access areas.*

### 2.2.2.6 New Interventions

In Cambodia, there are significant public health problems for which safe and effective vaccines exist but which are not included in the current vaccination schedule. Currently, plans for a phased introduction of hepatitis B vaccine into routine immunization services are at an advanced stage of development. *The challenge is to introduce new vaccines and technologies into the routine immunization program, as feasible and appropriate.*

### 2.2.2.7 Injection Safety

There is a public perception that re-usable syringes are unsafe, and that disposable syringes are safe. WHO and UNTCEF recommend that all immunization injections be provided using A-D syringes by the end of 2003. In 1999, the MOH approved the National Injection Safer: Policy, which supports the WHO/UNICEF

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Proposal. A-D syringes are currently used in supplementary immunization activities for measles and NNT control. Problems with safe disposal of the syringes and safety boxes have been identified, and studies are currently being conducted on incineration practices. Over the next five years, Cambodia NIP will be phasing out re-usable syringes in favor of the A-D technology.

The MOH is committed to assuring that single-use syringes will be used for every vaccination. As with any new technology, the difficulties in implementation must be addressed before widespread implementation occurs, to assure efficient use. A safe injection strategy must include a system for safe disposal of used injection material.

The challenge is to assure continued sufficient resources for making lite transition to A-D technology and sustaining its use indefinitely

2.2.2.8 High Vaccine Wastage

The recent 2000 NIP Assessment, as well as a WHO consultancy in March 2000, documented high vaccine wastage in numerous locations. Several factors have contributed to this, including heavy reliance on outreach sessions where small numbers of children present especially in remote areas, vaccine loss due to vial label detachment, poor cold chain management, large vial size and the non-use of opened and unopened vials returned from outreach sessions.

With current low-cost vaccines, high wastage rates have not been a critical factor in achieving coverage goals. However, with the proposed introduction of combination DPT-HepB vaccine, which has a significantly higher cost per dose, the issue of reducing vaccine wastage will be paramount for program efficiency in achieving high coverage.

The challenge is to reduce vaccine wastage to a level allowing high-cost vaccines to be successfully introduced on a sustainable basis.

2.3.2.9 Adverse Events Following Immunizations

There is currently a system for monitoring AEFI. However, the reliability of this system for regularly reporting and monitoring the situation with adverse events is low. The MOH has established a National Committee for AEFI to oversee the further development of the reporting and monitoring system. The challenge is to implement a practical and effective system for reporting, monitoring and provision of appropriate responses to adverse events following immunization.

III. STRATEGY ON IMMUNIZATION

3.1 GOAL

To improve child survival and child health by controlling, eliminating, or eradicating all vaccine preventable diseases targeted by the National Immunization Program.

3.2 OBJECTIVES

3.2.1 Routine Coverage for Children: To raise immunization coverage for all National Immunization Program antigens among children under 1 year of age to 80% in a minimum of 50 (of 73) operational districts by the year 2002 and all operational districts by the year 2005.

3.2.2 Polio Eradication: Certification of polio-free status by the end of 2000; establishment and maintenance of capability for rapid detection and containment of any imported wild poliovirus until the time of global certification.

3.2.3 Neonatal Tetanus: achieve neonatal tetanus elimination by 2005.
3.2.4 Measles Control: To effectively control measles as a public health problem by 2005.

3.2.5 Vitamin A Deficiency: To effectively control Vitamin A deficiency as a significant public health problem by 2005.

3.2.6 New Interventions: To reduce Hepatitis B carriage associated with transmission in children, and morbidity and mortality due to other illnesses for which the introduction of new vaccines and technologies is feasible and practical.

