

**WORLD HEALTH ORGANIZATION**  
REGIONAL OFFICE FOR THE WESTERN PACIFIC



**REPORT**

**FIFTEENTH MEETING OF THE TECHNICAL ADVISORY GROUP ON THE  
EXPANDED PROGRAMME ON IMMUNIZATION AND POLIOMYELITIS  
ERADICATION IN THE WESTERN PACIFIC REGION**

**Beijing, China  
8-10 June 2005**

Manila, Philippines  
August 2005

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Convened by:

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## **NOTE**

The views expressed in this report are those of the participants of the Fifteenth Meeting of the Technical Advisory Group on the Expanded Programme on Immunization and Poliomyelitis Eradication in the Western Pacific Region and do not necessarily reflect the policies of the World Health Organization.

Keywords:

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This report has been printed by the Regional Office for the Western Pacific of the World Health Organization for the participants of the Fifteenth Meeting of the Technical Advisory Group on the Expanded Programme on Immunization and Poliomyelitis Eradication in the Western Pacific Region, which was held in Beijing, China, from 8 to 10 June 2005.

## SUMMARY

The Technical Advisory Group on the Expanded Programme on Immunization (EPI) and Poliomyelitis Eradication of Western Pacific Region (TAG) provides technical advice to guide immunization programmes in the Region.

At the 15<sup>th</sup> TAG meeting (Beijing, China, 8-10 June 2005), deliberations were undertaken with representatives of Member States and international partner agencies. The agenda covered several issues, with a focus on measles elimination and hepatitis B control – the two new pillars to strengthen EPI adopted by the Regional Committee for the Western Pacific at its fifty-fourth session in 2003.

The TAG concluded that regional measles elimination by 2012 is feasible, but it will be challenging and will require extra effort in some countries. To maintain the partnering of the two pillars, the TAG also recommended a 2012 milestone for reducing HBsAg prevalence to less than 2% for five-year-olds (towards achieving the regional goal of <1%). The TAG recommended that the Regional Director ask the Regional Committee to adopt these goals at its fifty-sixth session in September 2005.

The TAG emphasized the importance of safeguarding the investment made in achieving poliomyelitis-free status and the need for each country to maintain highly quality AFP surveillance and high oral poliovirus vaccine (OPV) coverage levels until certification of global eradication of poliomyelitis.

The TAG noted that strong national immunization services capable of reaching all children, irrespective of their geographical location and socioeconomic status, will be key to achievement of these goals and all future goals that the Region may set with respect to new vaccines. The Global Immunization Vision and Strategies (GIVS), endorsed by the 2005 World Health Assembly, provide a useful framework for strengthening national immunization services. A comprehensive and costed multiyear plan provides a practical way for each country to implement the GIVS in a locally appropriate way.

The regional Interagency Coordinating Committee (ICC), which held its meeting along with the TAG, recommended establishment of an Asian Pacific immunization partnership. This partnership should enable mobilization and coordination of support for further improvement of immunization services, including regional measles elimination, hepatitis B control, maintaining poliomyelitis-free status and strengthening routine immunization services.

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## 1. INTRODUCTION

The Technical Advisory Group (TAG) on the Expanded Programme on Immunization (EPI) and Poliomyelitis Eradication was established in 1991. Its technical guidance was a critical element of the Western Pacific Region's achievement of certification of poliomyelitis-free status on 29 October 2000. In addition to poliomyelitis-free status, EPI has delivered other important health benefits to the Region: a 95% reduction in measles deaths; a substantial reduction in chronic liver infection rates among children born after the start of inclusion of hepatitis B vaccine in every programme; and elimination of neonatal tetanus in all but six countries of the Region. However, sustained efforts are required to maintain and build upon these successes by strengthening immunization services. Increased attention needs to be paid to increasing coverage, especially for underserved and hard-to-reach populations; enhancing disease surveillance, including laboratory capacity; assuring immunization safety; improving data quality and using data to improve programme management; and improving vaccine security and financial sustainability.

The thirteenth meeting of the TAG (4-7 November 2002, Manila, Philippines) started to address these issues and recommended the adoption of two new EPI initiatives: measles elimination and hepatitis B control. These initiatives were adopted by the Regional Committee for the Western Pacific at its fifty-fourth session in September 2003. The 14th TAG meeting (29-31 March 2004, Manila, Philippines) focused on implementing the two new initiatives, including setting a target date for measles elimination. The Measles Task Force (recommended by TAG) met on 29-30 July 2004 and proposed 2012 as a suitable target date for regional measles elimination.

### 1.1 Objectives

The TAG held its fifteenth meeting in Beijing, China, from 8 to 10 June 2005, with the following objectives:

- (1) to make recommendations on the programmatic strategies and target date for regional measles elimination;
- (2) to review the progress made and strategies used in hepatitis B control and make recommendations on improving the effectiveness of the hepatitis B control programme, including best practices in timely delivery of first dose of hepatitis B vaccine and monitoring of the level of hepatitis B control;
- (3) to review the situation and make recommendations regarding the maintenance of poliomyelitis-free status, taking into account the recommendations of the Regional Certification Commission (RCC);
- (4) to discuss the latest information on new and underutilized vaccines and make recommendations for preparing each national immunization system to effectively deliver new vaccines as and when these become available, depending on the need; and
- (5) to review the progress made in strengthening routine immunization systems for effective control of vaccine-preventable diseases and recommend best practices for adoption and scaling up in countries.

## 1.2 Organization

A total of 82 participants and observers attended the meeting: five TAG members; and twenty-five participants from 16 Member States, including eight national EPI managers and surveillance managers, 51 representatives of international organizations, one representative from the WHO Regional Office for South-East Asia, and 26 from the secretariat. The timetable of the meeting and list of participants are provided in Annexes 1 and 2, respectively.

## 1.3 Opening ceremony

Dr Shigeru Omi, WHO Regional Director for the Western Pacific, welcomed the participants and expressed his gratitude to the Ministry of Health, China, for hosting the meeting. Dr Omi said that it was particularly appropriate that the meeting was being held in China because of the importance of China in the Region and the fact that EPI had achieved considerable success in China. He commended China on the legislation passed by the State Council that went into effect on 1 June 2005 – International Children’s Day – that reaffirms the country’s high level of commitment to the EPI programme. In 2003, the TAG had helped to establish the two new pillars to strengthen EPI: measles elimination and hepatitis B control. At the 15th TAG meeting, it was time to build on those foundations by providing a target date for the regional goal of measles elimination. The target date would help to mobilize resources and political commitment to achieving common goals, including strengthening health systems, as well as accelerated disease control initiatives.

Dr Omi closed his speech by thanking the participants for their dedication and commitment to improving health outcomes through EPI.

Dr Ma Xiaowei, Honourable Vice-Minister of Health of China reciprocated Dr Omi’s thanks and emphasized the special efforts the Government of China had been making in immunization. This included the legislation that Dr Omi had referred to, which provided a sound legal basis to improve the immunization programme. Dr Ma said that China was keen to be an active member of the Region, and to contribute to the achievement of regional and global goals.

Dr Omi thanked the Ministry of Health for their welcome.

The following TAG members were selected to serve as officers for the meeting:

Chairperson	-	Dr Robert Hall
Vice-chairperson	-	Dr Tatsuo Miyamura
Rapporteur	-	Dr Steve Cochi

## 2. PROCEEDINGS

### 2.1 EPI overview

#### 2.1.1 Regional overview

Since the 14<sup>th</sup> TAG meeting in March 2004, EPI in the Western Pacific Region has made limited progress. In September 2003, the WHO Regional Committee for the Western Pacific resolved to strengthen EPI through two new pillars: measles elimination and hepatitis B control. So far, programmes in the Region have not fully exploited that resolution.

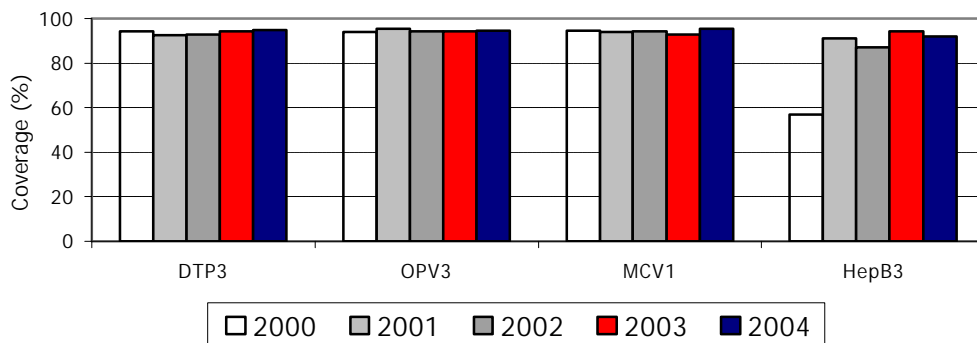
Nevertheless, progress continues, and a target date for measles elimination will help accelerate that progress.

EPI in the Region has had many successes, saving about one million lives every year, and preventing sickness and disability in many more. The Region was second to be certified poliomyelitis-free (29 October 2000) and the first to have hepatitis B vaccine introduced into every national immunization programme. Measles mortality and morbidity have been reduced by over 95% since the introduction of the measles vaccine and the Region is well on its way towards measles elimination. EPI has, for the first time, brought health services to many communities in the Region and has laid the foundation for the development of health and surveillance systems.

As a result of these successes there is a danger of EPI losing priority. There is a perception that EPI has already completed its achievements, that the disease burden from EPI diseases is now minimal, and that EPI is too vertical a programme. However, the reality is that there are many gains still to be made, and there is a need to advocate to build on the achievements made. EPI provides a strong platform for health service delivery and for communicable disease surveillance. There are also new vaccines and technologies that will become available to extend the future benefits from immunization programmes.

In general, coverage – the most important indicator for EPI – continues to improve or is stable (Figure 1). However, as many as one quarter of eligible children in the Region are not fully protected by EPI. The precise number remains uncertain, with problems in routinely reported coverage data limiting the ability to use the numbers to guide programmes. Surveillance for vaccine-preventable diseases, including measles, is important in this context to validate coverage (see Figure 1)

**Figure 1. Weighted regional immunization coverage\* of selected vaccines, 2000-2004 [Joint Reporting Form (JRF) data].**



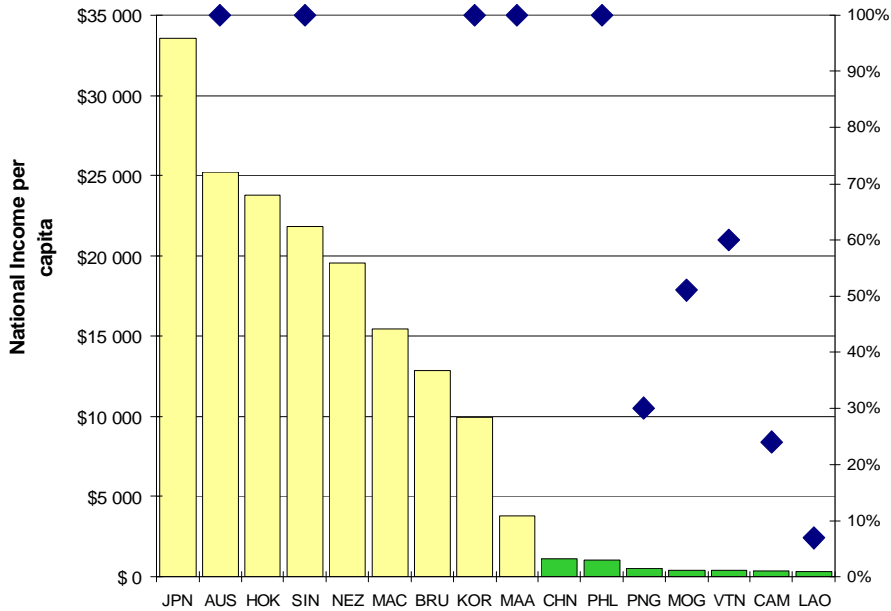
\* Based on weighted average of countries.

Another challenge is delivering the first dose of hepatitis B vaccine within 24 hours of birth in a Region where 30%-50% of chronic HBV infections are estimated to be acquired perinatally (see Section 2.3.1). Maternal and neonatal tetanus (MNT) continues to be a public health problem in six countries, showing a failure in immunization of women and delivery services for many communities. MNT is an indicator of poor access to basic health services and hence places the greatest burden on the most disadvantaged communities.

There is a large variation in population size and economic development between the 37 countries and areas of the Region, 21 of which are Pacific island countries and areas. Of

the 16 non-Pacific island countries and areas represented at the TAG, seven priority countries are defined as having a per capita gross national income (GNI) of about US\$ 1000 or less. The other countries and areas finance their immunization programmes fully, while for the seven priority countries, the proportion of EPI costs financed by government varies.

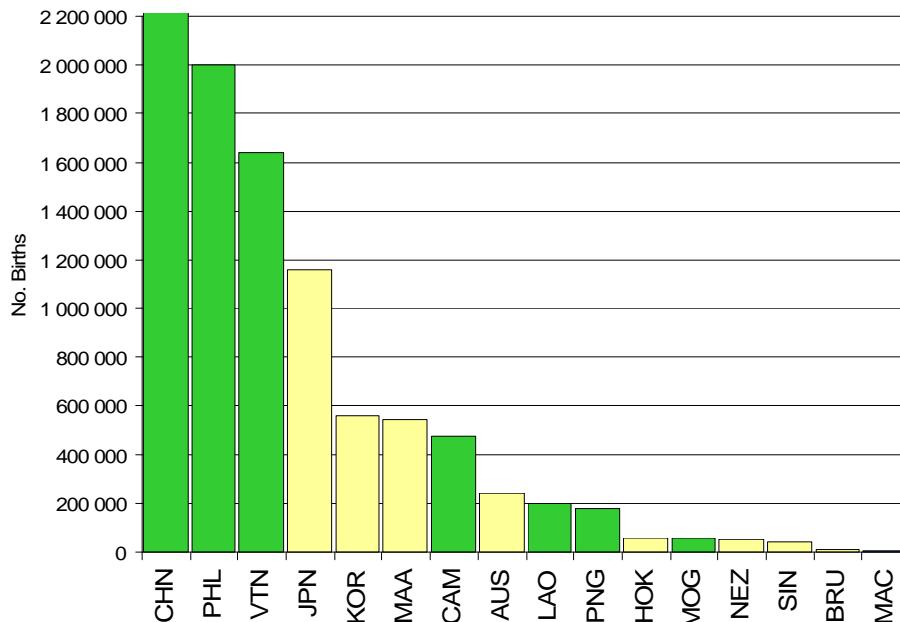
**Figure 2. Per capita gross national income and % of EPI costs funded by government (2004 JRF).**



Note: The percentage of EPI costs are as reported in the Joint Reporting Form (JRF). However, there may be interpretation issues. For example, the Philippines reported 100% government funding. However, although the Philippine Government does fund all routine costs, they received external funding support for cold chain equipment and for measles vaccine for the 2004 campaign.

More than 90% of the total births (the primary target population for EPI) in the Region take place in the seven priority countries (Figure 3). China accounted for just over 70% of all the Region's 26 million births in 2004.

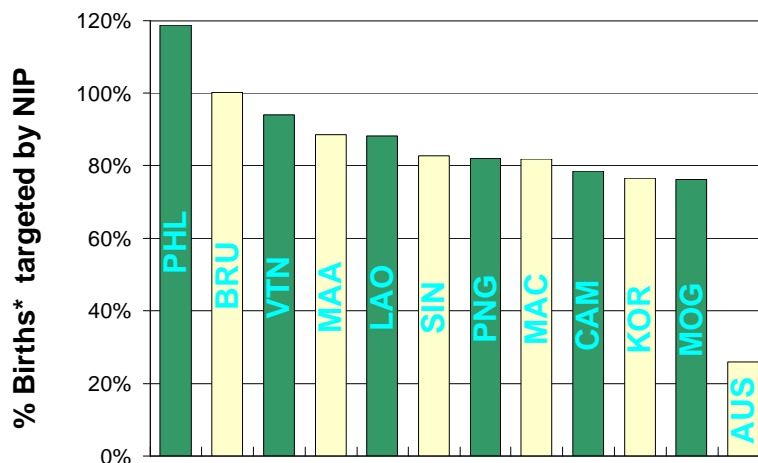
**Figure 3. Number of births in 2004, by country (Western Pacific Regional Office estimates)**



One reason for uncertainty about reported coverage is that national immunization programmes (NIPs) may be reporting on coverage of only part of the entire birth cohort. The percentage of births reported as the NIP target population is shown in Figure 4. There may be inaccuracies in WHO Western Pacific Regional Office data as well as country data, as shown by the fact that the Philippines' target is higher than the estimate calculated by Regional Office. There may be several reasons for the observed discrepancies. In the case of Australia, only 25% of the birth cohort is reported as the target population, as Australia only reports coverage quarterly (not annually).

**Figure 4. Percentage of births targeted by NIP (JRF 2004)**

*Births are from the United Nations World Population Prospects*



The Pacific Immunization Programme Strengthening (PIPS) initiative has been developed to build on the achievements of EPI in the Pacific. PIPS is a mechanism to coordinate donors as well as technical inputs for EPI, and is a useful model that could be replicated in other parts of the Region, grouping countries that face similar challenges.

At the global level, WHO and the United Nations Children's Fund (UNICEF) have developed the Global Immunization Vision and Strategy (see Section 2.1.2). This will facilitate working with partners, including national governments, to improve and expand EPI in the Western Pacific so that global and regional goals can be achieved.

