REPORT

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

Manila, Philippines
13-15 August 2001

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NOTE

The views expressed in this report are those of the participants of the twelfth 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:

Poliomyelitis - prevention and control / Epidemiologic surveillance - standards / Immunization programmes / National health programmes / Certification / Western Pacific

This report has been printed by the Regional Office for the Western Pacific of the World Health Organization for the participants in the Technical Advisory Group on the Expanded Programme on Immunization and Poliomyelitis Eradication in the Western Pacific Region, which was held in Manila, Philippines, from 13-15 August 2001.
SUMMARY

The twelfth meeting of the Technical Advisory Group (TAG) on the Expanded Programme on Immunization (EPI) and Poliomyelitis Eradication in the Western Pacific Region was held from 13 to 15 August 2001 in Manila, the Philippines. This was attended by the members of the TAG, Chairman and Vice Chairman of the Regional Certification Commission (RCC), EPI and surveillance managers from countries within the Western Pacific Region, representatives from regional and national poliomyelitis reference laboratories, international organizations, other partners in poliomyelitis eradication and a secretariat.

The purpose of the meeting was to review the EPI, including maintenance of poliomyelitis-free status after its certification in the Region, and to make recommendations on objectives and strategies towards further reduction of vaccine-preventable diseases and achieving and sustaining high quality national immunization programmes.

Since the eleventh TAG meeting in October 2000, progress has been achieved in the maintenance of poliomyelitis-free status in the Region; at the same time, new developments have been made towards strengthening routine immunization, accelerating measles control, eliminating maternal and neonatal tetanus, conducting safe immunization, and introducing new or under-utilized vaccines.

Despite the success of EPI programmes, vaccine-preventable diseases continue to cause a high burden of illness and death among children. Thus, the EPI programme will need to continue as a priority public health programme in the Region. The emphasis of EPI should not only be on achieving higher immunization coverage, but also on disease prevention, control and eventually elimination and eradication.
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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 with the purpose of advising the WHO Western Pacific Regional Office (WPRO) on strengthening the EPI and the newly established poliomyelitis eradication initiative, following the 1988 resolution of the Western Pacific Regional Committee of WHO to eradicate poliomyelitis from the Region by 1995.

On 29 October 2000, the Regional Commission on the Certification of Poliomyelitis Eradication (RCC) declared the Western Pacific Region poliomyelitis-free as no indigenous wild poliovirus was detected since 19 March 1997 under conditions of high quality surveillance in all countries and areas.

The eleventh meeting of the TAG was held on 30 October 2000 in Kyoto, Japan to make recommendations on maintaining poliomyelitis-free status until global eradication is achieved. The objectives of the tenth meeting of the TAG (Manila, 3-4 April 2000) had also focused on poliomyelitis eradication to ensure that countries could comply with criteria for certification as laid down by the RCC.

The ninth TAG meeting (3-6 November 1998) had not only reviewed the situation of poliomyelitis eradication, but also the EPI and made recommendations for action on EPI and other disease control initiatives.

Besides the attainment of poliomyelitis-free status, progress has also been made in other areas of EPI and disease control. Measles has declined substantially in the Western Pacific Region over the past 25 years and most countries have attained the 90% disease reduction and 95% mortality reduction goals set by the 1989 World Health Assembly as a result of high routine coverage with measles vaccine. There is considerable variation in vaccine coverage rates in different countries. For the Region, the overall reported coverage with a single dose of a measles containing vaccine was 95% in 1999. Despite this, measles is still the EPI target disease that causes the greatest childhood morbidity and mortality in the Region.

Neonatal tetanus (NT) has been eliminated in all but six countries of the Region. China, the Philippines and Viet Nam have succeeded in reducing the incidence to less than one case per 1000 live births (LB) at the province/prefecture level (population unit of approximately one million) but have not yet reached the elimination goal of less than one case per 1000 LB at district level. Cambodia, Lao People's Democratic Republic and Papua New Guinea have high-risk areas for NT and do not meet elimination criteria at the provincial/prefecture level.

The introduction of hepatitis B vaccine into the routine immunization programmes of Cambodia and Lao People's Democratic Republic was scheduled for September 2001. All National Immunization Programs (NIP) in the Western Pacific Region will then provide vaccination against this disease. Assessments of the disease burden caused by *Haemophilus influenzae* type b (Hib) are currently underway in some countries in the Region. These studies will enable an assessment of the relative benefits of introducing Hib vaccine into respective national routine immunization programmes in the Region. The introduction of hepatitis B vaccine in Cambodia and Lao People's Democratic Republic is supported by the Global Alliance for Vaccines and Immunization (GAVI), which brings together traditional and new partners to revitalise immunization programmes and to accelerate the introduction of new vaccines. Finally, the issue of immunization safety becomes increasingly important, as programmes mature, diseases are controlled and adverse events following immunization (AEFI) gain more prominence.