3.2.7 Injection Safety: To ensure that all immunizations are given safely and with potent, high quality vaccine.

3.2.8 Vaccine Usage: To improve the efficiency of vaccine delivery and usage.

3.3 STRATEGIES/ACTIVITIES

3.3.1 ROUTINE COVERAGE AND SURVEILLANCE

Strategy: Strengthening of cold chain

Activities
- NIP to conduct comprehensive review of cold chain operations
- NIP to conduct cold chain inventory
- NIP to develop cold chain procurement plan
- NIP to develop and implement cold chain resources redeployment plan
- NIP with the EDB and the Central Medical Store (CMS) to review, revise and implement vaccine and equipment stock ordering, distribution and storage plan based on actual need
- NIP to distribute revised plans and organize discussion mechanism to all stakeholders
- NIP to review and strengthen plan for routine repair and maintenance of cold chain equipment including system for emergency notification of equipment failure

Strategy: Strengthening and increased utilization of social mobilization methodologies

Activities
- NIP to develop MOH inter-departmental/program coordination proposal including the National Center for Health Promotion (NHC)
- Establish coordinator with IEC and social mobilization skills within NIP
- Develop social mobilization and advocacy campaigns at all levels for NIP, coordinated through the designated mechanism
- Provide guidance for development, production, and use of IEC materials

Strategy: Coordinating increased technical guidance and skills development with those provided under Health Sector Reform activities.

Activities:
- NIP to organize training needs assessment of "NIP technical staff at National and Provincial levels with the Human Resource Department (HRD)
- NIP to organize development of training materials and coordinate the training program with HRD and Continuous Education Coordinators (CEC) at provincial level
- NIP to organize design and implementation of specific supplementary skills development workshops for Vaccine Usage with EDB and CMS (Forecasting and Ordering), Cold Chain Management and Maintenance, Injection Safety Disease Surveillance with the
Communicable Diseases Control department (CDC), AEFI, Technical Guidance and Program Monitoring at each level

- NIP to develop a vaccine wastage reduction and dropout reduction plan for all vaccines
- NIP to participate in the development, publication, and dissemination of an updated immunization policy and procedures manual in line with the Guidelines for Outreach services
- NIP to organize development of training plan for updated manual in coordination with HRD and CEC
- NIP to organize development of feedback instrument

Strategy: Surveillance for Pertussis and Diphtheria
Activity:
- NIP to strengthen coordination with Communicable Disease Control Department, National Institute of Public Health, Health Information System and NGO reporting

Strategy: Full integration of immunization activities with health services delivery systems in Operational Districts
Activities:
- Implement the re-organization of the NIP at central level and develop a plan for integration/coordination of immunization activities at Province and OD levels within the overall OD/Provincial plan of activities
- NIP to participate in developing a proposal to MOH to further define the roles of Province and OD Technical Bureaus including responsibility for coordination of outreach activities, improvement of the quality of the monthly report and of the integrated supervision
- NIP to participate in formal coordination meetings for all central level departments and programs involved in outreach service and to assist with the arrangement of meetings
- NIP to participate in supporting ODs in the implementation of integrated outreach sessions
- NIP to participate in developing/adapting curricula for inclusion in integrated training outreach activities
- NIP to provide input into the development of a plan for regular performance monitoring and review of results at all levels

Strategy: Strengthening of fixed sites immunization activities to reach a proportion of 50% of the overall coverage by 2005
Activities:
- NIP to organize a study on the issues linked to the fixed site immunization delivery strategy and on the relative importance of the outreach strategy
- NIP to organize a dissemination workshop with all concerned departments, programs and representative OD and provincial departments (PHD) to make recommendation on a shift in delivery strategy
- NIP to assist selected area to pilot this strategic shift and to monitor closely results
- After evaluation, VIP to organize and support extension of this strategic shift

Strategy: Strengthening of budgeting and financial support
Activities:
- NIP to facilitate donor coordination at central level and assist PHDs to facilitate donor coordination at provincial level
• NIP to propose to MOH annual budget related to annual plan of activities for NIP related activities including of MoH budget and donor contribution
• NIP to provide support and if needed supplemental skills development in coo-dination with the Admin/Finance and Health DGs of MoH to improve resource-planning capacity to enhance OD and Provincial plans

3.3.2 POLIO ERADICATION:

Strategies: - Certification of polio-free status by Regional Certification Commission based on national documentation
AFP surveillance maintained at WHO standards of excellence.

Activities:
• Integrate measles and NT surveillance with AFP surveillance to ensure continued high motivation
NIP to coordinate surveillance activities with private sector providers.
NIP to provide inputs and share experience with CDC department

Strategy: Maintenance of high OPV3 coverage in the population under 5 years of age in areas where importation are most likely to occur.