Despite the challenges to EPI, including the ever-increasing competition for resources from other development programmes, it will continue to remain essential and a key component of public health services. EPI delivers a proven intervention that is safe and highly cost-effective. There are many more gains to be made from EPI, especially in reaching the poorest of the poor, who continue to miss out on immunization and other life-saving interventions. New vaccines that are, or will soon become available increase the potential benefits of EPI. Other challenges include better integration with other life-saving interventions to maximize the efficiency and effectiveness of EPI and applying the lessons learnt in reaching every child to other programmes to strengthen overall health systems. EPI needs to be an integral component of overall health service delivery and not a vertical programme.

To achieve the potential gains from EPI, there is a need for a commitment to reach every child, system and infrastructure to deliver service, and to ensure there are adequate human and financial resources to do so. Working together will help in achieving the vision of reaching every child in the Region with life-saving vaccines. Vaccine delivery must be safe and effective. It must generate community demand and be able to provide adequate services

to satisfy that demand. The quality of services needs to improve continually, and the basic package of interventions should continue to expand according to need and capacity to deliver.

To achieve this vision of EPI requires leadership, resources and commitment to the idea of protecting people's health. A target date for measles elimination will help to achieve the vision. This is very well summarized in the statement made by the Regional Director for the Western Pacific, *"When the Member States of the Western Pacific Region come together with a common goal and target, they can achieve enormous and lasting public health gains."*

Through a coordinated effort, EPI can look forward to a bright future that includes among other achievements, a measles-free (as well as a poliomyelitis-free) Region.

### 2.1.2 Global Immunization Vision and Strategies (GIVS)

In May 2005, the World Health Assembly urged Member States to adopt the Global Immunization Vision and Strategies (GIVS) as a framework to strengthen and rejuvenate national immunization programmes (NIPs) in their regions. The GIVS is a joint UNICEF/WHO strategy developed in conjunction with other partners. WHO will work to help mobilize the resources that countries will need to implement the GIVS and will report every three years on progress in implementing the GIVS.

The GIVS has four strategic areas:

Area 1: protect more people; expand target groups beyond infancy; appropriate use of campaigns; and strengthen vaccine management practices.

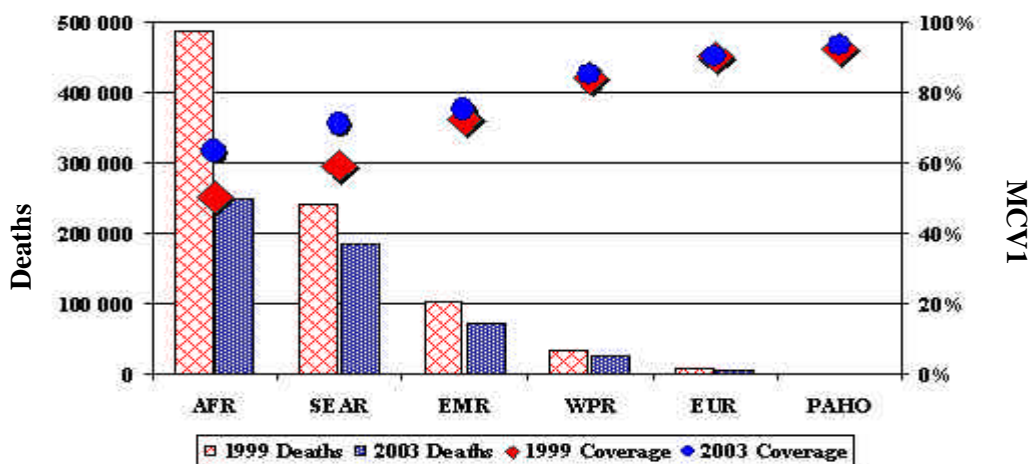
Area 2: introduce new vaccines and technologies – empowerment for country decision-making; make vaccines available; new vaccines for the disadvantaged; research and development for new vaccines.

Area 3: integrate immunization with other interventions – addressing system barriers; develop linkages; and expand surveillance

Area 4: in the context of global interdependence – increase awareness and strengthen partnerships.

One of the challenges in implementing GIVS will be the costs involved, which will be substantial and about half of which will be for existing and new vaccines. The other two major cost categories will be systems maintenance and strengthening, mostly for routine immunization, including campaigns in some places to rapidly control disease, as happened with measles campaigns, especially in Africa (Figure 5).

**Figure 5. Estimated measles deaths and MCV1 coverage, 1999 and 2003**



One potential source of funds for the poorest countries may be the proposed International Financing Facility for Immunization (IFFIm). This new initiative, proposed to provide additional funding of about US\$ 4 billion for immunization programmes over the next ten years, will be additional to the Global Alliance for Vaccines and Immunization (GAVI)/Vaccine Fund resources. A decision is expected within a few months on whether the IFFIm will come through or not.

## 2.2 Measles elimination through strengthening immunization services

### 2.2.1 The way forward – the challenge of “reaching every child”

The Region continues to progress towards measles elimination. In September 2003, the Regional Committee for the Western Pacific established measles elimination as a regional goal. Following the recommendation of the 14th TAG, WHO convened the Measles Task Force on 29-30 July 2004. The Task Force reviewed progress on measles control and recommended adoption of 2012 as a suitable target date. The Task Force noted that elimination would be challenging but feasible and could be achieved rapidly with adequate political support and resources. A target date for elimination will facilitate in focusing efforts and marshalling resources. Because of the need to sustain elimination status over time, strong routine delivery services that reach each and every child are essential for measles elimination.

Reaching children in remote and underserved communities is the main challenge for measles elimination. Another challenge is to ensure that measles elimination is used as an opportunity for strengthening overall health systems. The two areas with potential benefits are the improvement of health service delivery for underserved communities and strengthening of community-based disease surveillance.

There are some arguments against elimination. The main concern is that some countries are not yet ready, primarily because of lack of resources, and that there are many other competing health priorities with a much higher disease burden than measles<sup>1</sup>. However, setting a target date will help to mobilize resources. Furthermore, as illustrated in recent years in the Marshall Islands and the Republic of Korea, after several years of good control, a large outbreak may occur – unless elimination is achieved. Finally, and perhaps most importantly, is the fear that measles elimination will be a vertical programme that will not strengthen health systems. However, measles elimination is not just about measles. It is about “reaching every child”. It is about development. It is about equity.

The Western Pacific Regional Plan of Action for Measles Elimination has established the basic strategies for Member States: immunization, surveillance and laboratory support. A field guide has also been prepared to help countries to implement these strategies, including an operational definition of measles elimination for each country to work towards. To monitor progress towards elimination, countries will need to monitor district-level surveillance data on measles using case-based surveillance, as appropriate to their level of measles control.

The immunization strategy needs to achieve 95% population immunity because measles is highly infectious, with each infected person infecting on average up to 20 others. If at least 19 of the 20 people are already immune through immunization, there will be, on average, less than one additional case, so that chain of transmission will quickly die out. However, because measles vaccine is only about 85% effective when given at age nine

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<sup>1</sup> Which, to some extent, may be due to a reduction in measles mortality following a vaccination programme.

months, and 90% to 95% effective after the age of 12 months, a single dose of measles vaccine is not able to provide the required level of population immunity. A second dose can protect those who fail to be protected by the first dose. In addition, the second dose event can provide an opportunity to give a first dose to previously unimmunized children. Reaching unvaccinated children is a priority. Strengthening immunization services is the key to success in eliminating measles, and to maintaining that success.

The key focus must be on reaching every child with two scheduled doses of measles vaccine, with the use of supplementary campaigns to fill the gaps in population immunity. This is distinct from poliomyelitis eradication, where the primary focus was on campaigns. While campaigns can rapidly reduce the measles burden or prevent potential epidemics by filling gaps in population immunity, they are not sustainable as a strategy to achieve measles elimination as their impact is only temporary.

It is important for measles elimination efforts to strengthen overall immunization and health services to reap the full potential benefit from the elimination initiative. This is one reason for pairing hepatitis B control with measles elimination. The additional resources required to achieve measles elimination (staffing, facilities, infrastructure) can and should be used for health systems strengthening, especially in areas that currently have limited or no health services.

The 1996 Global Measles Meeting in Atlanta, United States of America, stated, "*The major obstacles to measles elimination are not technical but perceptual, political, and financial.*" This statement still holds true. Challenges the Region faces in implementation include marshalling sufficient domestic and external resources, reaching remote/underserved populations and further integrating, rather than competing with, other health service delivery systems.

Countries have demonstrated their political commitment, capacity and success in pursuing measles elimination. Many countries will be able to demonstrate that they have achieved elimination. Selected country experiences illustrate the successes as well as the challenges and the steps made towards overcoming them. They suggest that a measles elimination target date of 2012 is challenging but feasible.

## 2.2.2 Country experiences

### 2.2.2.1 Cambodia

Cambodia started measles immunization in 1986 but had low coverage, leading to a three-yearly epidemic cycle in the 1990s. The country is now pursuing measles elimination, with a three-year phased national campaign, completed in 2003, achieving a marked reduction in measles incidence. The drop in the number of measles cases is likely to be greater than shown by the surveillance data, as surveillance has also been enhanced. Measles cases remain underreported.

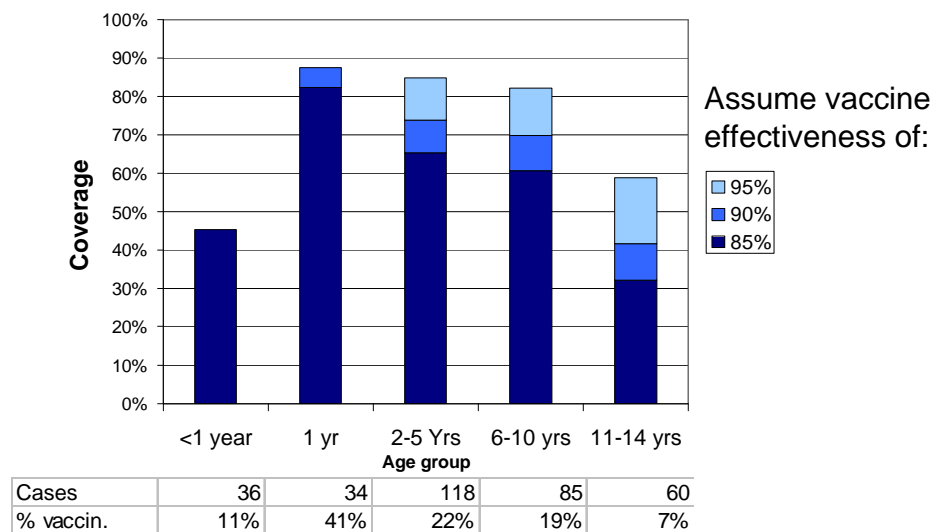
The main challenges for Cambodia in achieving elimination are improving the quality of both surveillance and coverage with immunization services. A national follow-up campaign is planned for 2007 and consideration is also being given to adding a second scheduled vaccine dose in the second year of life and a school-entry check.

The first phase of the measles campaign targeted children aged up to five years. An early lesson, from analysis of surveillance data, was the need to target children up to age 15 years. In 2004, therefore, a further campaign was conducted, targeting children aged 7-15 years and covering the areas covered in the first phase.

The campaign was an example of successful integration of service delivery for some interventions, but was not so successful for others. In phases two and three, covering less remote areas, vitamin A and de-worming (mebendazole) were successfully delivered as part of the measles campaign. The success was due to the ease of carrying and delivering the oral interventions. In contrast, it was harder to add more interventions for delivery to more remote populations. The interventions included all EPI vaccines for all aged up to two years, oral poliovirus vaccine (OPV) for all aged up to five years, tetanus toxoid (TT) for women of child-bearing age (CBAW), iodine capsules and impregnated bednets. In remote areas, the campaign was less successful (achieving only about 80% coverage compared with about 100% for phases two and three) because of the operational complexity and the logistics problems for all the interventions. Lower coverage may also be attributable to the remote, more difficult-to-reach population, but the contrasting experiences highlight the need to be careful about adding too many interventions.

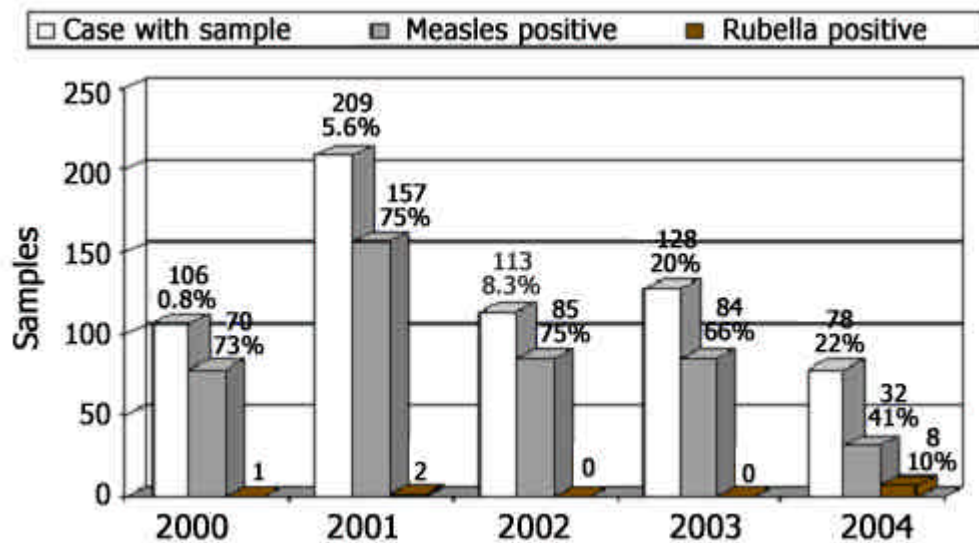
In contrast to the reported data of about 100% coverage for the campaign, 2004 surveillance data can be used to estimate coverage from data on the percentage of cases vaccinated and assumed vaccine effectiveness (Figure 6). These estimates suggest about 80%-90% coverage, with lower coverage for those aged 11-14 years.

**Figure 6. Coverage estimated using surveillance data, Cambodia 2004.**



As a result of enhanced surveillance, laboratory tests are being carried out for an increasing percentage of suspected measles cases. The impact of the campaign can be seen, not only in the reduction in the number of measles cases, but also in the percentage of suspected cases that prove positive for measles (Figure 7). (The emergence of rubella once measles is controlled can also be seen.) However, the level of decline suggests that measles is continuing to circulate in Cambodia and there is a need for additional measures, especially strengthening of routine immunization, to achieve elimination.

Figure 7. Cambodia laboratory surveillance data, 2000-2004.



#### 2.2.2.2 China

China introduced measles vaccine in 1965, with annual winter mass immunization campaigns. Establishment of the EPI in 1978 and expansion of the cold chain in 1980 enabled delivery of measles vaccine every two months. As coverage increased progressively, the annual incidence of reported measles declined from about 1000 per 100 000 population to less than 100 per 100 000 by the mid 1980s and about 10 per 100 000 by the late 1980s. In 1986, a two-dose schedule (at ages eight months and seven years) was introduced. Reported measles incidence has been less than 10 per 100 000 population since the early 1990s, with small resurgences every four to five years. In 2005, China is experiencing another resurgence, with an increase in the number of older children and young adults affected, as would be expected after decades of good control.

In 1998, a national measles control programme was launched. The 31 provinces have been divided into four categories based on the level of control, with different strategies used in each category. Province categorization has been updated based on average annual reported measles incidence from 2000 to 2004. There are now three provinces in category A (<1/100 000), 13 in category B (1-5/100 000), nine in category C (>5-10/100 000), and six in category D (>10/100 000). This has shown little progress since the launch of the programme. Although many provinces have undertaken measles campaigns, only a few have interrupted transmission. Experience with campaigns and routine programmes has shown that only those that achieved very high coverage in the campaign in the presence of a strong routine programme managed to interrupt transmission. Hence, the priority for measles control has to be the strengthening of routine EPI.

The Guizhou Project (2003-2007) has shown the feasibility of improving measles control in the province with the highest reported incidence. However, transmission still continues. The project includes various elements, including a 'catch-up' measles campaign for children aged eight months to 14 years (undertaken in November 2004 after a pilot test in 2003), school-entry immunization requirements and enhanced surveillance. The primary approach was to strengthen routine immunization services, especially at township and county level, as well as to deliver the campaign. The lessons learnt from the campaign include the

importance of political commitment, a strong logistic system, and a good system to manage adverse events following immunization (AEFI).

There are many challenges for EPI in addition to measles control. One is the large and growing number of floating populations (120 million or about 10% of the total population). In several areas, half or more of measles cases now occur in floating populations.

#### 2.2.2.3 Japan

Mandatory measles vaccination was introduced in 1978 and replaced by MMR in 1989. MMR was withdrawn in 1993 due to cases of aseptic meningitis from the mumps component. Since 1994, no vaccination has been mandatory, but is recommended, including separate measles and rubella vaccines at government cost. The law designates which vaccines are to be recommended, and funding is provided by national and local government.

Measles surveillance in Japan is based on sentinel surveillance at about 3000 paediatric clinics (about 10% of total); serosurveys in about 8-10 prefectures; and viral strain surveillance at about 300 sites. In addition, some hospitals report on adult cases.

Japan has continued to improve its control of measles since the 2001 outbreak with an estimated 300 000 cases. In 2004, about 15 000 cases were reported at the national level based on sentinel reports. Japan is now moving towards elimination, with a plan to introduce a second dose, as well as continuing the work to improve the timeliness of the first dose by recommending it at 12 months of age. In addition, Japan is pursuing measles elimination as a national goal and supports the proposed regional target date of 2012. As Japan moves towards elimination, there may be a need to move from sentinel-based surveillance to universal case-based reporting to meet the operational definition of measles elimination.