Activities:
• NIP to coordinate and oversee supplementary immunizations as necessary, as an addition to measles and TT supplementary activities.

Strategy: Increased routine OPV coverage

Activities:
• Refer to vaccine coverage activities

3.3.3 NEONATAL TETANUS EUBILYATION

Strategy: Improve NNT surveillance

Activities
• NIP to integrate NNT surveillance into ATP surveillance nation-wide
• NIP to coordinate with existing social mobilization and other NNT MCH control activities
• NIP undertake social mobilization programs with NCHP to strengthen awareness of all target diseases

Strategy: Increase TT coverage in pregnant women and child bearing age women (CBAN)

Activities:
• NIP to develop plan to improve TT coverage is pregnant women and CBAW
• NIP to review and implement routine and supplementary activities in other groups (school aged children, adolescents) as appropriate

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• Reevaluate the role of PAB in monitoring program activities

Strategy: Improve case response procedures

Activities:

• NIP to review and revise existing guidelines for case response procedures
• NIP to coordinate and oversee limited supplementary immunizations for case response in high risk area

3.3.4 MEASLES CONTROL

Strategy: Improve measles surveillance

Activities

• NIP to integrate measles surveillance into AFP surveillance nationwide
• NIP to liaise with National Institute of Public Health in the establishment of laboratory capacity for performing measles serology
• NIP assist Provinces/ODs to establish coordination mechanism with other community based development programs to improve measles surveillance
• NIP undertake social mobilization programs to strengthen awareness of all target diseases in coordination with NCHP

Strategy: Improve measles coverage

Activities:

• NIP to develop plan to improve routine coverage for measles as developed in Routine Coverage part
• NIP to coordinate and oversee nationwide supplementary campaign for children 9-59 months of age

Strategy: Improve outbreak response procedures

Activity:

• NIP to review and revise existing guidelines for outbreak response procedures
  
  • NIP to assist ODs to improve outbreak response implementation

3.3.5 VITAMIN A

Strategy: Improved Vit A capsule distribution coverage

Activities

• improve coordination with Nutrition Program for vitamin A capsule distribution during routine and supplementation immunization activities
• NIP to participate in reviewing Nutrition Program surveillance and survey data to develop specific activities in Vit A deficiency high-risk areas
• Strengthen coordination with Nutrition Program concerning monitoring vitamin A capsule delivery

Strategy: Decrease severe Vitamin A deficiency through measles control activities
Activities

- Increase measles immunization coverage
- Continued inclusion of Vitamin A distribution during measles outbreak investigations

3.3.6 NEW PROGRAMME INTERVENTIONS

Strategy: Pilot introduction of combined HepB/DPT vaccine

Activities

- NIP to develop a vaccine wastage reduction and dropout reduction plan for the combination vaccine
- NIP to organize the design and conduct pre-introduction serosurvey in pilot area
- NIP to organize design and conduct pre-introduction 30-cluster coverage survey in pilot area
- NIP to oversee procurement of A-D syringes and safety boxes or delivery of all NIP antigens in the Hep B phased introduction locations
- NIP to organize procurement and installation of High-Temperature Incinerator in the selected area
- NIP to organize procurement of 5 dose vials of DPT-HepB vaccine with waterproof labels, freeze watch monitor and Vaccine Vial Monitors (VVM)
- NIP to organize the coordinated design and implementation of intensive social mobilization, IEC and advocacy for NIP activities
- NIP to organize the design and implementation of follow-up sero-survey of children of the target population in pilot area
- NIP to organize the design and development of a follow-up 30-cluster coverage survey for all antigens, to assess impact of improvements on routine coverage in pilot area
- NIP to organize the design and implementation of birth-dose feasibility study
- NIP to document operational issues related to the introduction of hepatitis B vaccine
- NIP to undertake review of vaccination needs and the availability of suitable new vaccines or technologies by 2004

Strategy: Phased expansion of combined HepB/DPT vaccine

Activities

- NIP to establish clear criteria for expansion of combined HepB.DPT vaccine
- NIP to plan for expansion to 15 ODs by 2003 to all ODs by 2005
- NIP to assist selected ODs to implement introduction of combined HepB/DPT vaccine

3.3.7 INJECTION SAFETY

Strategy: Phased introduction of auto-disable syringes and safety boxes for routine immunizations