#### 2.2.2.4 Malaysia

Measles immunization started in Malaysia in 1982 with a dose scheduled at age nine months. As coverage increased, reported measles decreased, with a reported incidence of about two per 100 000 between 1992 and 1998. In 1999-2000, a major outbreak occurred, resulting from the build up of susceptibles from vaccine failure and failure to vaccinate, and involving both rural and urban areas. As a result, Malaysia has been planning measles elimination strategies since 2002, and the Ministry of Health endorsed these in February 2003.

Measles-mumps-rubella vaccine (MMR) at age 12 months replaced measles vaccine at age nine months from July 2002. The second dose of measles-containing vaccine (MMR) was added to the immunization schedule for school entrants in January 2004. A catch-up campaign using measles vaccine was conducted for school-age children (7-15 years) from April to September 2004, achieving 93% coverage. Following outbreaks in 2004 among national service trainees (aged 17-18 years) and children under one year, it was decided to implement a measles immunization campaign for schoolchildren aged 17 years in their last year at school. Similarly, an outbreak in January 2004, largely affecting infants among the ethnic population in Sarawak, led to the introduction of a dose of measles vaccine at age six months.

#### 2.2.2.5 Papua New Guinea

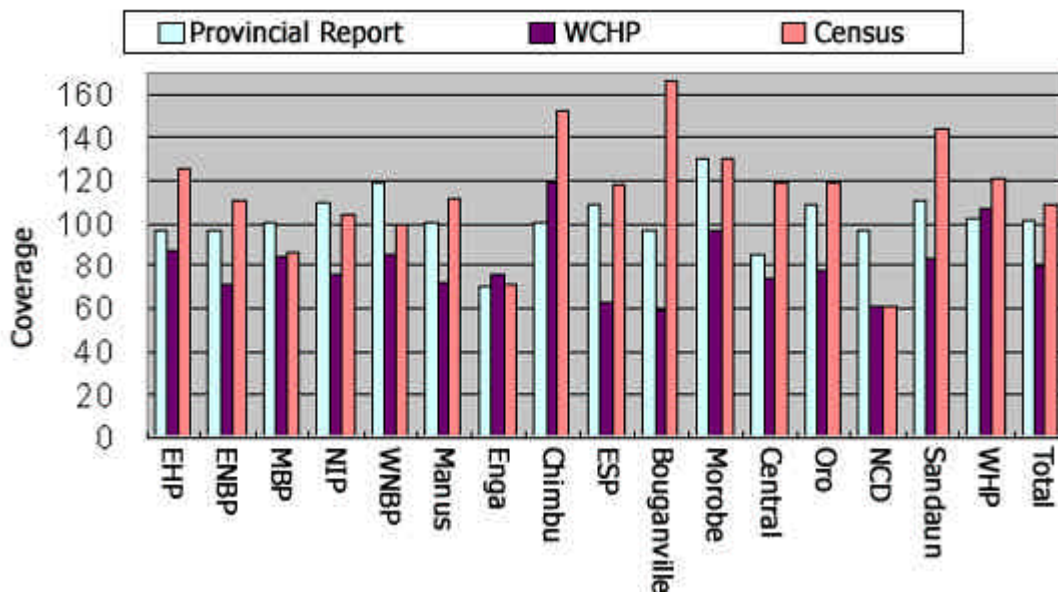
Papua New Guinea is composed of 89 districts in 20 provinces, covering over 600 islands. The population of 5.7 million people speaks over 800 languages. Measles elimination will be most challenging for parts of the Region like Papua New Guinea, where many areas have no regular services and coverage for scheduled doses is low. In addition, although there are two doses of measles vaccine on the immunization schedule, both are

scheduled under the age of one year, the first at age six months, because of the high burden of measles in infants.

Over the past two years, Papua New Guinea has been delivering a rolling measles campaign for children aged six months to ten years, province by province, with three more provinces left to cover in 2005. The campaign was a response to the ongoing high rate of measles, with very large outbreaks in 2001-2002, as a result of low immunization coverage (around 40%). Each health centre organized four to ten teams, and each team covered four to eight villages. For some remote villages, helicopters were used for transport and about 10% of teams needed to camp out for a few days. Cost data from seven provinces estimated the average cost at US\$0.53 per dose delivered. The two main cost categories were fuel/transport, which made up 35% of the total cost, and allowances, which accounted for 31%.

In most provinces, over 100% coverage was reported because of an underestimated denominator. The impact of using different denominators is shown in Figure 8. Rapid coverage assessments suggest that about 90% coverage was achieved overall, but with lower coverage in 5-10-year-olds than younger children. In addition to its impact on measles control, the supplementary immunization activity (SIA) was used to motivate EPI, improve scheduled service delivery and reach the unreached, factors essential to achieving and maintaining elimination.

**Figure 8. Papua New Guinea measles campaign coverage, using different denominators**



#### 2.2.2.6 Republic of Korea

The Republic of Korea introduced measles vaccine (initially inactivated vaccine) in 1965 and MMR in 1979, and added it to its NIP in 1983. In 1997, a two-dose MMR schedule (at ages 12-15 months and 4-6 years) was introduced. However, the large number of susceptibles among the school-age population led to a large measles outbreak in 2000-2001. As a result of that outbreak, a plan to eliminate measles by 2005 was implemented. The measles elimination plan includes catch-up campaigns and implementing a two-dose MMR schedule, a with school-entry requirement. Since 2002, over 99% of school entrants have presented a certificate showing receipt of two doses.

The catch-up campaign in 2001 targeted 5.8 million children aged 8 to 16, and achieved 97% coverage. The target group was based on both the age profile of susceptibility (using a serosurvey) and measles incidence. Measles transmission appears to have been interrupted by the campaign.

The emphasis is now on enhancing and evaluating measles surveillance. Measles incidence has been below elimination levels (<1 confirmed case per million population) since 2002. It is expected that measles elimination will be declared in April 2006, after evaluation of the fifth year of the plan in 2005.

#### 2.2.2.7 Viet Nam

In spite of very high measles vaccine coverage for many years, Viet Nam still faced ongoing measles transmission, showing that a single dose is not enough to control the disease. Therefore, a strategy for elimination by 2010 was established, with an initial campaign for all children aged under 10 years of age in 2002 and 2003, to be followed by the introduction of a routine second dose in the immunization schedule in 2006.

The 2002-2003 measles campaign achieved over 99% coverage and was implemented in the 28 northern provinces in March and April 2002, and in the remaining 33 southern provinces in March and April 2003. As a result, the number of measles cases has decreased dramatically. However, many young people under 20 years of age and people living in remote communities still remain susceptible to measles. In 2004, therefore, campaigns were undertaken for all children aged 13-20 years in mountainous, remote and difficult-to-reach districts. In 2003 and 2004, mop-up campaigns were conducted for children under 20 years of age in all communes with measles outbreaks or where confirmed measles cases were identified. From 2006, six-year-old children will be vaccinated with a second dose of measles vaccine through the routine immunization services.

Measles incidence was over 100 per 100 000 population in the mid-1980s and declined to between 8 and 20 per 100 000 population in the 1990s as a result of high vaccine coverage. As a result of the 2004 campaigns, measles incidence has been reduced further to 0.26 per 100 000. In North Viet Nam, a 35-fold reduction in measles cases was observed in 2003 compared with 2000.

The reported declines underestimate the true decline, as the number of cases being detected and investigated rose from less than 10% to over 90% as a result of improved surveillance. At the same time, the number of samples testing positive for measles from suspected measles clinical cases declined from about 80% in 2001 to 1% or less after the national campaign. As measles transmission is reduced, only a fraction of cases of acute fever and rash test positive for measles, with about half the suspected measles cases being laboratory-confirmed as rubella.

The very low level of measles, the relatively high rate of reporting (>1 suspected case per 100 000 people at national level) and the very small fraction of suspected measles cases confirmed as measles all suggest that Viet Nam is already close to elimination and should be able to achieve its target of measles elimination ahead of the proposed regional target date of 2012. This is especially so if the remaining pockets of susceptibles among older children and remote communities have been protected by the recent activities. However, the 2005 outbreaks in mountain and highland areas show that there are also still important pockets of susceptibles. In these outbreaks, over half the cases were aged over 10 years. The main challenge will now be to ensure elimination standards for district-level surveillance.

### 2.2.3 Strategies and costs to achieve measles elimination in China by 2012

A study was undertaken, with the support of WHO and the Centers for Disease Control and Prevention (CDC), United States of America, and on the recommendation of the Measles Task Force to assess the costs to achieve measles elimination in China. The costing was based on operational strategies appropriate for each province, based on the existing province measles control categorization (see 2.2.2.2).

It was assumed that all provinces would introduce a school-entry requirement (for two doses of measles vaccine), strengthen routine immunization and enhance surveillance. A and B provinces would carry out a catch-up campaign for school-age children (7-15 years), and C and D provinces would target the catch-up campaign at all those aged 8 months to 15 years. D provinces would also carry out a follow-up campaign for those under five. In addition, the A and B provinces with the largest floating populations would carry out catch-up campaigns (8 months–15 years) among floating populations.

The costs have been separated into three categories: routine immunization; strengthening routine activities; and campaigns. Costs have been derived from the financial sustainability plan and other sources. Calculations were done by province, based on epidemiological and economic considerations. All costs were calculated for the seven-year period from 2006 to 2012. The costs for the existing programme were estimated at 4.2 billion RMB (approximately US\$ 520 million), with an additional 1.6 billion RMB needed to strengthen routine services and 0.9 billion RMB for campaigns. This equates to about US\$ 300 million additional costs (or 37% of total costs). Using MR vaccine instead of measles vaccine would require an additional 15.3 billion RMB (approximately US\$1.9 million).

### 2.2.4 Regional Measles Laboratory Network

Confirmatory laboratory testing of suspected measles cases is an important aspect of the measles control programme, especially as measles becomes less common and clinical diagnosis less reliable. Thus, the primary objectives of the Measles Laboratory Network relate to monitoring and verifying virus transmission in the Region (including monitoring population immunity).

The Network provides accreditation, training and support to ensure that quality testing is adequate. Part of the process involves sending a proportion of samples to regional reference laboratories (RRLs). The role of laboratories will evolve as measles control progresses towards elimination. Genotyping is increasingly important to help identify the source of the virus. There is a need to start identifying indigenous genotypes in circulation in each member state as a baseline survey and to keep on monitoring them.

Dried blood spots (DBS) have now been validated as a technique that enables blood to be collected on filter paper that can then be shipped relatively easily, and is less invasive than conventional blood serum sampling. Both specificity and sensitivity are over 90% for DBS compared with serum testing for IgM. Genotyping can also be done on the DBS using a PCR test. According to the latest amendment, DBS are no longer subject to the IATA Dangerous Goods Regulations. The Measles Laboratory Network continues to grow and evolve in the Region, with a strong focus on training. There are many challenges, especially to be able to use the Network to test for other diseases.

## 2.3 Hepatitis B control

### 2.3.1 Regional overview: status of implementation and key issues

The Western Pacific Region, with about 28% of the global population, has a disproportionate hepatitis B burden, accounting for over half of global deaths from the disease. Every day in the Region, about 890 people die from hepatitis-B-related causes, giving an annual incidence of about 20 deaths per 100 000 population, about the same as that from tuberculosis.

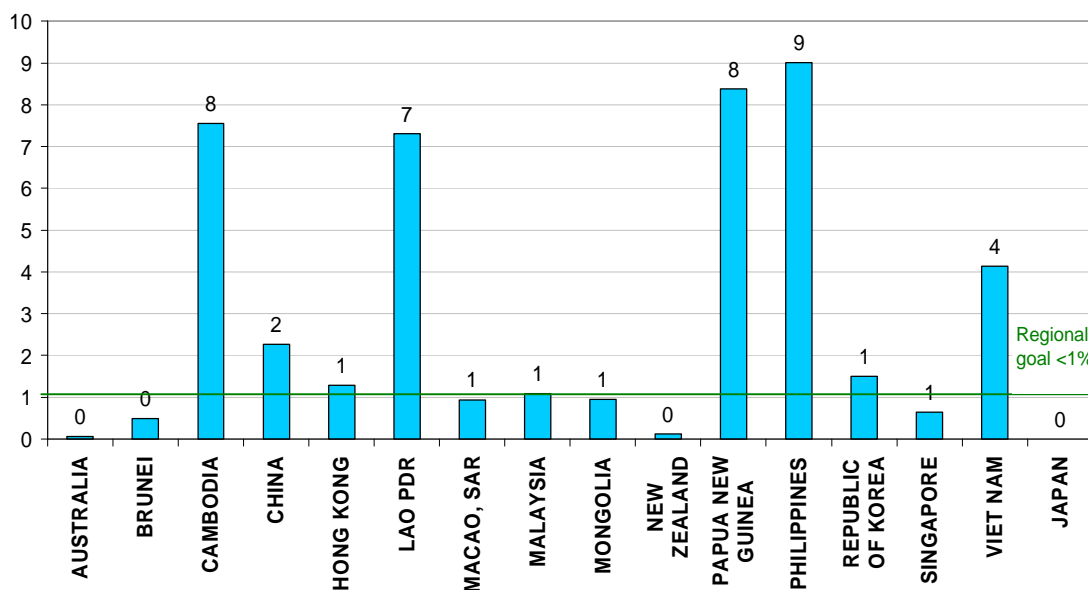
The regional plan, published in 2003, set a target of reducing HbsAg seroprevalence to less than 1% in five-year-olds born after the start of vaccination, with an interim goal of 2% for countries with more challenging situations. The plan proposed meeting this target by achieving more than 80% coverage (ideally 95%) for three doses of hepatitis B vaccine, with the first dose delivered within 24 hours of birth, for at least 80% of all births. However, no date was set or proposed in the plan for achieving these goals. Hepatitis B control through universal childhood immunization has been proposed as one of the pillars to strengthen routine immunization in the Region.

In 2001, the Western Pacific Region became the first Region to introduce hepatitis B vaccine into every national immunization programme. All Pacific island countries and areas and 10 of the 16 non-Pacific island countries have been offering universal infant immunization for more than five years. Only the Philippines and Cambodia have not yet introduced the vaccine nationwide; the Philippines for financial reasons and Cambodia because of its phased introduction approach. For 2004, nine non-Pacific island countries reported more than 90% HepB3 coverage, but an estimated five million children born in the Region in 2004 still remain unimmunized and unprotected.

Without immunization, approximately 3% to 5% of infants born in the Region would acquire chronic HBV infection at birth. It is estimated that 30% to 50% of all chronic infections in the Region were acquired perinatally. Hence, timely delivery of the first dose is critical to achieving the regional goal of less than 1% seroprevalence. Nearly 30% of all births in the Region occur at home, the majority of them unsupervised by any trained health worker. In addition, a large proportion of births take place in health facilities with no continuous cold chain. In many countries, a large proportion of births also take place in private health facilities, which are not involved in the delivery of vaccination services. Hence, special efforts will be required to increase the coverage of a timely first dose within 24 hours of birth.

Surveillance for *Hepatocellular carcinoma* is of limited use to monitor immediate programme effectiveness due to the substantial lag period between acquisition of infection and manifestation of disease symptoms.

**Figure 9. HBsAg prevalence (%) modelled from coverage data for 2004 birth cohort.**  
Seroprevalence (%)



Because of the long time between infection and manifestation of disease, disease surveillance of acute or chronic liver disease is not very useful in monitoring the immediate impact of the vaccination programme. However, accurate and reliable vaccine coverage data (on both three doses and first dose within 24 hours) is a very useful programmatic indicator. The coverage data can be indirectly used to assess the impact on disease by modelling the anticipated carriage rates if vaccine efficacy is determined as not being compromised by programmatic factors, such as vaccine freezing. The regional plan recommends validating the HBsAg prevalence modelled from coverage data with at least one large nationally representative serosurvey. A simple spreadsheet has been prepared and included is in the meeting compact disk (CD) to allow estimation of chronic HBV infection rates using coverage data (Figure 9 shows the estimate for the 2004 birth cohort.).

The financial sustainability of the programme is another critical issue. Several countries in the Region remain dependent on external support, which is time-limited and unpredictable. The Philippines is still unable to procure 100% of its vaccine needs.

### 2.3.2 Country experiences

#### 2.3.2.1 China

Hepatitis B is an important public health problem in China. China introduced the vaccine in 1992, but at full cost to parents (including the cost of vaccine, distribution charge and administration fee), at an average charge of US\$3 for the three-dose series. A new regulation (2001) stipulated free provision of hepatitis B vaccine, similar to other EPI vaccines. However the uptake of the vaccine still remains low in the 12 western provinces and other poor counties. GAVI has helped in the expansion of hepatitis B vaccine supply in these geographical areas (about one-third of the birth cohort).

A 1992 national survey (sample size = 68 330) identified national seroprevalence as being just under 10%. A 2002 national nutrition survey (sample size = 62 029), which included testing for HBsAg, found little change in HBsAg seroprevalence in the population

aged 20 years and over, but a progressive decline in younger age groups. These findings are as expected, given that hepatitis B vaccine was introduced in China in 1992. For five-year-olds, seroprevalence in 2002 was 5%, which is half the rate in 1992. However, only 63% of the sample had received HepB3, and only 29% a timely birth dose. In both 1992 and 2002, rural children had higher rates of HBsAg prevalence than urban. That difference has increased as a result of immunization (11% for rural and 7% for urban children in 1992, and 8% for rural and 2% for urban in 2002).