Activities

- NIP to implement injection safety policy
- NIP to develop transition plan including schedule for implementation
- NIP to facilitate the establishment of a sustainable supply of A-D syringes and safety boxes
- NIP to develop guidelines for and a system of disposal of used injection material
- NIP to organize procurement, installation and testing of high-temperature incinerators for safe destruction of used injection materials according to transition plan schedule

Strategy: Continued use of auto-disable syringes and safety boxes for supplementary immunization activities
Activity:
• Dissemination of policy and operational guidelines to all Operational Districts

Strategy: Use of potent, high quality vaccines

Activity:
• NIP to propose vaccines procurement policy to MOH, consistent with international procurement and handling standards, incorporating VVM requirements

Strategy: Strengthened cold chain through improved equipment deployment

Activity:
• Refer to activities under Cold Chain and Logistics objective

Strategy: Improved system for monitoring AEFI

Activities:
• NIP to develop proposal for national policy for response to AEFI to be submitted to the National Review Committee for AEFI
• NIP to develop definitions for AEFI for each vaccine
• NIP to assess skills development needs
• NIP to implement skills development workshops
• NIP to review effectiveness of AEFI monitoring
• NIP to develop implementation plan, including coordination mechanisms

3.3.8 VACCINE USAGE

Strategy: Increased impact of open vial policy in outreach activities

Activities:
• NIP to review Cambodian, international organization and other regional national 'open-vial' policies and procedures and revise national policy as appropriate
• NIP to participate in formal coordination meetings at central level for improved efficiency of outreach services
• NIP to review and redesign vaccination components of outreach schedules

Strategy: Reduce vaccine wastage

Activities:
• NIP to disseminate amended national open vial policy
• NIP to support skills development activities at OD and HC levels
• NIP to undertake assessment of feasibility of open vial policy during outreach sessions
• NIP to conduct analysis of vial size requirements for specific vaccines
• NIP to amend procurement plan in accordance with findings
• NIP to identify solutions, and their operational feasibility, for protecting opened vials (e.g., waterproof bags or sealable containers)

Strategy: Refinement of vaccine procurement
IV. MONITORING AND EVALUATION FRAMEWORK

An Overall Monitoring and Evaluation Framework for the strategic plan is appended as Appendix I. The framework lists goal and objectives with indicators, targets, and means of verification and timeframes relevant to verification.

An important element of the Monitoring and Evaluation Framework is the description of the sources of data and information providing the basis of management decision-making.

In this context, the following have been identified for the monitoring and evaluation purposes of this five year plan:

- Ministry of Health Monthly Health Information. Quarterly Essential Drug Reports
- NIP Supplementary Reports
- Ad-hoc Technical Reports

Routine meetings included in the monitoring process include:

- NIP routine day-to-day management review
- Monthly NIP Technical Meetings
- Annual planning meetings

Routine schedules providing the basis for monitoring activities include the following:

- Programmed cold-chain preventive maintenance
- Cold Chain breakdown response protocols
- AEFI response protocols
- Disease surveillance case response protocols

In addition, some specific activities will be carried out to improve the monitoring and evaluation systems.

Strategy: Improve quality and reliability of the monthly report with the Health Information unit
- Participate in the training of the analysis and use for decision making of the data of the monthly reports
- Contribute to the implementation of the plan of the Health Information unit to improve the monthly report and the use of health data in planning activities

Strategy: Organize if needed or participate regularly in national or sub-national coverage survey
- NIP to get information and participate in planning and in the analysis of national and if feasible in sub-national coverage survey to make sure that these survey tit the needs of the MoH for evaluation of the NIP
- NIP to organize and implement, if needed, in coordination with Planning unit additional coverage survey according to the needs

V. PARTNERSHIPS AND LONG TERM SUSTAINABILITY

The Ministry of Health has developed the five-year Plan in close consultation with the Immunization Coordination Sub-Committee, through the Technical Working Group, which functions as the committee secretariat. The objective of the strategic partnerships represented in the ICSC is the strengthening of support for immunization services through Government sources and better co-ordination.
In addition, the MoH has to develop further links with other ministries to support the implementation of the immunization activities.

In establishing direction for the National Immunization Program for the next five years, the Plan anticipates increasing government commitment to routine and supplementary immunization as a key element in the achievement of its national health goals.
<table>
<thead>
<tr>
<th>STRATEGY/ACTIVITY</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
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<tr>
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<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
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<tr>
<td><strong>ROUTINE COVERAGE AND SURVEILLANCE</strong></td>
<td></td>
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<tr>
<td>1.1 Strengthening Cold Chain Vaccine Refrigerator Specifications Development</td>
<td></td>
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</tr>
<tr>
<td>1-2 Weeks, External Consultant</td>
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<td>Comprehensive Cold Chain Review</td>
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<tr>
<td>3 months, External Consultant</td>
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<tr>
<td>Implementation of Review findings</td>
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<td>6 months, Local Consultant</td>
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<td>Implementation of Plan</td>
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<tr>
<td>Hiring an appropriate expert to work for 1-2 year</td>
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<tr>
<td>P to establish coordination mechanism with other community &amp; development programs</td>
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<tr>
<td>Increase Technical Guidance/Skills Development capacity</td>
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<tr>
<td>NIP</td>
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<tr>
<td>Update Policy and Procedures manual</td>
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<tr>
<td>2 months External Consultant</td>
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<tr>
<td>Develop Feedback instrument</td>
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</tr>
<tr>
<td>Civilly Schedule 5YP</td>
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</tbody>
</table>
1.4 Surveillance of Pertussis and Diphtheria
Liaise at relevant levels with CDC, NIPH, HIS and NGOs

1.5 Full Integration of NIP at OD Level
Implement restructure of NIP
Develop Transition Plans for supporting Integrated Outreach
Implement plan
Maintain liaison with MPA Training through HR Unit regarding Outreach

1.6 Strengthen Budget/Finance Support
Facilitate Donor Coordination (through ICSC)
Recommend to Higher levels regarding donor funds requirements and usage

2. POLIO ERADICATION

2.1 Certification of polio-free status by Regional Certification Commission based on national documentation

2.1 AFP surveillance maintained at WHO standards of excellence

Integrate measles and NT surveillance with AFP surveillance to ensure continued high motivation

Activity Schedule 5YP
NATIONAL IMMUNIZATION PROGRAM

NIP to implement surveillance activities with private sector Providers

2.2 Maintenance of high OPV3 coverage in the population under 5 years of age in areas where importations are most likely to occur
NIP to coordinate and oversee supplementary immunizations as necessary, as an addition to measles and TT supplementary activities

3. NEONATAL TETANUS ELIMINATION
3.1 Improve NT surveillance
NIP to integrate NNT surveillance into AFP surveillance nationwide

3.2 Increase TT coverage in pregnant women and other Child Bearing Age Women (CBAWs)
NIP to coordinate with existing social mobilization and other NNT MCH control activities
NIP undertake social mobilization programs to strengthen awareness of all target diseases
NIP to review and implement activities in groups other than CBAWs as appropriate
Evaluate the constraints of PAP program activities
Determine future value of PAB for program purposes and take appropriate action
NIP to integrate TT supplementary immunization into measles supplementation

Activity schedule 5YP
IP to deliver the two additional TT doses following measles Implementation through Outreach activities

3 Improve case response procedures

IIP to review and revise existing guidelines for case response procedures

IIP to coordinate and monitor supplementary immunizations in elected areas

1. MEASLES CONTROL

1.1 Improve measles surveillance

NIP to integrate measles surveillance into AFP surveillance nationwide

NIP to liaise with National Institute of Public Health in the establishment of laboratory capacity for performing measles serology

1 month, External consultant

NIP undertake social mobilization programs to strengthen awareness of all target diseases
NIP to coordinate and monitor nationwide supplementary campaigns for children 9-59 months of age

4.3 Improve outbreak response procedures

NIP to review and revise existing guidelines for outbreak response procedures for measles

Activity Schedule 5YP
NATIONAL IMMUNIZATION PROGRAM

5. VITAMIN A SUPPLEMENTATION

5.1 Improved coordination with Nutrition Unit/MOH

NIP to review with the Nutrition Unit surveillance and survey data to develop specific activities in high-risk areas