Since 2001, hepatitis B vaccine coverage has been increasing nationally. The major gains have been in those areas that previously had very low coverage because of cost. There still remain large disparities, as shown by the 2004 coverage survey of children born from January to September 2003. National HepB3 coverage was 89%. Although most provinces had coverage above 90%, and several were close to 99%, six provinces had HepB3 coverage below 80%, with the lowest at 29%. For a timely birth dose, the pattern was similar, but overall rates were lower: 76% of newborn babies received a dose within 24 hours nationally, and the range was from 11% to 97% for each province. The survey also found that those born at home are, not only less likely to get a timely birth dose, but also less likely to get HepB3, indicating general access problems for this population.

Delivery of the first dose of hepatitis B within 24 hours is a focus of special efforts, given its importance in reducing perinatal transmission and the reservoir of infection in general. Special pilot projects have been undertaken to test the technical and operational feasibility of alternative strategies. A comparison of three interventions in Hunan, funded by the Children's Vaccine Programme (CVP) of the Programme for Appropriate Technology in Health (PATH), found increases, compared with baselines and non-intervention counties of <10%, from intensifying the routine strategy (25%), use of vaccine outside the cold chain (53%), and use of Uniject outside the cold chain (67%). Serosurveys found equal effectiveness for vaccines used outside the cold chain. Funding and national policy development is now needed to enable use of vaccine outside the cold chain, ideally of Uniject, for hard-to-reach populations.

A 10-year plan (2005-2015) on hepatitis B is being finalized. This includes discussion of a proposed goal to achieve <1% HBsAg prevalence in children under 10 years of age by 2015.

#### 2.3.2.2 Mongolia.

All forms of hepatitis have been listed as group B notifiable diseases, requiring weekly reporting, since 1981. The seroprevalence of hepatitis B in the general population is estimated to be between 9.8% and 21.6%. Mongolia introduced hepatitis B vaccine in a phased manner, starting in 1990 and with national coverage by 1991, and has achieved almost universal coverage (>90%) since 1997. HepB has been scheduled at birth, two months, and 8-11 months since first introduction – except during 1995-1996 when a two-dose schedule was used, in line with the manufacturer's recommendation. From 2005, the pentavalent DTPHepB-Hib will replace HepB and will be given at two, three and four months. A birth dose of monovalent HepB will continue to be used. The new vaccine is being phased in.

Mongolia's immunization schedule formerly recommended the first dose of vaccine within 48 hours of birth, but this changed to within 24 hours in 2004. Mongolia also experiences extended winter seasons with below freezing temperatures, and avoiding freezing of vaccine, especially in rural areas with poor heating systems and during outreach, is a major challenge.

The incidence of viral hepatitis B is being monitored regularly as this a notifiable disease. The incidence has declined from 35.5 in 1974 to 2.89 per 10 000 population. However, the incidence of hepatocellular carcinoma (the most common cancer in Mongolia)

has increased from 41 per 100 000 for men and 17.7 per 100 000 for women in 1973 to 63.5 per 100 000 for men and 43.5 per 100 000 for women.

Mongolia's immunization coverage suggests that hepatitis seroprevalence should be about 1%. However, this is not supported by recent seroprevalence surveys. A recent survey of two-year-old children born between January 1998 and June 1999 revealed a seroprevalence of more than 6% (Edstam, 2002)<sup>2</sup>. Another study conducted in 2003 found a HbsAg rate of 7.2% among children aged 4-7 years born after the start of the vaccination programme (Jamba, 2004)<sup>3</sup>. The studies found significant urban-rural differences, with much higher prevalence among rural children.

The lower-than-expected impact on hepatitis B carriage may be due to problems in vaccine efficacy (possibly from freezing of vaccine) or high perinatal transmission rates.

### 2.3.2.3 The Philippines.

Hepatitis B is an important burden in the Philippines, with an estimated 36 000 annual related deaths and an estimated 180 000 new chronic HBV infections per year. A pre-vaccine seroprevalence of around 10% (8%-16%) means that liver cancer is the fourth most common type of cancer (16.8 cases per 100 000 population per year). Infant hepatitis B immunization was started in 1992, but with no policy or birth dose to prevent perinatal transmission. Funding was initially only for 40% of the national requirement, with a plan to increase that by 10% annually, but funding has not increased and there has been variable funding since then (still at 40% of requirement in 2004). In 2004, HepB3 coverage was 42% compared with 77% for DTP3; with a birth cohort of approximately 2.5 million, only 1.2 million doses were procured. A bill is currently before the Senate to make hepatitis B vaccine available to the entire birth cohort.

Despite the high disease burden and the cost-effectiveness of vaccine, the Philippine (self-financing for all vaccines) has been unable to afford to procure sufficient vaccine for the nation. The total incremental cost for full coverage would be nearly US\$3 million per year (US\$ 0.036 per capita) for bundled vaccine supplies. This compares with an estimated annual cost of US\$11 million for hospital treatment costs and US\$9 million for lost wages. The Philippines remains just above the threshold for GAVI assistance, despite having the second largest number of people living on less than US\$1 per day and the second largest number of under-five deaths in the Region.

As well as the challenge of funding the vaccine, another major challenge is birth dose delivery, with 62% of birth delivered at home and 40% of births attended by unskilled workers.

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<sup>2</sup> Edstam JS, Dulmaa N, Nymadawa P, Rinchin A, Khulan J, and Kimball AM. 2002. "Comparison of hepatitis B coverage and effectiveness among urban and rural Mongolian 2-Year-Olds". *Preventive Medicine* 34:207-214.

<sup>3</sup> Jamba, G, Zulkhuu G, and Bayarmagnai B. 2004. "The study on mandatory immunization coverage and effectiveness in Mongolian children." Preliminary technical report on a research project financed by World Health Organization Western Pacific Regional Office.

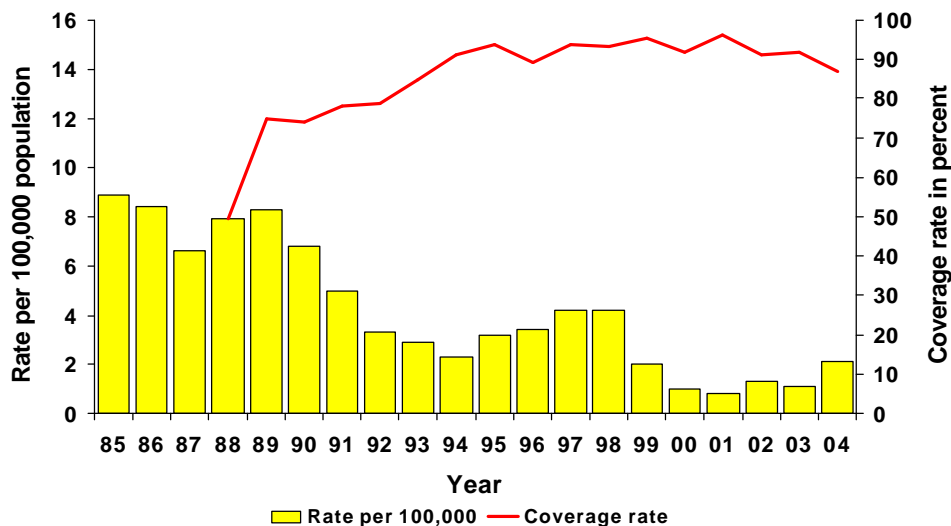
### 2.3.2.4 Singapore.

Hepatitis B was formerly a major public health problem in Singapore, with hepatocellular cancer the third most common cancer for males. The direct cost of treating patients in government hospitals for acute viral hepatitis, chronic hepatitis, liver cirrhosis and primary liver cancer was US\$ 3.1 million in 1984

The Hepatitis B Immunization Programme was first started in mid-1983 with the voluntary immunization of high-risk groups, such as health care workers. Infant immunization, starting at birth, for babies of carrier mothers was introduced on 1 October 1985 and extended to all newborn infants on 1 September 1987. HepB3 coverage by the age of one year increased from 44% in 1988 to 85% in 1993 and 98.6% in 2004. From 2001 to 2004, all those born before 1987 were screened and immunized.

The annual incidence of acute hepatitis B decreased from about eight per 100 000 in the 1980s to about one to two per 100 000 (Figure 10) in 2004. In children below 15 years of age, the incidence of acute hepatitis B dropped from 1.4 per 100 000 during the period of 1983-1985 to zero per 100 000 for the period of 1998 to 2004.

**Figure 10. Acute hepatitis B incidence and HepB3 coverage, Singapore 1985-2004**



The overall HBsAg prevalence decreased from 5.7% to 4.5% in males and 3.4% to 3.0% in females between 1978 and 1998. In primary-school children prevalence decreased from 5.7% in 1972 to 4% in 1987 and 0% in 1994. In secondary-school children, the prevalence rate was <1% in 2001.

Perinatal transmission of HBV has been reduced by 80%-100% in babies of carrier mothers that have received the primary course of three doses of hepatitis B vaccine, and no carriers have been detected among newborn infants of hepatitis B antigen-negative mothers in recent years. Among antenatal women routinely tested for hepatitis B carrier state, the HBsAg prevalence decreased from 4.4% in 1980-1981 to 2.3% in 2000.

Long-term follow-up of vaccinated children and adults has shown that the vaccine conferred protection against both acute hepatitis B and HBsAg carriage for at least 12 years, even among those whose antibody titre against hepatitis B surface antigen (anti-HBs) had declined to below 10mIU/ml.

Age-standardized incidence rates of primary liver cancer among males declined from 27.8 per 100 000 per year in 1978-1982 to 19.0 per 100 000 per year in 1993-1997 and 18.5 per 100 000 in 1998-2002.

The critical success factors for hepatitis B immunization in Singapore have been its integration in the NIP, the use of Medisave to fund it and the widespread publicity promoting the need for hepatitis B immunization.

#### 2.3.2.5 Viet Nam

Viet Nam introduced hepatitis B vaccine for the first time in 1997, covering only 5% of the birth cohort. The vaccine was locally produced (plasma-derived) and there was limited production, allowing expansion to only 19% of the birth cohort by 2001. With GAVI support, coverage was expanded to 66% in 2002, and was extended nationwide in 2003. In 2001, HepB3 reported coverage was 94%, with similar high coverage in all geographical regions and exceeding the 85% target for 2004.

The current birth dose policy provides for delivery of the first dose within 24 hours for births in hospitals with a refrigerator, and within 72 hours for births outside hospitals. Reporting of the birth dose differentiates those given before and after 72 hours of birth, with almost 60% of births given the dose within 72 hours in 2004. Timely birth dose coverage was 70% using the single-dose GAVI-supplied vaccine, compared with 9% in those areas using the locally produced two-dose vial.

The major operational constraints that were identified (by an August 2004 qualitative study) in providing the birth dose within 24 hours were location of the vaccine storage, lack of involvement of private obstetric practices and delivery problems in large hospitals. Storage of the vaccine in all health facilities (which has substantial cost implications for the cold chain) and using hepatitis B vaccine out of the cold chain are two policy options being considered. A study of 'out of cold chain' has been planned in Thanh Hoa Province with support from CVP-PATH. Other areas where Viet Nam is currently working include increasing awareness about perinatal transmission, working with the private sector and changing the definition of 'timeliness' from 72 hours to 24 hours.

### 2.4 Maintaining poliomyelitis-free status

#### 2.4.1 Global overview

##### 2.4.1.2 Status of poliovirus circulation

In 2004, intensified poliomyelitis eradication activities made good progress in Asia and reduced the geographical distribution of wild polioviruses in Afghanistan, India and Pakistan. In Egypt, poliovirus transmission fell to its lowest level ever. In contrast, sub-Saharan Africa experienced large poliomyelitis outbreaks, mainly as a result of suspension of immunization in Kano State, Northern Nigeria, and low routine immunization coverage in some neighbouring countries. These outbreaks led to wild poliovirus importations in 16 previously poliomyelitis-free countries (including, most recently, Saudi Arabia, Yemen and Indonesia), and in six of these countries endemic transmission of the imported polioviruses was re-established.

In 2004, the detection in Central Africa of type 1 and type 3 wild polioviruses that were genetically linked to those viruses, though they had been eliminated three years earlier, demonstrated that surveillance that does not meet certification standards at all levels concerned could fail to detect ongoing poliovirus transmission. Generally, the new outbreaks of 2004 appear to have been contained, and several countries in Western and Central Africa

that were classified in 2004 as having re-established transmission have had no wild poliovirus detected in 2005 so far. Another positive development was the re-establishment of immunization in Kano.

Monovalent (type I) OPV is being used selectively for the first time in Egypt, India and Yemen. So far in 2005, there have been only 18 cases in India, seven in Pakistan and two in Afghanistan. It is anticipated that there will be no longer be wild poliovirus circulation in Asia by the end of 2005.

A risk analysis for achieving poliomyelitis eradication identified the following levels:

Delay in virus interruption in Asia:	Low-moderate
Expansion of the African epidemic:	Moderate-high
Delay in interruption in Africa:	Moderate-high
Insufficient financing:	Moderate
Undetected virus (surveillance gaps):	Moderate

#### 2.4.1.3 Oral poliovirus vaccine (OPV) cessation

It has been agreed, supported by several episodes of circulating vaccine-derived poliovirus (cVDPV) in recent years, that continued use of the live attenuated polioviruses contained in OPV after interruption of global transmission would ultimately be incompatible with eradication. Safely stopping the use of OPV will require:

- confirmation of interruption of wild polioviruses (i.e., global certification of eradication);
- appropriate containment of all polioviruses in laboratories and vaccine-production facilities;
- continued poliovirus surveillance and notification capacity that meet international standards globally;
- a WHO/UNICEF managed stockpile of monovalent OPV (mOPV), with internationally agreed mechanisms for use;
- processes for synchronized cessation of OPV use globally; and
- 'post-OPV' immunization policy at national level.

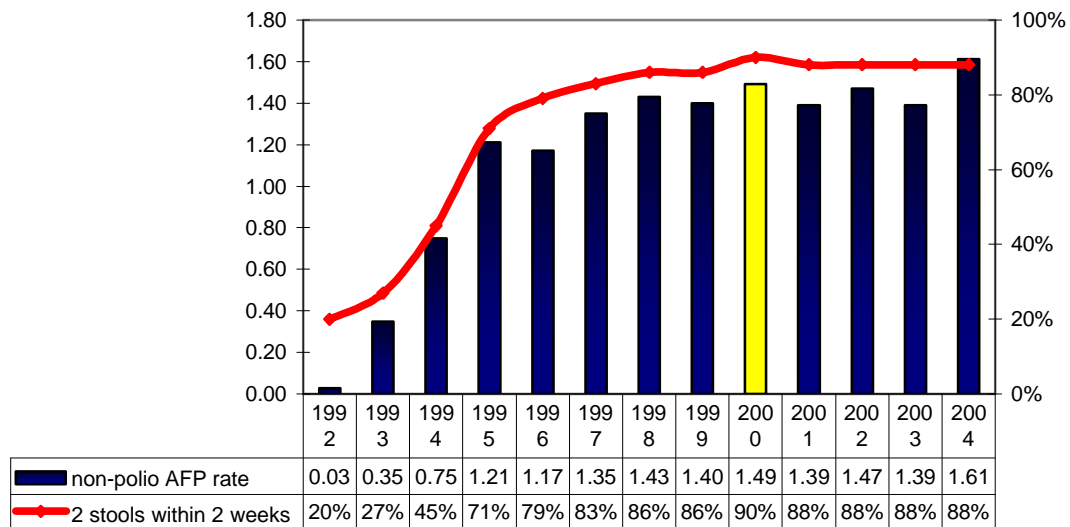
#### 2.4.2 Regional overview

The risk of wild poliovirus importation continues or may currently even be increased. This requires all Member States to maintain high immunity against poliomyelitis, quality surveillance systems and updated outbreak preparedness plans. All these must be maintained until global certification. Surveillance has to extend beyond certification, because of cVDPV risk. There is also the need to complete the first phase of wild poliovirus laboratory containment (see below).

In general, acute flaccid paralysis (AFP) surveillance sensitivity levels in the Western Pacific Region have been maintained at acceptable quality levels (Figure 11). While no wild polioviruses have been detected since 1999, the AFP surveillance systems were able to quickly detect VDPV episodes in China and the Lao People's Democratic Republic in 2004-2005. Reported routine immunization coverage with polio vaccine has been maintained at levels similar to those in previous years; however, serious immunity gaps in some areas

continue to exist, as indicated by the recent VDPV episodes. SIAs with OPV have been further reduced, mainly due to lack of funding. While strong priority is placed on strengthening routine immunization systems, various forms of SIA may still be required in high-risk communities to protect poliomyelitis-free status and the huge investments made while development of quality routine immunization takes place.

**Figure 11. Regional non-poliomyelitis AFP rate (per 100,000 aged <15 years + % of cases with adequate stool samples 1992-2004).**



WHO does not recommend universal use of inactivated poliovirus vaccine (IPV), but will assist Member States in a consultative process to select future immunization options. As long as wild poliovirus transmission has not ceased, OPV is the recommended vaccine, including for stopping cVDPVs.

WHO will also continue to work with Member States on poliomyelitis outbreak preparedness plans and coordinate between technical units (e.g. EPI and CSR), particularly on the definition of a 'polio event' and other issues arising from the revised International Health Regulations (IHR).