5.2 Improved monitoring of Vitamin A delivery

Develop plan for improvement of monitoring of Vitamin A supplementation with Nutrition Unit

6. NEW PROGRAM INTERVENTIONS

6.1 Phased Introduction of combined HepB/DPT vaccine

NIP to develop a vaccine wastage reduction and drop-out reduction plan for the Combination vaccine

NIP to organize the design and conduct of pre-introduction serosurvey in selected area

NIP to organise design of and conduct 30 cluster coverage survey in selected province

NIP to arrange procurement with the Department of Finance/MOH where available of A-D syringes and safety boxes for delivery of all NIP antigens in the Hep B phased introduction locations

NIP to arrange procurement and installation of High-Temperature Incinerator in the selected Province

Activity Schedule 5YP
NATIONAL IMMUNIZATION PROGRAM

NIP to arrange procurement of 5 dose vials of DPT-HepB vaccine with water-proof labels, freeze watch monitor and VVM

NIP to arrange the coordinated design and implementation of intensive social mobilization, IEC and advocacy for NIP activities

NIP to arrange the design and implementation of follow-up sero-survey of children of lite target population

NIP to arrange the design and development of a follow-up 30 cluster coverage survey for all antigens, to assess impact of improvements on routine coverage

NIP to organize the design and implementation of birth-dose feasibility study

NIP to document operational issues related to the introduction of hepatitis B vaccine

NIP to undertake review of vaccination needs and the availability of suitable new vaccines or technologies by 2004

7. INJECTION SAFETY

7.1 Phased introduction of auto-disable syringes and safety boxes for routine immunizations 12 months, External Consultant

NIP to develop transition plan including schedule for implementation

NIP to organize the establishment of a sustainable supply of A-D syringes and safety boxes

Activity Schedule 5YP
NATIONAL IMMUNIZATION PROGRAM

NIP to coordinate with the Injection Safety TWG to develop guidelines for, and a system of disposal of used injection material

NIP to arrange procurement, installation and testing of high temperature incinerators for safe destruction of used injection materials according to transition plan schedule

NIP to coordinate with the injection Safety Committee to explore the feasibility of the local manufacture of Safety Boxes

7.2 Continued use of auto-disable syringes and safety boxes for supplementary immunization activities

Implementation of policy and operational guidelines to all Operational Districts

7.3 NIP to develop proposal and implementation plan for national policy for response to AEFI to be submitted to the National Review Committee for AEFI

2 months, External Consultant

NIP in coordination with the NRC to develop definitions for AEFI for each vaccine

NIP in coordination with the NRC to assess skills development needs

NIP in coordination with the NRC to implement skills development workshops

NIP in coordination with the NRC to review effectiveness of AEFI monitoring

Activity Schedule 5YP
VACCINE USAGE

I Increased impact of open vial policy in outreach activities

IP to use as reference existing international 'open-vial' policies and procedures and to revise existing Cambodian national policy as appropriate

.2 Reduce vaccine wastage

IIP to assess and quantify vaccine wastage due to specific causes, including vial size requirements
IIP to implement revised national open vial policy OD and HC levels for both fixed session and outreach

8.3 Refinement of vaccine procurement

NIP to amend vaccine procurement policy to include requirement for water-proof labels, and VVMs as they become available

9. MONITORING AND EVALUATION

3 months, External Consultants

NIP to develop Monitoring and Evaluation plan including program indicators
NIP to establish and implement Monitoring and Evaluation Framework

10. Strengthening Program Management

NIP to recruit new qualified staff

Activity Schedule 5YP
NATIONAL IMMUNIZATION PROGRAM

NIP to attend the oversea and in-country training courses and seminars
NIP to have oversea and in-country study visits
NIP to evaluate staff performance

Activity Schedule 5YP
OVERALL MONITORING AND EVALUATION FRAMEWORK

**MEANS OF**

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>VERIFICATION</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOAL</td>
<td></td>
<td></td>
<td></td>
<td>2001-2005</td>
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</tbody>
</table>

To improve child survival and child health by controlling, eliminating, or eradicating all vaccine preventable diseases targeted by the National Immunization Program