#### 2.4.2.1 Poliomyelitis cases due to cVDPV

China: In August 2004, type 1 VDPV was isolated from two AFP cases in Yaoshang Village, Qianxinan Prefecture, Guizhou Province, as well as from three of 21 contacts of those two AFP cases and from a contact of a polio-compatible case from the same area (paralysis onset on 22 May 2004). The AFP cases were boys aged three years (paralysis onset 13 June 2004) and one year (paralysis onset 11 July 2004). Both cases were clinically compatible with poliomyelitis and had no history of any OPV immunization. As a result, OPV campaigns targeting children <4 years old were conducted in the whole province, and achieved high coverage.

A type 2 VDPV was isolated in a 19-month-old girl in Bijie Prefecture, Guizhou Province, who developed paralysis on 7 August 2004. Bijie Prefecture is close to, but not directly neighbouring Qianxinan Prefecture. The VDPV was unrelated to a type 2 VDPV isolated in Guizhou in 1997. The girl had moved back to Guizhou from Zhejiang Province two weeks before, where she apparently had received two doses of OPV. Although the case was discarded as not poliomyelitis based on clinical findings, investigation and mop-up immunization activities were conducted. Active searches did not find any missed AFP cases in both areas in Zhejiang and Guizhou Provinces.

Japan: The Global Specialized Polio Laboratory in Tokyo reported isolation of type 2 VDPV from a non-AFP male child from Toyama Prefecture, aged nine months at the time of stool collection, as part of activities for national epidemiological surveillance of vaccine-preventable diseases. The child and his family have remained healthy and there does not appear to have been any further spread of the VDPV.

Lao People's Democratic Republic: A type 2 VDPV was isolated from a 14-month-old unimmunized boy residing in Phonsivilay Village, Feuang District, Vientiane Province, who developed AFP on 24 October 2004. VDPV type 2 was also isolated from two healthy contacts. Genetic analysis of the virus suggests two threads of independent transmission over several months. The response has been a combination of OPV campaign and targeted rapid improvement in routine immunization. Infants are supposed to be targeted for all eligible antigens (including vitamin A), while children over one and up to five years should receive OPV and vitamin A only.

#### 2.4.2.2 Laboratory containment

Maintaining poliomyelitis-free status also includes accurate and updated national inventories of wild poliovirus infectious and/or potentially infectious materials still retained in laboratories to ensure that these are safely stored under required conditions. Preparing for the synchronous cessation of OPV use will require appropriate containment of all poliovirus strains and thus it is of great importance that phase 1 wild poliovirus containment (national laboratory survey and establishment of inventory) be completed as soon as possible in the two remaining countries (China and Japan) to protect the current poliomyelitis-free status and prepare for the next phase.

Currently, six countries in the Western Pacific Region hold wild poliovirus infectious and/or potentially infectious materials: Australia, China, Japan, New Zealand, the Philippines and the Republic of Korea. Plans have been developed to destroy materials in the Philippines and the Republic of Korea shortly.

Future poliovirus laboratory containment requirements will be defined in the third edition of the WHO Global Action Plan, which is currently under preparation.

China: Extensive discussions continue on how best to complete the national inventory of wild polioviruses and document completeness and quality of the laboratory survey. In 2003, a new regulation, the “general requirement on biosafety”, was issued. Under the regulation, all biological laboratories should obtain licensure from the Ministry of Health to carry out biological work related to humans. Poliovirus laboratory containment is considered to be connected with this new requirement.

In the future, biosafety work in China will be mainly the responsibility of the Ministry of Health’s Department of Science, Education and Technology (DSET), which has recently been given authority by the State Council to ensure biosafety in all laboratories in China working with human specimens. This includes laboratories in other ministries and private laboratories, and includes containment of dangerous human pathogens. One of their first areas of work is to develop a national inventory of all laboratories. If complete, this list could provide the basic denominator list of laboratories for a variety of purposes.

Current discussions include how, for laboratory containment of polioviruses, the Ministry of Health’s Department of Disease Control (DDC) and China Centers for Disease Control (CCDC) will remain involved in the managerial and technical work. DDC has presented a report to the Minister for his approval. The previous plan developed in China was already a comprehensive one, but agencies outside the Ministry of Health did not fully

comply with its requirements. The Ministry of Health is planning to hold a meeting with key stakeholders about poliovirus laboratory containment before the end of June 2005.

Japan: As a result of the first survey based on the Global Action Plan 1<sup>st</sup> edition (GAP-I), 31 laboratories were initially identified as having wild polioviruses. A national survey of facilities that possess pathogens and toxins that have the potential to be used in biological weapons (including wild poliovirus) started in December 2004, and the results were obtained in March 2005. Medical institutions (public hospitals, national hospitals, national medical centres and national sanatoriums for leprosy), research institutions (national institutes and district public health laboratories), local health centres and quarantine centres were surveyed. Of 11 624 laboratories, 25 had wild polioviruses. They were all among the laboratories listed in the first inventory.

In addition to the phase 2 search of laboratories, the National Certification Committee (NCC) has set up a plan to survey scientists who published the results of work using polioviruses in academic journals during 1990-2005; 350 papers were published during the period and direct contacts will be made with the corresponding authors or principal investigators. Final results will be obtained by August 2005. In addition, all institutions listed in October 2004 will be re-examined before mid-2005. This time, the survey will be expanded to search environmental agencies and police and defence agencies. Importantly, this survey will include all polioviruses except OPV strains approved for use by Japanese control authorities.

## 2.5 Strengthening immunization services

### 2.5.1 Developing and costing a multiyear plan

A comprehensive multiyear immunization plan should be based on a situational analysis and should address all components of the system, with a system focus rather than an individual-initiative focus. Taking this systems approach will enable integration of activities for different initiatives. The Global Immunization Vision and Strategies (GIVS) checklist is available to ensure that the plan is comprehensive and to allow full use of that framework.

The multiyear plan is the basis for preparing annual workplans, so the multiyear plan should be included in the first year's workplan. Finally, the cost of implementing the plan needs to be estimated so that the necessary funds can be mobilized. In this way, the multiyear plan can incorporate and become a financial sustainability plan. A costing tool is available (on meeting CD).

The steps in developing the plan will vary in each country, but need to start from a situational analysis and national objectives and milestones. From these, national priorities need to be determined as the basis for planning strategies and key activities. This planning should be based on system components rather than disease control goals. The GIVS framework can now be used to identify any missing activities and strategies. Once the final list of activities is prepared, they need to be placed on a timeline over the years of the plan and then costed. Integration (with other health programmes) and consolidation of activities is the next step, aiming to achieve greater efficiency and gains, and is the step before prioritization, which needs to be done for both activities and districts. This leads to the annual workplan for the next year, which needs to be costed, implemented and reviewed. Every year, the multiyear plan should be reviewed when preparing the next annual workplan. It may also be appropriate to undertake a mid-term review of the multiyear plan.

One important implication for the multiyear plan, as outlined here, is that it offers the opportunity for integration with the financial sustainability plan in a single document that

covers every aspect of the immunization programme. It will be the basis for mobilizing funds, including obtaining GAVI support.

### 2.5.2 Reaching unreached populations

In the Philippines, considerable effort has been made to reach the previously unreached. The key to this work is using the available population data and increasing the quality of that data, including the use of maps.

Success in reaching the unreached can be seen by comparing the post-campaign impact of the 2004 Philippines Follow-up Measles Elimination Campaign (PFMEC) with the 1998 campaign. In 2004, there was a 95% decline in the number of measles cases in Metro Manila and deaths decreased from 85 to 0. Similar trends were found nationwide. In contrast, the 1998 campaign had limited impact on measles; the difference was due to reaching the previously unreached, with a door-to-door approach and validating coverage in every urban *barangay* and selected rural *barangays*. However, many children continue to be missed, as can be seen from the continuing burden of vaccine-preventable diseases. Most of the unreached are in the poorest quintile of the population. They also have disproportionate drop-out levels. Most of the unreached live in urban areas, although coverage levels are lower in more remote areas.

Experience with training on the 'Reach every *barangay*' strategy (local version of RED – 'Reach every district') has shown that training also does not reach where it is most needed – health centre staff. Supervisory visits are a more effective way to train health centre staff. Comparison of population data from the existing community-based monitoring and information system (CBMIS) with validation studies found 30% of the total population were not included in the CBMIS. These findings, especially in the context of many staff saying that their population estimates are too high, shows that unsupervised interventions can lead to large numbers of the target population being missed.

Data are submitted for compliance, but are not used to analyse the interventions, and health staff are often not aware of disease in their area. Engaging staff in their data and their potential use has been a useful way to get them to use the data. Similarly, community mapping has proved an effective strategy to engage community members in identifying and developing solutions to reach unreached populations.

Mentoring and supportive supervision, data use, engaging communities and planned, prioritized outreach are the key lessons that need to be used in reaching the unreached.

### 2.5.3 Social communication and mobilization

The first step is to review the situation and understand the problems leading to low coverage and its causes. A framework that defines the problem and identifies ideal behaviour provides the starting point. Then the barriers (or 'locks') and motivations (or 'keys') should be identified, together with the most powerful advocate, and the potential solutions identified.

It is important to distinguish the service delivery aspect, which includes an important communication and mobilization role, from demand generation. Communication and social mobilization is not appropriate if the services are not reliably and regularly present to meet the demand that they generate.

In using the traditional 'information, education and communication' (IEC) approach, there is a need to understand changing patterns and expectations. For example, the labelling of a product can have a big impact on demand, as is well known and illustrated by successful

corporate marketing brands. For immunization and other health promotion there is a need to think of 'IEC' as inform, engage and convince.

To be effective in doing so, good research is needed. Ideally, this should be participatory research involving the community, who should also be engaged in developing their own solutions and materials. In developing strategies to motivate people, it is as important to appeal to the emotions as to the intellect and to use attractive, feasible solutions. It is important to find the right motivators for the community, to address fears as well as raise the status of immunization and vaccinators.

#### 2.5.4 Safe immunization

Following the 2001 regional strategy, there continues to be progress. Since 1999, all campaigns in priority countries have been undertaken with autodisable syringes (ADs) and safety boxes. There was a progressive update of ADs for the routine programme so that, by 2003, all but one of the priority countries and most Pacific island countries were using these. Exclusive use of ADs is limited to two priority countries. In Papua New Guinea, sterilizable syringes are still used together with ADs and other disposable syringes.

Safety boxes for collection of used injection equipment are used in all priority countries. Disposal is via a variety of methods, but with increasing use of incinerators. Open burning is the main method of disposal in one priority country and burial in another. Safe disposal in an environmentally acceptable way continues to be a challenge, and incineration is considered to be the option that causes the least overall harm. A new WHO policy on safe management of health care waste is now available (in meeting CD) and provides guidance to countries on both short- and long-term options for waste disposal.

At present just under half the countries in the Region have a system to monitor adverse events following immunization (AEFI). However, not all countries with report systems are reporting the number of AEFI annually. In most countries there is only a small number of reports. There have not been any new major concerns about AEFI in the Region.

One of the challenges for some of the priority countries is funding for safe injection supplies, as well as the costs for disposal and destruction of injection waste.

#### 2.5.5 Cold chain and logistics

National immunization programmes require a vaccine management system and a financing system to ensure vaccine supply. The former needs to accurately forecast, procure and distribute vaccines to the point of administration, while at all times maintaining vaccine quality within a cold chain. The latter needs to estimate and secure the funds required to procure and distribute vaccines and supplies.

The first step for vaccine supply is working out vaccine requirements, which is simply calculated by multiplying the target population by the number of scheduled doses and allowing a wastage factor. However, problems with data quality or failure to use the formula can lead to excess stock or vaccine outages. Cold chain failures and sometimes, external factors can also lead to outages due to lack of supply.

Systems to monitor vaccine logistics need to be integrated into district-level data management systems. These should include reviews of stock and wastage levels. Just as simple charts monitoring monthly coverage have been implemented, similar charts can be used for vaccine use to help prevent outages or wastage.

At present, many countries still calculate vaccine wastage at the national level only. While this is useful for estimation of vaccine requirements and ordering, it provides little information as to where most vaccine wastage occurs within countries, and thus limits the implementation and monitoring of strategies to lessen reducible (or open vial) wastage. Collection of information on the number of vaccine doses opened during each session should be done at the time of service delivery (e.g. as part of the session tally sheet) and the information collated as it passes through the reporting system. Only some countries are reporting wastage levels to WHO, which suggests a lack of wastage monitoring. Of the three priority countries that did not report 2004 wastage rates, two of them had vaccine outages, suggesting some relation between the two. This further supports the need to monitor wastage.

All districts need an inventory of the ideal level of cold chain equipment (both refrigeration and cold boxes/vaccine carriers), based on national policy/standard, and estimates of cold chain storage capacity. This information then needs to be used to identify equipment gaps and for the maintenance and replacement of current equipment.

#### 2.5.6 Synergy between EPI and other public health interventions

Integration should be a tool or means to achieve a more effective and efficient programme rather than an objective or an end in itself. However, integration may not be the solution for weak programme management, and integration of two poorly managed programmes will yield another poorly managed programme. Considering the special aspects of the immunization programme, there is a need to retain some of the vertical elements of the programme. Hence the objective should be to identify the synergy or right balance between vertical and horizontal approaches.

While the same basic data may be used for planning in different programmes, failure to share that data among the programmes may lead to either duplication or less efficient programmes. This kind of integration can be most effective by finding shared requirements and effectively sharing them. Such areas need to be identified and developed. Areas of potential integration include planning, microplanning, record-keeping, injection waste disposal, surveillance and delivery of other interventions.

There are also areas, such as delivery of the birth dose and tetanus toxoid (TT) to pregnant women, which require integration with delivery and antenatal services. Integration of vaccine logistics, reporting systems and supervision, and with delivery of other interventions, has been undertaken in the Region. The success of each has varied, and the challenge of different programme objectives and other factors can prevent successful integration. Careful analysis of the impact of integration, and which areas can be integrated, is needed so that evidence-based decisions can be made about integration.

#### 2.5.7 Ensuring the financial sustainability of EPI in the Region

Several of the priority countries in the Region are still not fully financing their immunization programmes. Given the low level of income of the priority countries, other health priorities and very limited health budgets, continued external funding will be needed for both operational and vaccine costs.

The total EPI cost per child targeted, as reported by countries in 2004, ranged between US\$6 and US\$30. With the addition of new vaccines, that cost will increase, and the proportion of overall EPI costs will increase. Obtaining the funds needed so that benefits of new vaccines can also be enjoyed by the poorest countries will be a challenge.

An important aspect of financial sustainability is improving programme efficiency. Unfortunately those countries that are most dependent on donors have the most inefficient programmes, with high vaccine wastage rates.

Delegating financing from national level to provincial level may have some unanticipated effects on EPI coverage, including increasing inequities if poorer provinces are not cross-subsidized at the national level.

It is not only vaccines for which countries are externally dependent, but also operational costs, which are more difficult to account for. In addition, donors may be less willing to fund recurrent operational costs than vaccine costs. Development of a common revolving fund, rather than each donor/nongovernmental organization (NGO) financing operational costs on *ad hoc* basis in a few selected areas, may help in better programme planning.

#### 2.5.8 Getting the numbers right: improving EPI data management to “reach every child”

Improving the quality of routine data is necessary so that those data can be used as a management tool to improve programme management. Data quality refers to the completeness, accuracy and timeliness of data. Data must also be meaningful to be used in managing the programme. There are two key primary areas for the immunization programme (coverage and disease) and three secondary areas (AEFI, vaccine wastage and resource data). Steps to improve data quality at the point where they are first collected are vital. This includes limiting the data burden and avoiding duplication. Providing feedback on any data that are reported is also essential. The data need to be fed back, not just in the form that they have been received, with analysis and interpretation, but also with an appreciation, to continue getting feedback. The essential tools at service delivery level include systems to record and report immunization data. Ideally, these should be integrated with other reporting systems to minimize the reporting burden. Registers are also important tools in achieving coverage. Supportive supervisory visits are an important way to improve the completeness and accuracy of reported and recorded data, as well as an opportunity to provide feedback.

To improve the data quality process, the WHO Western Pacific Regional Office is aiming to integrate data sources and improve data processes to minimize the burden on countries. A questionnaire sent to countries in 2003 identified that most countries prefer to send data on an electronic form, with the remainder wanting to complete a paper form. No country chose the option of web-based data entry.

As countries tend to keep national data in various types of database, there should be electronic processes set up that enable transfer of selected data from those national databases to the Regional Office database at predetermined intervals. This will be most useful for coverage and disease incidence data. Once data quality improves and data transfer requires less effort, more attention can be paid to analysis of data and using data for programme management.

### 3. INTERAGENCY COORDINATION COMMITTEE

The Interagency Coordination Committee (ICC) meeting was conducted at the 15<sup>th</sup> TAG Meeting. Dr Hamid Jafari from CDC, United States of America, chaired the meeting and Ms Letitia Toms from the Australian Agency for International Development (AusAID), served as Rapporteur. Official invitations were forwarded to AusAID, CDC, the Canadian International Development Agency (CIDA), the Japanese Government, the Japan

International Cooperation Agency (JICA), Rotary International 2650, the United Nations Foundation and UNICEF, among others.

The WHO Western Pacific Regional Office is in the process of developing and strengthening an EPI partnership, and is considering a measles partnership, which has been very successful in the African Region of WHO, as one of the models.

Although there is a long-standing history of successful partnership in this Region on poliomyelitis eradication and EPI, a partnership to help Member States meet the challenge of measles elimination by 2012 is beginning to form in the Western Pacific Region. Currently, CDC, the United Nations Foundation, UNICEF, and WHO are informal members of this partnership. Other traditional donor agencies/NGOs/interested partners are invited to join the partnership.

Measles elimination and hepatitis B control are the two main pillars to support and strengthen EPI in the Western Pacific Region. A stronger EPI is also needed to maintain the Region's polio-free status. The clear targets for measles elimination and hepatitis B reduction recommended by the TAG provide an excellent opportunity to establish a strong, diverse and well-coordinated regional partnership.

The regional partnership would focus on:

- strengthening existing partnerships and induction of new partners;
- coordinating partner support and optimum utilization of partner strengths and resources by applying the successful partnership principles and lessons learnt from previous regional experience and the Measles Partnership for Africa;
- helping Member States to meet the regional measles elimination and hepatitis B control targets by strengthening routine EPI; and
- seeking, developing and capitalizing on opportunities to integrate measles elimination strategies with delivery of other interventions, such as vitamin A and bednets.

For the purpose of allocating resources, the measles partnership would consider the Western Pacific Region's three distinct areas, with the following resource requirements:

1. Asia countries without China – (2005 –2008: US\$ 15 000 000)
2. China – (2006 –2012: US\$ 300 000 000)
3. Pacific island countries – (2006 –2012: US\$ 2 500 000)

#### 4. CONCLUSIONS AND RECOMMENDATIONS

##### 4.1 Strengthening immunization services

The Technical Advisory Group (TAG) welcomes the resolution adopted by the World Health Assembly at its 58<sup>th</sup> meeting in May 2005 on the Global Immunization Vision and Strategies (GIVS) as an opportunity to strengthen and rejuvenate national immunization programmes (NIPs) in the Region. Each of the four strategic areas of the GIVS is relevant to all NIPs; strategies need to be prioritized and adapted to local situations.

Recommendations include:

- (1) Countries should use the GIVS as the framework for strengthening their national immunization programmes, incorporating the strategies in a comprehensive multiyear plan for immunization.
- (2) WHO, UNICEF and other partners should work with countries to implement the GIVS to ensure that immunization remains high on the political agenda, and that countries achieve the immunization coverage and morbidity and mortality reduction targets set by the United Nations General Assembly Special Session on Children and goal 4 (reducing under-five mortality by two-thirds between 1990 and 2015) of the Millennium Development Goals.

#### 4.2 Measles elimination

The Regional Committee for the Western Pacific, during its fifty-fourth session in 2003, resolved to eliminate measles, and the Region is continuing to progress towards elimination, with many countries at, or close to elimination. A target date is needed to focus efforts; facilitate resource mobilization; enable development of an appropriate implementation plan, complete with timeline and milestones; and rapidly bring to an end the unnecessary morbidity and mortality from measles in the Region.

Only a strong routine immunization system with high coverage of two doses of measles vaccine can achieve and sustain the 95% population immunity necessary to interrupt measles virus transmission and sustain measles elimination. However, measles coverage must not be at the expense of coverage with other EPI vaccines.

In July 2004, the Measles Task Force recommended setting 2012 as the target date for measles elimination. Experience in the Region and globally continues to confirm the feasibility of elimination.

Well planned and carefully targeted campaigns may be used to achieve rapid, but temporary:

- interruption of transmission in endemic areas;
- filling of gaps in population immunity (e.g., school-age children); and
- prevention of outbreaks.

Measles elimination can also be used as a platform for strengthening health systems because of the continuing need for very high coverage and sensitive communitywide surveillance systems. Measles incidence is an excellent indicator of coverage because measles is so infectious and visible. Thus, coverage can be validated by surveillance data.

Achieving regional measles elimination requires a commitment from all countries. The target date must be feasible and one that all can aspire to reach, recognizing that additional investments in health systems will be needed to achieve the goal.

The operational definition of measles elimination in the regional Measles Field Guidelines remains appropriate.

Recommendations include:

- (1) The Regional Director for the Western Pacific, at the fifty-sixth session of the Regional Committee in September 2005, should propose 2012 as the target date for regional measles elimination. It will be challenging to eliminate measles in every

country in the Region by that date, especially in China, where measles elimination may require more time and effort in some provinces.

- (2) Political commitment, as well as financial support for immunization is critical to the success of measles elimination and should be primarily mobilized at national and subnational levels. WHO and its partners should assist in this endeavour by establishing a regional measles partnership as part of the existing Interagency Coordinating Committee (ICC) framework.

#### 4.3 Hepatitis B control

Hepatitis B is an important and priority public health problem in most countries in the Western Pacific Region, causing approximately 300 000 deaths per year (approximately 22 deaths per 100 000 population). Universal childhood immunization with three doses of hepatitis B vaccine, with the first dose delivered within 24 hours of birth, is the most effective method for control of hepatitis B.

All Member States have already endorsed, through the Regional Committee Resolution of September 2003, a regional goal of <1% HBsAg prevalence in five-year-olds born after the introduction of universal infant hepatitis B immunization programme. A date to achieve that target has not yet been set.

Sustained high coverage (>90%) with three doses of hepatitis B vaccine and reaching at least 80% of births with the first dose within 24 hours of birth is likely to reduce HBsAg prevalence to <1% in vaccinated cohorts as result of individual protection combined with the impact of herd immunity. However, several countries still face challenges to achieving these levels of coverage, especially the timely birth dose.

There are increasing scientific data to show that hepatitis B with vaccine vial monitors (VVM) can be safely and effectively used out of the cold chain to protect more infants. However, current use remains limited.

Setting a milestone for progress towards achieving the hepatitis B regional goal that can be linked with the target date for regional measles elimination goal will reinforce the concept of partnership between these two pillars intended to strengthen EPI.

Recommendations include:

- (1) The TAG proposes setting the following regional targets of HBsAg prevalence in five-year-olds:
  - an interim milestone of <2% HBsAg prevalence in every country by 2012; and
  - achievement of the regional goal of <1% HBsAg prevalence in every country at a target date to be established.

A working group should be convened to develop the methodology and statistical analysis for assessment of each country's status and progress. In the interim, countries should continue to monitor progress towards reducing HBsAg prevalence using the best estimates of HepB3 and timely birth dose coverage, and should validate the HBsAg prevalence modelled from coverage data with at least one large nationally representative serosurvey. Where possible, the surveys should be undertaken as part of other national surveys.

- (2) Recognizing that timely birth dose delivery of the first dose of hepatitis B within 24 hours of birth is critical to achievement of this goal, the TAG recommends that every country should establish a system to monitor the timeliness of the birth dose (using the standard definition of 'within 24 hours of birth' as timely) and set a target of at least 80% for timely birth dose delivery.
- (3) To improve the delivery of a timely birth dose, more effort needs to be made to vaccinate those born in hospitals and health facilities, using strategies that strengthen the overall maternal health programme.
- (4) To improve access to vaccine, especially for a timely birth dose, countries can use hepatitis B vaccine out of the cold chain in accordance with WHO guidelines and national policies. WHO should develop additional guidelines on the situations and conditions where 'out-of-cold-chain' use is appropriate to help programmes implement the policy appropriately without negative impacts on safety and effectiveness for hepatitis B or other vaccines that should not be used out of the cold chain. In addition, the guidelines will need to address the regulatory issues of using a vaccine out of the cold chain.

#### 4.4 Maintaining poliomyelitis-free status

The Region remains poliomyelitis-free and is generally meeting the challenge of maintaining high quality AFP surveillance, as illustrated by the rapid detection of vaccine-derived polioviruses (VDPV) in China and the Lao People's Democratic Republic in 2004. The continued overall high performance of the Regional Poliomyelitis Laboratory Network plays a crucial role in documenting the sustained poliomyelitis-free status of countries and the Region.

However, immunization coverage is insufficient and further decreasing, and AFP surveillance indicators are not being met or maintained in a number of countries, reflecting performance problems at national and/or subnational levels.

The importation of wild poliovirus into many previously poliomyelitis-free countries of West and Central Africa, the Sudan, Saudi Arabia, Yemen and Indonesia (2005) shows the ease with which wild poliovirus is transmitted across international borders and proves that no country is safe from importations. All countries in the Region remain at risk of importation.

Efforts to complete and document the quality of phase I laboratory containment in the Western Pacific Region continue. The TAG agrees with the Regional Certification Commission that the quality assessment reports, received from all but three countries of the Region that have completed the laboratory survey and inventory activities, provide an important foundation for documenting the work done and for preparation of future stages of poliomyelitis eradication and eventually OPV cessation.

The level of available funding to sustain poliomyelitis-free status is a concern and may eventually be insufficient to support minimum requirements.

Recommendations include:

- (1) Maintaining highly sensitive acute flaccid paralysis (AFP) surveillance systems is essential for all countries for early detection of possible wild virus importations as well as emerging VDPVs. Quality surveillance should always include regular and detailed analysis of AFP surveillance information, including data from subnational levels, and priority investigation of high-risk AFP cases without adequate stool samples.

- (2) The TAG urges all countries to maintain high levels of immunity against polioviruses, particularly in young children, and to further improve the systematic monitoring of their immunity levels by regularly analysing the OPV immunization status of AFP cases aged <5 years, in addition to more traditional methods of monitoring routine and supplementary immunization OPV coverage and survey results.
- (3) The TAG reaffirms that each country must maintain and regularly update a preparedness plan for detection of, and response to imported poliovirus and circulating VDPV. The WHO secretariat should work closely with Member States to strengthen their capacity to rapidly detect and respond to both situations.
- (4) The TAG concurs with the recommendations of the Regional Certification Commission that, not only must phase 1 laboratory containment be of high quality and completed as soon as possible in the Western Pacific Region, but also that a critical review should be conducted of the quality assessment exercise to advise Member States if additional activities are required.
- (5) The TAG urges all poliomyelitis partners to provide the necessary support to protect the enormous investments made to reach and maintain poliomyelitis-free status, as a resurgence of poliomyelitis would cause enormous additional burdens on national health systems.
- (6) The TAG requests the WHO secretariat to follow up on the global poliomyelitis eradication situation and development of an appropriate vaccine strategy for the Region, including consideration of a consultation on inactivated poliovirus vaccine (IPV) and monovalent oral poliovirus vaccine (OPV).

#### 4.5 Interagency Coordinating Committee

A shared partnership that can leverage resources, enable diverse partners to contribute effectively and builds on the strengths of individual partners is essential for the Region to succeed in measles elimination and hepatitis B control.

Recommendations include:

- (1) The ICC recommends that WHO and its partners should proceed with establishing an immunization partnership and strengthen relations with partners. This partnership should enable mobilization and coordination of support for a range of EPI activities, including measles elimination, hepatitis B control, maintenance of poliomyelitis-free status, and strengthening of routine immunization in the Region.
- (2) As an important first step towards establishing a partnership, WHO and its partners should map out budgetary requirements and resource commitments by national governments, and should clarify the funding gaps to achieving measles elimination and hepatitis B control targets through strengthening routine EPI.
- (3) Country level ICCs should be re-energized and linked to the partnership at the regional level.
- (4) The WHO Western Pacific Regional Office should take the lead in following up with partners and should propose guiding principles for the partnership as well as mechanisms for partnership coordination, such as communications and frequency of meetings.

## 5. ACKNOWLEDGEMENTS

The TAG gratefully acknowledges the Ministry of Health, China, for the invitation to hold its 15th meeting in Beijing, China, and the Ministry of Health, Labour and Welfare of Japan for providing financial support for the meeting, including production of this document.

As in all previous meetings, the TAG gratefully acknowledges the outstanding contribution and participation of all partners in the EPI and poliomyelitis eradication, including the national governments of WHO Member States; the Government of Australia through the Australian Agency for International Development (AusAID); the Government of Japan through the Japan International Cooperation Agency (JICA); the Ministry of Health, Labour and Welfare of Japan through the WHO Technology Transfer Programme Office; the Centers for Disease Control and Prevention (CDC), United States of America; Rotary International; Rotary International District 2650; the United National Children's Fund (UNICEF); the World Bank; and the Shinnyo-En Foundation. In addition to funds, partner agencies have generously contributed technical, management and promotional expertise.

TIMETABLE

Time	Wednesday, 8 June	Time	Thursday, 9 June	Time	Friday, 10 June
08:00–08:30	<b>REGISTRATION</b>		<b>4 Hepatitis B control</b>		<b>6 Strengthening immunization services</b>
08:30–09:30	<b>1 Opening ceremony</b> <ul style="list-style-type: none"> <li>• Opening remarks</li> <li>• Self-introduction</li> <li>• Election of officers</li> <li>• Administrative announcements</li> <li>• Group photograph</li> </ul>	<b>08:00-08:30</b> <b>08:30-10:00</b>	(a) Regional overview (b) Country experiences <ul style="list-style-type: none"> <li>i China</li> <li>ii Viet Nam</li> <li>iii Mongolia</li> <li>iv Singapore</li> <li>v Philippines</li> </ul>	<b>08:00-08:30</b> <b>08:30-09:00</b> <b>09:00-09:30</b> <b>09:30-10:00</b>	(a) Multi-year planning and costing (b) Reaching unreached populations (c) Communication and social mobilization (d) Safe immunization
09:30-10:00	<i>Coffee break</i>	10:00-10:30	<i>Coffee break</i>	10:00-10:30	<i>Coffee break</i>
10:00-10:30	<b>2 Overview of programmes</b> <ul style="list-style-type: none"> <li>(a) Regional overview of Expanded programme on immunization (EPI)</li> <li>(b) Global context of EPI</li> </ul>	10:30-12:00	<b>Hepatitis B control (cont.)</b> Discussion on Hepatitis B control	10:30-11:00 11:00-11:30 11:30-12:00	<b>Strengthening immunization services (cont.)</b> <ul style="list-style-type: none"> <li>(e) Cold chain and logistics</li> <li>(f) Synergies with other interventions</li> <li>(g) Financial sustainability</li> </ul>
10:30-11:00	<b>3 Measles elimination</b> <ul style="list-style-type: none"> <li>(a) Regional overview</li> <li>(b) Country experiences <ul style="list-style-type: none"> <li>- Papua New Guinea</li> <li>- Cambodia</li> </ul> </li> </ul>				
11:00-11:30					
11:30-12:00					
12:00-13:00	<i>Lunch break</i>	12:00-13:00	<i>Lunch break</i>	12:00-13:00	<i>Lunch break</i>
13:00-15:00	<b>Measles elimination (cont.)</b> <ul style="list-style-type: none"> <li>(b) Country experiences (cont.) <ul style="list-style-type: none"> <li>- Viet Nam</li> <li>- China</li> <li>- Malaysia</li> <li>- Republic of Korea</li> <li>- Japan</li> </ul> </li> </ul>	13:00-13:30 13:30-14:00 14:00-14:30	<b>5 Maintaining poliomyelitis-free status</b> <ul style="list-style-type: none"> <li>(a) Update on global poliomyelitis eradication</li> <li>(b) Regional overview of poliomyelitis-free status</li> </ul> Discussion on poliomyelitis eradication	13:00-13:30 13:30-14:00 14:00-14:30	<b>Strengthening immunization services (cont.)</b> <ul style="list-style-type: none"> <li>(h) Getting the numbers right</li> </ul> Discussion on strengthening immunization services <b>Feedback from ICC meeting</b>
15:00-15:30	<i>Coffee break</i>	14:30-15:00	<i>Coffee break</i>	14:30-15:30	<i>Coffee break</i>
15:30-16:00	<b>Measles elimination (cont.)</b> <ul style="list-style-type: none"> <li>(c) Costing study of measles elimination</li> <li>(d) Measles laboratory network</li> </ul>	15:00-17:30	<b>Interagency Coordinating Committee (ICC) meeting</b>	15:30-17:00 17:00-17:30	<b>7 Conclusions and recommendations</b> <b>8 Closing ceremony</b>
16:00-16:20					
16:20-17:30	Discussion on measles elimination				
19:00	<b>Dinner hosted by Ministry of Health, China</b>	1900	<b>Dinner hosted by WHO Regional Director</b>		

**WORLD HEALTH  
ORGANIZATION**



**ORGANISATION MONDIALE  
DE LA SANTÉ**

**REGIONAL OFFICE FOR THE WESTERN PACIFIC  
BUREAU RÉGIONAL DU PACIFIQUE OCCIDENTAL**

**FIFTEENTH MEETING OF THE TECHNICAL ADVISORY GROUP (TAG) ON  
THE EXPANDED PROGRAMME ON IMMUNIZATION AND POLIOMYELITIS  
ERADICATION IN THE WESTERN PACIFIC REGION**

Beijing, China, 8-10 June 2005

**LIST OF TAG MEMBERS, PARTICIPANTS (EPI NATIONAL  
MANAGERS/SURVEILLANCE OFFICERS, MINISTRY/DEPARTMENT OF HEALTH  
STAFF), SHORT-TERM CONSULTANTS, OBSERVERS/REPRESENTATIVES  
AND SECRETARIAT**

**1. TECHNICAL ADVISORY GROUP MEMBERS**

Dr Stephen Cochi, Acting Director, National Immunization Program, Centers for Disease Control and Prevention, Atlanta, Georgia 30333, United States of America, Tel. No.: +1-404-639-8476, Fax No.: +1-404-639-8573, E-mail: [slc1@cdc.gov](mailto:slc1@cdc.gov); [scochi@cdc.gov](mailto:scochi@cdc.gov)

Dr Robert Hall, Director, Public Health and Chief Health Officer, Department of Human Services Level 18/120 Spencer Street, Melbourne, Victoria 3000, Australia, Tel. No.: +61-3-9637-4200, Fax No.: +61-3-9637-4250, E-mail: [Robert.G.Hall@dhs.vic.gov.au](mailto:Robert.G.Hall@dhs.vic.gov.au)