**OBJECTIVES**

<table>
<thead>
<tr>
<th>Routine Coverage for Children: to Raise immunization Program National Immunization Program antigens among children under 1 year age.</th>
<th>Number of Operating Districts reporting DPT3 coverage (by age 1 year) of: 1) &lt;50% 2) 50%-79% 3) 80%+</th>
<th>80% in each of 50 Operational Districts by 2002, and in all Operational Districts by 2005</th>
<th>MOH Monthly NIP Supplementary Reports; Coverage Surveys Coordinate with MOH; External Reviews; GAVI MID-term (2 Year) Review and Final (5 Year) Review</th>
<th>Monthly: Annually 2002; 2005; As needed</th>
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<tbody>
<tr>
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</table>

Five-Year-Plan-Monitoring and Eval Frame
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>MEANS OF VERIFICATION</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polio Eradication: Certification of polio-free status by the end of 2000; establishment and maintenance of capability for rapid detection and containment of any imported wild poliovirus until the time of global certification.</td>
<td>Uniform AFP Rate of &gt;=1 per 100,000 age 0-15 years; Adequate stool collection rate of 70% Maintenance of OPV3 coverage of at least 80% in children under 5 years</td>
<td>Annually in all geographically defined areas; In all areas at high risk for importation</td>
<td>AFP Surveillance Reports; MOH Monthly Reports; NIP Supplementary Reports; Special Surveys; External Reviews</td>
<td>Weekly; Monthly; Yearly; As needed</td>
</tr>
<tr>
<td>Neonatal Tetanus: Achieve neonatal tetanus elimination by 2005.</td>
<td>Reported NNT rate of &lt;1/1000 live births in every district; TT2+ coverage &gt;=80% among pregnant women</td>
<td>100% of districts reporting incidence of &lt;1/1000 live births</td>
<td>Surveillance Reports; MOH Monthly Reports; Surveys</td>
<td>Monthly; Yearly; As needed</td>
</tr>
</tbody>
</table>

Five-Year Plan - Monitoring and Eval Frame
## OVERALL MONITORING AND EVALUATION FRAMEWORK

<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>MEANS OF VERIFICATION</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measlos Control: To effectively control measles as a public health problem by 2005.</td>
<td>Existence of a measles reporting system meeting timeliness and completeness standards; Outbreak confirmation; Measles coverage to match indicator in objective 1</td>
<td>Annual Measles incidence less than 10,000 cases by year 2005. 100% of provinces having monthly reporting; including zero reporting; measles coverage to match indicator in objective 1.</td>
<td>Measles Immunization Coverage; Surveillance Reports; MOH Monthly Reports;</td>
<td>Monthly; Yearly</td>
</tr>
<tr>
<td>Vitamin A Deficiency: To effectively control Vitamin A deficiency as a significant public health problem by 2005.</td>
<td>&lt; 1% night blindness (XN) among children 24-59 months, or WHO % XN or serum retinol cutoff for serum retinol. Measles coverage to match indicator in objective 1.</td>
<td>&lt; 1% night blindness (XN) among children 24-59 months, or WHO % XN or serum retinol cutoff for serum retinol.</td>
<td>Nutrition Unit Data; NIP Supplementary Reports; Monthly MOH Report; Surveys</td>
<td>Monthly; Yearly; Needed</td>
</tr>
</tbody>
</table>

Five Year Plan - Monitoring and Eval Frame
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>INDICATOR</th>
<th>TARGET</th>
<th>MEANS OF VERIFICATION</th>
<th>TIMEFRAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Interventions: To reduce hepatitis B carriage associated with transmission in children, and morbidity and mortality due to other illnesses for which the introduction of new vaccines and technologies is feasible and practical.</td>
<td>Reduction in hepatitis B infection among children 9-18 months</td>
<td>50% reduction within in 18 months of Introduction in targeted areas</td>
<td>Serological Study Report</td>
<td>2000; 2002</td>
</tr>
<tr>
<td>Injection Safety: To ensure that all immunizations are given safely and with potent, high quality vaccine</td>
<td>100% of immunization injections given with A D syringes that are properly disposed of in safety boxes and effectively incinerated; Number of functioning disposal sites</td>
<td>Whole country by 2005; Every province will have access by 2002; Monitoring system in place by 2004 to measure sharps disposal at each immunization site</td>
<td>Supplementary NIP Reports; Vaccine Procurement specifications</td>
<td>As Needed</td>
</tr>
<tr>
<td>Vaccine Usage: To improve the efficiency of vaccine delivery and usage</td>
<td>Annual wastage rate (DPT or DPT-HB) at OD level</td>
<td>35% for 10-dose vials and 25% for 5-dose vials by 2005</td>
<td>MOH Quarterly Report; NIP Supplementary Reports, NIP Annual Planning Meeting</td>
<td>Quarterly, Yearly</td>
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</tbody>
</table>