Dr Tatsuo Miyamura, Director, Department of Virology II, National Institute of Infectious Diseases Toyama 1-23-1, Shinjuku-ku, Tokyo 162-8640, Japan, Tel. No.: +81-3-5285-1111, Fax No.: +81-3-5285-1161, E-mail: [tmiyam@nih.go.jp](mailto:tmiyam@nih.go.jp)

Dr Mitsuhiro Ushio, Director, Division of Tuberculosis and Infectious Disease Control, Health Service Bureau, Ministry of Health, Labour and Welfare, 1-2-2 Kasumigaseki, Chiyoda-ku Tokyo 100-8916, Japan, Tel. No.: +81-3-3591 3060, Fax No.: +81-3-3581-6251, E-mail: [ushio-mitsuhiro@mhlw.go.jp](mailto:ushio-mitsuhiro@mhlw.go.jp)

Dr Yu Jingjin, Deputy Director-General, Department of Diseases Control, Ministry of Health No. 1 Xi Zhi Men Wai Nan Lu, Xicheng District, Beijing 100044 People's People's Republic of China, Tel. No.: +8610-6879-2331, Fax No.: +8610-6879-2514 E-mail: [yujj@moh.gov.cn](mailto:yujj@moh.gov.cn)

**2. EPI NATIONAL MANAGERS/SURVEILLANCE OFFICERS,  
MINISTRY/DEPARTMENT OF HEALTH STAFF**

Ms Letitia Toms, Assistant Director, Immunization Section, Department of Health and Ageing  
GPO Box 9848, Canberra, A.C.T. 2601, Australia Tel. No.: +612 6289 8572,  
Fax No.: +612 6289 3677, E-mail: [letitia.toms@health.gov.au](mailto:letitia.toms@health.gov.au)

Dr Hajah Anie Haryani binti Haji Abdul Rahman, Medical Officer, Division of Health School  
Services, Ministry of Health, Jalan Menteri Besar, Bandar Seri Begawan BB3910,  
Brunei Darussalam, TeleFax No.: +673 2380128, E-mail: [ahr1202@hotmail.com](mailto:ahr1202@hotmail.com)

Dr Sann Chan Soeung, Manager, National Immunization Programme, Ministry of Health  
125-129 Street 134, Veal Vong, 7 Makara, Phnom Penh, Cambodia, Tel. No.: (855) 12 933 344,  
Fax No.: (855) 23 426 167, E-mail: [sanns@nip.everyday.com.kh](mailto:sanns@nip.everyday.com.kh)

Ms Ly Nareth, Deputy Manager, National Immunization Programme, Ministry of Health,  
151 – 153 Kampuchea Krom Street, Phnom Penh, Cambodia, Tel. No.: (855) 12 620 481,  
E-mail: [immunization@nip.everyday.com.kh](mailto:immunization@nip.everyday.com.kh)

Dr Cui Gang, Director, Expanded Programme on Immunization, Ministry of Health,  
No. 1 Xizhimenwai Nanlu, Beijing 100044, China, Tel. No.: (8610)-68792355,  
Fax No.: (8610) 68792357, E-mail: [epiddc@moh.gov.cn](mailto:epiddc@moh.gov.cn)

Dr Yan Jun, Deputy director, Expanded Programme on Immunization, Ministry of Health  
No. 1 Xizhimenwai Nanlu, Beijing 100044, China, Tel. No.: (8610) 6879 2358,  
Fax No.: (8610) 6879-2357, E-mail: [epiddc@moh.gov.cn](mailto:epiddc@moh.gov.cn); [juney210@hotmail.com](mailto:juney210@hotmail.com)

Dr Bai HuQun, Deputy Director, Chinese Center for Disease Control and Prevention  
No. 27 Nan Wei road, Xuan Wu District, Beijing 10050, China, Tel. No.: (8610) 6303 0799,  
Fax No.: (8610) 6317 0894

Dr Liang Xiaofeng, Director, National Immunization Program, Chinese Center for Disease  
Control and Prevention, No. 27 Nan Wei road, Xuan Wu District, Beijing 10050, China  
Tel. No.: (8610) 6317 6737, Fax No.: (8610) 6317 6737, E-mail: [liangxf@hotmail.com](mailto:liangxf@hotmail.com)

Professor Leung Nai Kong, Chairman, Scientific Committee on Vaccine, Preventable Diseases  
Centre for Health Protection, Department of Health, Rm 808, 8th Fl, Hong Kong Academy of  
Medicine Jockey Club Building, 99 Wong Chuk Hang Road, Aberdeen, Hong Kong  
Tel. No.: (852) 2871 8842, Fax No.: (852) 2785 1850, E-mail: [leungk@netvigator.com](mailto:leungk@netvigator.com)

Dr Lam Chong, Coordinator, Control of Communicable Diseases (CDC), Department of Health,  
Government of Macao, P.O. Box 3002, Macao, Tel. No.: +853-533-525, Fax No.: +853-533-524,  
E-mail: [ndiv@ssm.gov.mo](mailto:ndiv@ssm.gov.mo)

Dr Nobuhiko Okabe, Director, Infectious Disease Surveillance Center, National Institute of  
Infectious Diseases, 1-23-1 Toyama Shinjuku-ku, Tokyo 162-8640, Japan  
Tel. No.: +81-3-5285 1111 (Ext. 2501), Fax No.: +81-3-5285-1129, E-mail: [okabenob@nih.go.jp](mailto:okabenob@nih.go.jp)

Associate Professor Dr Somthana Douangmala, Deputy Director, National Center of National  
Maternal and Child Health, Ministry of Health, Km 3, Thadeua Road, Vientiane  
Lao People's Democratic Republic, Tel. No.: (856)-21-350027, Fax No.: (856)-21-312120,  
E-mail: [somthdaml@laotel.com](mailto:somthdaml@laotel.com)

Dr Phengta Vongphrachanh, Deputy Director, National Center for Laboratory and Epidemiology  
Ministry of Health, Km 3, Thadeua Road, Vientiane, Lao People's Democratic Republic  
Tel. No.: +856-21-312351, Fax No.: +856-21-350209, E-mail: [Phengta@hotmail.com](mailto:Phengta@hotmail.com)

Dr Nirmal Singh, Deputy Director, Disease Control Division (Communicable Disease Control)  
Ministry of Health, Level 3, Block E 10, Parcel E, Pusat Pentadbiran Kerajaan Persekutuan  
62590 Putrajaya, Malaysia, Tel. No.: +603-8883411, Fax No.: +603-8886270,  
E-mail: [drnirmal9\\_11@hotmail.com](mailto:drnirmal9_11@hotmail.com)

Dr Dorj Narangerel, Officer, Communicable Diseases Control and National EPI Manager  
Ministry of Health, Olympic Street-2, Sukhbaatar duureg, Ulaanbaatar, Mongolia  
Tel. No.: +976-11-263631, Fax No.: +976-11-320926, E-mail: [naraa\\_61us@yahoo.com](mailto:naraa_61us@yahoo.com)

Dr Dugerjav Gantulga, Epidemiologist, EPI Team, National Center for Communicable Diseases  
Expanded Programme on Immunization Department, Ministry of Health, Ulaanbaatar, Mongolia,  
Tel. No.: +976-11 451798, Fax No.: +976-11 454921, E-mail: [gantulgad@magicnet.mog](mailto:gantulgad@magicnet.mog)

Dr Alison Roberts, Senior Advisor Public Health Medicine, Communicable Disease &  
Environmental Health Policy, Public Health Directorate, Ministry of Health, Wellington,  
New Zealand, DDI: 04 495 4384, Fax No.: 04 495 4479, E-mail: [alison\\_roberts@moh.govt.nz](mailto:alison_roberts@moh.govt.nz)

Mr Steven Toikilik, National EPI Manager, National Department of Health  
P.O. Box 807, Waigani, National Capital District, Papua New Guinea  
Tel. No.: +675-301-3752, Fax No.: +675-323-0177, E-mail: [stoikilik@hssp.com.pg](mailto:stoikilik@hssp.com.pg)

Mr Barry Ropa, National Surveillance Officer (Polio/Measles), Health Department Disease  
Control, Ministry of Health, P.O. Box 807, Waigani, NCD, Papua New Guinea,  
Tel. No.: +675-301-3938, Fax No.: +675-323-4515, E-mail: [bropa@health.gov.pg](mailto:bropa@health.gov.pg)

Dr Ma. Joyce Ducusin, Medical Specialist IV, National Center for Disease Prevention and  
Control, Department of Health, San Lazaro Compound, Tayuman, Sta Cruz, Manila, Philippines  
Tel. No.: (632) 711-6130, Fax No.: (632) 732-9956, E-mail: [juducusin@yahoo.com](mailto:juducusin@yahoo.com)

Dr Geraldine Anne Cruz-Crimen, Medical Specialist IV, National Center for Disease  
Prevention and Control, Department of Health, San Lazaro Compound, Tayuman, Sta Cruz  
Manila, Philippines, Tel. No.: (632) 711-6130, Fax No.: (632) 732-9956,  
E-mail: [geraldineannecruz@yahoo.com](mailto:geraldineannecruz@yahoo.com)

Dr Youngmee Jee, Chief, Division of Enteric and Hepatitis Viruses, Korea Center for Disease  
Control and Prevention, Nokbun-dong, Eunpyung-gu, Seoul 122-701, Republic of Korea  
Tel. No.: +822-380-1493, Fax No.: +822-382-6542, E-mail: [ymeejee@nih.go.kr](mailto:ymeejee@nih.go.kr)

Dr Gary Ong Pang Yeow, Assistant Director, Epidemiology and Diseases Control  
Ministry of Health, College of Medicine Building, 16 College Road, Singapore 169854  
Tel. No.: (65) 6325 8701, Fax No.: (65) 632 59194, E-mail: [Gary\\_ONG@moh.gov.sg](mailto:Gary_ONG@moh.gov.sg)

Professor Do Si Hien, Manager, National EPI, National Institute of Hygiene and Epidemiology  
Ministry of Health, No. 1 Yersin Street, Ha Noi 10 000, Viet Nam, Tel. No.: +844-821-4680,  
Fax No.: +844-821-3782, E-mail: [dshien@fpt.vn](mailto:dshien@fpt.vn)

Professor Nguyen Thu Yen, Chief, National AFP Surveillance, National Institute of Hygiene and  
Epidemiology, No. 1 Yersin Street, Ha Noi 10 000, Viet Nam, Tel. No.: +844-971-3433,  
Fax No.: +844-821-0487, E-mail: [yentc@hn.vnn.vn](mailto:yentc@hn.vnn.vn)

### **3. WHO CONSULTANT**

Dr Osman David Mansoor, Public Health Physician, Public Health Consulting, Ltd.  
4/14 College Street, Wellington, New Zealand, Tel. No.: +64-4-3844 877,  
Mobile: +64-21-134-9777, E-mail: [oz@phc.org.nz](mailto:oz@phc.org.nz)

#### **4. OBSERVERS**

Dr Hamid Jafari, Director, Global Immunization Division, Centers for Disease Control and Prevention, 1600 Clifton Road (E05) Atlanta, Georgia 30333 United States of America  
Tel. No.: 404-639-8252, Fax No.: 404-639-8676, E-mail: [hsj0@cdc.gov](mailto:hsj0@cdc.gov)

Dr Amra Uzicanin, Medical Epidemiologist, Global Immunization Division, National Immunization Program, Centers for Disease Control and Prevention, 1600 Clifton Road (E05) Atlanta, Georgia 30333, United States of America, Tel. No.: +1-404-639-8252  
Fax No.: +1-404-639-8573, E-mail: [aau5@cdc.gov](mailto:aau5@cdc.gov); [auzicanin@cdc.gov](mailto:auzicanin@cdc.gov)

Dr Susan Hills, Program Officer, CVP/PATH 1455 NW Leary Way, Seattle, WA 98107, United States of America, Tel. No.: 206-285-3500, Fax No.: 206-285 6619,  
E-mail: [shills@path.org](mailto:shills@path.org)

Mr Darin Zehrung, CVP/PATH, 1455 NW Leary Way, Seattle, WA 98107-5136, United States of America, Tel. No.: 206.285.3500, Fax No.: 206.285.6619, E-mail: [dzehrung@path.org](mailto:dzehrung@path.org)

Dr John Grundy, Temporary Adviser, CVP/PATH, P.O. Box 1684, Phnom Penh, Cambodia  
Tel. No.: +855 12 680 455, Fax No.: +855 23 720 172, E-mail: [jgrundy@path.org](mailto:jgrundy@path.org)

Dr Svay Sarath, Vice Director, National Immunization Programme, Ministry of Health Phnom Penh, Cambodia, Tel. No.: (855) 12 870 992, Fax No.: (855) 23 882 923,  
E-mail: [svays@nip.everyday.com.kh](mailto:svays@nip.everyday.com.kh)

Dr Wang Lixia, Project Officer, CVP/PATH, 27 Nanwei Lu, Xuanwu District, Beijing 100050, China, Tel. No.: 8610-6317 1724, Fax No.: 8610 6317 1724

Dr Vu Minh Hong, Program Director, CVP/PATH, Unit 01-02, Floor 2<sup>nd</sup> Ha Noi Towers, Hai Ba Trung, Hoan Kiem District, Ha Noi, Viet Nam, Tel. No.: 84-4-9362215,  
Fax No.: 84-4 9362216, E-mail: [hvu@path.org](mailto:hvu@path.org)

Dr Liang Guodong, Deputy Director, Virology Laboratory, China CDC, 100 Yingxin Lu Xuan Wu Qu, Beijing 100052, China, Tel. No.: 86-10-6351 0124, Fax No.: 86-10-6353 2053,  
E-mail: [gdluong@hotmail.com](mailto:gdluong@hotmail.com)

Dr Xu Aiqiang, Deputy Director, Shandong CDC, 72 Jingshi Lu, Jinan 250014, Shandong Province, China, Tel. No.: 86-531-2679626, Fax No.: 86-531-2964512

Dr Li Li, Technical Officer, National Immunization Program, China CDC, 27 Nanwei Lu, Xuanwu Qu, Beijing 100050, China, Tel. No.: 86-10-6317 1724, Fax No.: 86-10-6317 1724

Dr Yang Junfeng, Division Director, National Immunization Program, China CDC, 27 Nanwei Lu, Xuanwu Qu, Beijing 100050, China, Tel. No.: 86-10-6318 9994, Fax No.: 86-10-6317 1724

Dr Yu Wenzhou, Technical Officer, EPI Division, Department of Diseases Control, Ministry of Health, 1 Xizhimenwai Nan Lu, Xicheng Qu, Beijing 100044, China, Tel. No.: 86-10-6879 2357,  
Fax No.: 86-10-6879 2357, e-mail: [epiddc@moh.gov.cn](mailto:epiddc@moh.gov.cn)

Dr Diao Linqi, Director, EPI Department, Henan CDC, 47 Weiwu Lu, Zhengzhou 450003, China, Tel. No.: 86-371-5589203, Fax No.: 86-371-5946370

Dr Zhou Yong, Director, EPI Department, Fujian CDC, 76 Jintai Lu, Gulou Qu, Fuzhou 350001, China, Tel. No.: 86-591-87675361, Fax No.: 86-591-87675361

Dr Liu Dawei, Director, EPI Department, Beijing CDC, 16 Hepingli Zhongjie, Beijing 100013, China, Tel. No.: 86-10-6421 2461 ext 533, Fax No.: 86-10-6422 9410

Dr Xu Xuqing, Deputy Director, EPI Department, Zhejiang CDC, 17 Laozhe dazhilu, Hangzhou 310009, China, Tel. No.: 86-571-8723 5094, Fax No.: 86-571-8723 5095

Dr Liu Qinglian, Deputy Director, EPI Department, Sichuan CDC, 40 Huaishu Jie, Chengdu 610031, China, Tel. No.: 86-28-8663 4739, Fax No.: 86-28-8663 4739

Dr Liu Danqing, Deputy Director, EPI Department, Anhui CDC, 377 Wuhu Lu, Hefei 230061, China, Tel. No.: 86-551-286 3598, Fax No.: 86-551-286 3598

Dr Leng Hongying, Technical Officer, EPI Department, Jiangsu CDC, 172 Jiangsu Lu, Nanjing 210009, China, Tel. No.: 86-25-8375 9335, Fax No.: 86-25-8375 9420

Dr Shao Xiaoping, EPI Department, Guangdong CDC, 176 Xingang Xilu, Guangzhou 510300, China, Tel. No.: 86-20-8419 5397, Fax No.: 86-20-8419 5397

Dr Zheng Xiaochang, Deputy Director, EPI Department, Hainan CDC, 44 Haifu Dadao, Haikou 570203, China, Tel. No.: 86-898-65340425, Fax No.: 86-898-65333245

Dr He Haiyan, EPI Department, Tianjin CDC, 76 Hualongdao, Hedong Qu, Tianjin 300011, China Tel. No.: 86-22-2602 2804, Fax No.: 86-22-2602 286

Dr Siu Yuen Lee, Principal Medical and Health Officer, (Programme Development), Programme Management and Professional Branch Development, Centre for Health Protection, Department of Health, Hospital Authority Building, 47B Argyle Street, Kowloon, Hong Kong, Tel. No.: (852) 2199 9101, Fax No.: (852) 2715 6815, E-mail: s\_y\_lee@dh.gov.hk

Dr Kong Pan, Sanitary Authority, Control of Communicable Diseases, Centre for Disease Control Department of Health, P.O. Box 3002, Macao, Tel. No.: +853 533525, Fax No.: +853 533524, E-mail: kpan@ssm.gov.mo

Dr Song Mi Moon, Senior Researcher, Vaccine and Preventable Disease Control and National Immunization Programme Division, Korea Centre for Disease Control and Prevention, 5 Nokbun-dong, Eunpyoung-gu, Seoul, Republic of Korea, Tel. No.: 822-380-1445, Fax No.: 822 352 8235, E-mail: moon7796@hanmail.net

Dr Haruhiko Hakuno, Division of Tuberculosis and Infectious, Disease Control, Health Service Bureau, Ministry of Health, Labour and Welfare, 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8916, Japan, Tel. No.: +81-3-3591 3060, Fax No.: +81-3-3581-6251, E-mail: hakuno-haruhiko@mhlw.go.jp

Dr Ivone Rizzo, GAVI Secretariat, c/o UNICEF, Geneva, Switzerland, Tel. No.: +41-22-9095447, Fax No.: +41-22-9095931, E-mail: irizzo@unicef.org

Dr Toru Chosa, Senior Consultant, Bureau of International Cooperation, International Medical Center of Japan, Ministry of Health, Labour and Welfare, 1-21-1 Toyama, Shinjuku-ku, Tokyo 162-8655, Japan, Tel: 81-3 3202-7171, Fax: 81 3 3205-7860, E-mail: t-chosa@it.imcj.go.jp

Mr Koji Fujiya, Vice Resident Representative, Japan International Cooperation Agency, Beijing China, Tel. No.: (010) 6590-9250, Fax No.: (020) 6590 9260, E-mail: Fujiya.Koji@jica.go.jp

Dr Yasuo Kamitani, Governor 2004-2005, Rotary International District 2650, 12-5 Shirogane-cho Tsuruga-city, Fukui 914-0054, Japan, Tel. No.: +81-770-2342323, Fax No.: +81-770-20-0010

Mr Eiji. Sonoda, Chairperson, World Community Service Committee, Rotary International District 2650, 12-5 Shirogane-cho Tsuruga-city, Fukui 914-0054, Japan, Tel. No.: +81-770-2342323, Fax No.: +81-770-20-0010

Mr Kazuharu Mawaribuchi, Chairperson, Polio Eradication Fund Raising Campaign Committee, Rotary International District 2650, 12-5 Shirogane-cho Tsuruga-city, Fukui 914-0054, Japan Tel. No.: +81-770-2342323, Fax No.: +81-770-20-0010

Dr Francois Gasse, Senior Health Advisor, UNICEF, 3 United Nations Plaza (H-8A), New York, New York 10017, United States of America, Tel. No.: 1 212 326 73 35, Fax No.: 1 212 824 64 60, E-mail: fgasse@unicef.org

Mr Basil Rodriques, Regional Immunization Officer, UNICEF East Asia and Pacific Regional Office, P.O. Box 2-154, Bangkok 10200, Thailand, Tel. No.: +662-356-9427, Fax No.: +662-280-3563/4, E-mail: brodriques@unicef.org

Ms Susan Mackay, Regional Programme Communication Officer, UNICEF East Asia and Pacific Regional Office, P.O. Box 2-154, Bangkok 10200, Thailand, Tel. No.: +(66 2) 356 9206, Fax No.: +662-280-3563/4, E-mail: smackay@unicef.org

Dr Rasoka Thor, Maternal Child Health Project Officer, UNICEF Cambodia Country Office, No. 11, Street 75, Phnom Penh, Cambodia, Tel. No.: 855-23-426-714, Fax No.: 855 23 426-284, E-mail: rthor@unicef.org

Mr Chum Aun, Assistant Project Officer, Expanded Programme on Immunization, No. 11, St. 75<sup>th</sup>, Sraschak Quarter, UNICEF Phnom Penh Office, P.O. Box 176, Phnom Penh, Cambodia, Tel. No.: 855-23 426 214-5; 855-12-865-755, Fax No.: 855-23 426 284, E-mail: achum@unicef.org

Dr Chea Kimly, Deputy Manager, National Immunization Programme, Ministry of Health| Phnom Penh, Cambodia, Tel. No.: (855) 11727276, Fax No.: (855) 426167, E-mail: cheak@nip.everyday.com.kh

Dr Koenraad Vanormelingen, Chief, Health and Nutrition, UNICEF Beijing Office, 12, Sanlitun Lu, Beijing 100600, China, Tel. No.: (86-10) 65323131 Ext 1605, Fax No.: (86-10) 65323107, E-mail: kvanormelingen@unicef.org

Dr Xu Zhu, Project Officer, Health and Nutrition, UNICEF Beijing Office, 12, Sanlitun Lu, Beijing 100600, China, Tel. No.: (86-10) 65323131 Ext 1605, Fax No.: (86-10) 65323107 E-mail: xzhu@unicef.org

Dr Ingrid Hilman, EPI Project Officer, UNICEF Laos Country Office, Km-3, Thadeua Road P.O. Box 1080, Vientiane, Lao People's Democratic Republic. Tel. No.: (856 21) 315 200-04, Ext 108, Fax No.: (856-21) 314-852, E-mail: ihilman@unicef.org

Dr Somchit Akkhavong, Deputy Director, Department of Hygiene and Prevention Ministry of Health, Vientiane, Lao People's Democratic Republic Tel. no.: (856) 561 8040, Fax no.: (856) 252 911, Email: svilayrack@yahoo.com

Dr Marisa Ricardo, Project Officer, Expanded Programme on Immunization, UNICEF P.O. Box 1076, Makati Central Post Office, 1250 Makati City, Philippines, Tel. No.: +632-892-0611 to 25, Fax No.: +632-810-1453, E-mail: mricardo@unicef.org

Dr Pham Ngoc Len, Project Officer, Health and Nutrition, UNICEF Ha Noi Office 72 Ly Thuong Kiet St, Ha Noi, Viet Nam, Tel. No.: +844 935-0028 to 33 (ext 258), Fax No.: +844 942 5705, E-mail: pnlen@unicef.org

Dr Jama Gulaid, Section Chief, Health and Nutrition, UNICEF, Viet Nam  
72 Ly Thuong Street, Ha Noi, Viet Nam, Tel. No.: +84-4942-5706,  
Fax No.: +84-4 942 5704, E-mail: [jgulaid@unicef.org](mailto:jgulaid@unicef.org)

Dr Nguyen Thi Hien Thanh, Laboratory of Enteroviruses, National Institute of Hygiene and  
Epidemiology, Ministry of Health, 1 Yersin Street, Hanoi 10 000, Viet Nam,  
Tel. No.: (844) 826-6352, Fax No.: (844) 821-0853, E-mail: [nihe@netnam.org.vn](mailto:nihe@netnam.org.vn);  
[nththanh@fpt.vn](mailto:nththanh@fpt.vn)

Professor Nguyen Thi Kim Tien, Director, Pasteur Institute-Ho Chi Minh City, 167 Pasteur  
Street, District 3, Ho Chi Minh City, Viet Nam, Tel. 84-8-8 203 313, Fax. 84-8-8 231 419,  
E-mail: [ktien@pasteur-hcm.org.vn](mailto:ktien@pasteur-hcm.org.vn)

Professor Dang Tuan Dat, Director, Institute of Hygiene and Epidemiology, Highland Region,  
59 Hai Ba Trung Street, Buon Me Thuot City, Dak Lak Province, Viet Nam,  
Tel No.: 84-50-859 183, Fax No.: 84-50-852 423, E-mail: [ihetn@dng.vnn.vn](mailto:ihetn@dng.vnn.vn);  
[datkadal2002@yahoo.com](mailto:datkadal2002@yahoo.com)

Dr Bui Trong Chien, Director, Pasteur Institute-Nha Trang, 8 Tran Phu Street, Khanh Hoa  
Province, Nha Trang City, Viet Nam, Tel. No.: 84-58-823 934, Fax No.: 84-58-824 058,  
E-mail: [chienpasteur@dng.vnn.vn](mailto:chienpasteur@dng.vnn.vn)

Dr Nguyen Van Cuong, National EPI Secretary, National Institute of Hygiene and  
Epidemiology, 1 Yersin Street, Ha Noi, Viet Nam, Tel. No.: 84-4-9.721.334,  
Fax No.: 84-4-8.213.782, E-mail: [vancuong@fpt.vn](mailto:vancuong@fpt.vn)

Dr Andrea Gay, United Nations Foundation, 1301 Connecticut Avenue, NW,  
Washington, DC 20036, United States of America, Tel. No.: 202 887-9040,  
Fax No.: 202-887-9021, E-mail: [agay@unfoundation.org](mailto:agay@unfoundation.org)

## **5. SECRETARIAT**

Dr Shigeru Omi, Regional Director, World Health Organization Regional Office for the Western  
Pacific, United Nations Avenue, 1000 Manila, Philippines, Tel. No.: +632 528-8001  
Fax No.: +632 521-1036, E-mail: [omis@wpro.who.int](mailto:omis@wpro.who.int)

Dato' Dr Tee Ah Sian, Director, Combating Communicable Diseases, World Health Organization  
Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Philippines  
Tel. No.: +632 528-8001, Fax No.: +632 521-1036, E-mail: [Teeahsian@wpro.who.int](mailto:Teeahsian@wpro.who.int)

Dr Wu Guogao, External Relations Officer, External Cooperation and Partnership,  
World Health Organization, Regional Office for the Western Pacific, United Nations Avenue  
1000 Manila, Philippines, Tel. No.: +632-528-8001, Fax No.: +632-521-1036,  
E-mail: [wug@wpro.who.int](mailto:wug@wpro.who.int)

Dr Yang Baoping, Regional Adviser, Expanded Programme on Immunization, World Health  
Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila  
Philippines, Tel. No.: +632 528-8001, Fax No.: +632 521-1036, E-mail: [yangb@wpro.who.int](mailto:yangb@wpro.who.int)

Dr Yoshikuni Sato, Medical Officer, Expanded Programme on Immunization, World Health  
Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila  
Philippines, Tel. No.: +632-528-9742, Fax No.: +632-521-1036, E-mail: [satoy@wpro.who.int](mailto:satoy@wpro.who.int)

Dr Sigrun Roesel, Medical Officer, Expanded Programme on Immunization, World Health  
Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila  
Philippines, Tel. No.: +632-528-9741, Fax No.: +632-521-1036, E-mail: [roesels@wpro.who.int](mailto:roesels@wpro.who.int)

Mr Wayne Antkowiak, Technical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue 1000 Manila, Philippines, Tel. No.: +632-528-9751, Fax No.: +632-521-1036  
E-mail: [antkowiak@wpro.who.int](mailto:antkowiak@wpro.who.int)

Dr Kazunobu Kojima, Scientist (Laboratory Virologist), Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue 1000 Manila, Philippines, Tel. No.: +632-528-9750, Fax No.: +632-521-1036,  
E-mail: [kojimak@wpro.who.int](mailto:kojimak@wpro.who.int)

Dr Ernest Smith, Medical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila Philippines, Tel. No.: +632-528-9746, Fax No.: +632-521-1036, E-mail: [smithe@wpro.who.int](mailto:smithe@wpro.who.int)

Ms Margaret Hercules, Technical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila Philippines, Tel. No.: +632-528-9740, Fax No.: +632-521-1036, E-mail: [herculesm@wpro.who.int](mailto:herculesm@wpro.who.int)

Dr Manju Rani, Short-term Professional, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila Philippines, Tel. No.: +632-528-8001, Fax No.: +632-521-1036, E-mail: [hiraokah@wpro.who.int](mailto:hiraokah@wpro.who.int)

Dr Kohei Toda, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office, No. 177-179 corner Streets Pasteur (51) and 254, P.O. Box 1217, Sangkat Chak Tomouk Khan Daun Penh, Phnom Penh, Cambodia. Tel. No.: +855-23 216610, Fax No.: +855-23 216211, E-mail: [todak@cam.wpro.who.int](mailto:todak@cam.wpro.who.int)

Dr Hendrik Bekedam, WHO Representative, People's People's People's Republic of China, 401, Dongwai Diplomatic Office Building, 23, Dongzhimenwai Dajie, Chaoyang District Beijing 1000600, China, Tel. No.: (8610) 6532-7189, Fax No.: (8610) 6532-2359  
E-mail: [bekedamh@chn.wpro.who.int](mailto:bekedamh@chn.wpro.who.int)

Dr Lisa Lee, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office – China, 401, Dongwai, Diplomatic Office Building, Chaoyang District, Beijing 100600 China, Tel. No.: +8610 6532 7189 to 92, Fax No.: +8610 6532-2359,  
E-mail: [leel@chn.wpro.who.int](mailto:leel@chn.wpro.who.int)

Dr Yoshihiro Takashima, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office – China, 401, Dongwai Diplomatic Office Building, Chaoyang District Beijing 100600, China, Tel. No.: +8610 6532 7189 to 92, Fax No.: +8610 6532-2359,  
E-mail: [takashimay@chn.wpro.who.int](mailto:takashimay@chn.wpro.who.int)

Dr Stephen Hadler, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office – China, 401, Dongwai Diplomatic Office Building, Chaoyang District Beijing 100600, China, Tel. No.: +8610 6532 7189 to 92, Fax No.: +8610 6532-2359  
E-mail: [hadlers@chn.wpro.who.int](mailto:hadlers@chn.wpro.who.int)

Dr Ni Daxin, Programme Assistant, Expanded Programme on Immunization, WHO Representative's Office – China, 401, Dongwai, Diplomatic Office Building, Chaoyang District, Beijing 100600 China, Tel. No.: +8610 6532 7189 to 92, Fax No.: +8610 6532-2359,  
E-mail: [NiD@chn.wpro.who.int](mailto:NiD@chn.wpro.who.int)

Dr Craig Wilson, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office – Lao People's Democratic Republic, Ban Phonxay, That Luang Road, Vientiane Lao People's Democratic Republic, Tel. No.: (856) 21 413-431, Fax No.: (856) 21 413-432,  
E-mail: [wilsonc@lao.wpro.who.int](mailto:wilsonc@lao.wpro.who.int)

Dr Jamsran Mendsaikhan, Immunization Officer, Expanded Programme on Immunization, WHO Representative's Office – Mongolia, c/o Ministry of Public Health, Ulaanbaatar-13 Mongolia, Tel. No.: +976-11-32 7870, Fax No.: +976-11-32 4683, E-mail: [mendsaikhan@mog.wpro.who.int](mailto:mendsaikhan@mog.wpro.who.int)

Dr Lei Jie, Short-term Professional Staff, Expanded Programme on Immunization, WHO Representative's Office – Papua New Guinea, 4<sup>th</sup> Floor, AOPIC Centre, Waigani Drive Papua New Guinea, Tel. No.: (675) 325-7827, Fax No.: (675) 325-0568 E-mail: [leij@png.wpro.who.int](mailto:leij@png.wpro.who.int)

Dr Howard Sobel, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office – Philippines, c/o Department of Health, San Lazaro Compound, Rizal Avenue, Sta. Cruz Manila, Philippines, Tel. No.: +632-338-7479, Fax No.: +632-731-3914, E-mail: [sobelh@phl.wpro.who.int](mailto:sobelh@phl.wpro.who.int)

Mr Richard Duncan, Short-term Professional, Expanded Programme on Immunization WHO Representative's Office, Level 4 Provident Plaza One, Downtown Boulevard 33 Ellery Street, Suva, Fiji, Tel. No.: +679 3-304600, Fax No.: +679 3-304631 E-mail: [duncanr@fij.wpro.who.int](mailto:duncanr@fij.wpro.who.int)

Dr Hitoshi Murakami, Medical Officer, Expanded Programme on Immunization, WHO Representative's Office, 63 Tran Hung Dao Street, Hoan Kiem District, Ha Noi Viet Nam, Tel. No.: +844 943-3734, Fax No.: +844 943-3740, E-mail: [MurakamiH@vtn.wpro.who.int](mailto:MurakamiH@vtn.wpro.who.int)

Dr Jean-Marie Okwo-Bele, Director, Immunization, Vaccines and Biologicals (IVB), Family and Community Health (FCH), World Health Organization, 20 Avenue Appia, 1211 Geneva 27 Switzerland, Tel. No.: +41 22 791-2111, Fax No.: +41 22 791-4193, E-mail: [okwobelej@who.int](mailto:okwobelej@who.int)

Dr Julian Bilous, Coordinator, Expanded Programme on Immunization, Department of Immunization, Vaccines and Biologicals (IVB), Family and Community Health (FCH) World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland Tel. No.: +41 22 791-2111, Fax No.: +41 22 791-3111, E-mail: [bilousj@who.int](mailto:bilousj@who.int)

Dr Bradley Hersh, Medical Officer, Expanded Programme on Immunization, Department of Immunization, Vaccines and Biologicals (IVB), Family and Community Health (FCH), World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland, Tel. No.: +41 22 791 2111, Fax No.: +41 22 791 3111, E-mail: [hershbr@who.int](mailto:hershbr@who.int)

Mr Christopher Maher, Scientist, Representative of the Director-General, Polio Eradication Initiative World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland, Tel. No.: +41 22 791 2111, Fax No.: +41 22 791 3111, E-mail: [maherc@who.int](mailto:maherc@who.int)

Dr Brenton Burkholder, Regional Adviser, Immunization and Vaccines Development Regional Office for South-East Asia, World Health Organization, World Health House Indraprastha Estate, Mahatma Gandhi Road, New Delhi 110002, India, Tel. No.: +91-11 337 0804, Fax No.: +91-11 337 9707, 0197, 9395, E-mail: [burkholderb@whosea.org](mailto:burkholderb@whosea.org)