five-Year-Monitoring and Eval Frame
### AMBOOIA NATIONAL IMMUNIZATION PROGRAM

**Initial Budget for Five-Year Workplan 2001-2005**

<table>
<thead>
<tr>
<th>S Dollars</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>TOTAL</th>
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<tbody>
<tr>
<td>Vaccines (children)</td>
<td>1,093,207</td>
<td>982,639</td>
<td>1,289,295</td>
<td>2,055,521</td>
<td>3,034,819</td>
<td>8,455,480</td>
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<tr>
<td>Vaccines (tetanus)</td>
<td>119,188</td>
<td>183,036</td>
<td>256,078</td>
<td>319,450</td>
<td>379,726</td>
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<tr>
<td>Outreach</td>
<td>709,352</td>
<td>751,913</td>
<td>797,028</td>
<td>844,849</td>
<td>895,540</td>
<td>3,998,682</td>
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<tr>
<td>Monitoring and Meetings</td>
<td>97,818</td>
<td>81,243</td>
<td>54,351</td>
<td>54,205</td>
<td>50,537</td>
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<tr>
<td>Cold Chain Equipment (external)</td>
<td>179,700</td>
<td>190,482</td>
<td>201,911</td>
<td>214,025</td>
<td>226,867</td>
<td>1,012,986</td>
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<tr>
<td>Cold Chain (locally procured)</td>
<td>105,280</td>
<td>111,597</td>
<td>118,293</td>
<td>125,390</td>
<td>132,914</td>
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<tr>
<td>Injection Equipment</td>
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<td>698,631</td>
<td>747,929</td>
<td>800,223</td>
<td>849,522</td>
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<td>Training Materials Devel't and Tot</td>
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<td>100,000</td>
<td>80,000</td>
<td>80,000</td>
<td>80,000</td>
<td>440,000</td>
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<tr>
<td>Training and Logistics</td>
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<td>43,203</td>
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<td>223,693</td>
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<td>Strengthening Program Management</td>
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<td>221,900</td>
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<td>1,109,500</td>
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<td>admin. costs, overseas training, etc.)</td>
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<td>1,700,000</td>
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<td>1,700,000</td>
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</table>

**TOTAL**

4,399,7835,227,641 4,417,9295,348,7566,502;969 25,897,089

**Comments/Notes**

- See Calculation of Vaccine Costs Worksheet
- See Calculation of Vaccine Costs Worksheet. More defined strategy is needed to improve projections.
- See Calculation of Outreach Costs Worksheet. Costs should increasingly be funded from national budget.
- See Calculation of Monitoring/Meetings Costs Worksheet.
- Costs should increasingly be funded from the national budget.
- See Calculation of Cold Chain Costs Worksheet
- See Calculation of Cold Chain Costs Worksheet
- See Calculation of Safe Injection Costs Worksheet
- Based on discussions with CVP/PATH (tiara) - more detailed activity budgets are forthcoming.
- Projections of training costs require more detailed activity plan.
- Estimated costs for printing yellow cards.
- Based on discussions with WHO (David and Keith) - details available from Keith.
- Based on discussions with CVP/PATH (tiara) - more detailed activity budgets are forthcoming.
- Based on discussions with WHO (David and Keith) - details available from Keith.
- Hep B introduction costs not included. Cost of DP T /Hep B vaccines included in projections.
- Strengthening Program Management costs are based on central staff salaries, administration operating costs, and possible overseas training to strengthen central or periphery level staffs technical and management skills.
- This is an estimation of the cost for external technical assistance that will be needed according to the 5-year workplan.
- Details of the calculation are available on request.

**Immunization costing 2001-5**