The development of safe immunization including surveillance for AEFI is being promoted as part of the strengthening of immunization programmes in the Region. Given the large number of disposable syringes being used for immunization, safe disposal of used syringes has become an important issue, for health as well as the environment. This issue needs to be addressed effectively and efficiently.
1.1 Objectives

The TAG held its twelfth meeting at the WHO Regional Office for the Western Pacific in Manila, Philippines from 13 to 15 August 2001, with the following objectives:

(1) to review the situation of the EPI on Immunization in the Western Pacific Region including poliomyelitis eradication after certification of poliomyelitis-free status;

(2) to make further recommendations on objectives and strategies towards the reduction of vaccine-preventable diseases including the control and elimination of measles and neonatal tetanus, based upon review of epidemiological situation and progress made since the 9th TAG meeting;

(3) to make recommendations on strategies for achieving and/or sustaining high quality national immunization programmes in the Western Pacific Region, including immunization safety, management of vaccine supply and cold chain, and introduction of new vaccines;

(4) to review progress on new technical developments and make recommendations for sustaining the poliomyelitis-free status of the Western Pacific Region towards global certification of poliomyelitis eradication; and

(5) to disseminate information on the latest developments in EPI and disease outbreak elimination and control.

1.2 Organization

The meeting was attended by 69 participants and observers. These included six TAG members, EPI managers from 16 countries within the Western Pacific Region, representatives from the national and regional reference laboratories, international organizations, WHO South-East Asia Region, other partners in poliomyelitis eradication and a secretariat.

Annex 1 shows the timetable of the meeting and Annex 2 contains the list of participants.

1.3 Opening ceremony

Dr S. Omi, Director of WHO Western Pacific Regional Office, opened the meeting by welcoming the participants and reminding everybody of the tremendous success of achieving poliomyelitis-free status last year. In addition, he thanked all those involved for making this achievement possible.

Dr Omi welcomed the three new TAG members and expressed his thanks to the three members who had retired. He also expressed thanks to the Interagency Coordinating Committee (ICC) for coordinating the partner support that had been essential for the poliomyelitis eradication achievement under the chairmanship of Mr Brian Knowles, chairman of Rotary International's Regional Poliomyelitis-plus Programme, who will be retiring in 2002.

Dr Omi deliberated on four main areas to be discussed during the meeting, the most important to be continuing activities needed for poliomyelitis eradication until global certification is achieved. This includes achieving high levels of immunization coverage to maintain immunity and high quality surveillance to rapidly detect and control any importation of wild poliovirus and prevent emergence of vaccine derived polioviruses (VDPV) to circulate.

Second, once global poliomyelitis eradication is certified (anticipated in 2005) the next disease target that will be considered for global efforts will be measles. He summarized that there is already great progress made in measles control in the Region with Australia, Mongolia, and the Pacific island countries (PICs) appearing to have interrupted measles transmission. In the past year mass measles immunization campaigns were also conducted in Cambodia, the Lao People’s Democratic Republic, Republic of Korea, Viet Nam, and selected areas in China with further campaigns planned in the coming year.
Third, the elimination of maternal and neonatal tetanus is another priority for the six countries in the Region where this remains a public health problem and Dr Omi emphasized that the Regional Office for the Western Pacific is working closely with the United Nations Children’s Fund (UNICEF) to reinvigorate the strategy to eliminate maternal and neonatal tetanus by the year 2005.

Fourth, there are also many new vaccines that will become available in the future, and Dr Omi noted that the Region is once again taking a lead on introducing new vaccines as hepatitis B is going to be in the immunization programme of every country in the Region by the end of 2001. He emphasized that hepatitis B control is especially important in this Region because of its high prevalence in the area.

Dr Omi concluded that it remains essential to have high quality immunization services that reach all parts of the population, especially those that are usually not reached. Not only is the issue of coverage for routine services a major challenge, immunization services must ensure that immunization is delivered safely and with effective vaccine of proven quality.

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

Chairman - Dr Isao Arita
Vice-chairman - Dr Robert Hall
Rapporteur - Dr Roland Sutter

2. PROCEEDINGS

2.1 Regional EPI overview

Since the 11th TAG meeting in October 2000, maintenance of poliomyelitis-free status in the Region remains the highest priority of the EPI program. At the same time, more effort has been given to strengthen routine immunization, accelerate measles control, eliminate maternal and neonatal tetanus, conduct safe immunization, and introduce new/under-utilized vaccines.

A WHO/UNICEF joint strategic plan on EPI for 2000-2004 was developed by the Regional Office for the Western Pacific and UNICEF East Asia and Pacific Regional Office (EAPRO). The plan reflects the priorities of both organizations, outlines major strategies and provides an overall framework for immunization related activities, within which WHO and UNICEF can work in close cooperation.

Immunization coverage across the Region has been generally high since 1990. Some countries, however, have had difficulties achieving high routine coverage and other countries are facing challenges for sustaining the quality and coverage of services.

In 2000, the Regional coverage for EPI antigens was 96% for BCG, 95% for DPT3, 96% for oral polio vaccine (OPV) 3, 96% for measles vaccine and 72% for two or more doses of tetanus toxoid (TT2+) for pregnant women (see Figure 1).
In addition, Hib vaccine coverage was 94% based on reports from some PICs, Australia and New Zealand.

Some countries had overall low immunization coverage and some countries had pockets of low immunization coverage in provinces or districts, even when overall national coverage was high. Routine immunization is essential to maintain population immunity against EPI target diseases and to maintain poliomyelitis-free status in particular.

2.1.1 Sustaining poliomyelitis-free status

The RCC concluded in October 2000 in Kyoto, Japan that the transmission of indigenous wild poliovirus had been interrupted in all countries and areas of the Region. It therefore certified the Region as poliomyelitis-free.

Since the onset of the last poliomyelitis case due to indigenous wild poliovirus in the Region on 19 March 1997, over 27,000 cases of acute flaccid paralysis (AFP) have been reported and investigated in the Region. Adequate stool specimens were collected from 23,000 AFP cases and analyzed by WHO accredited laboratories (see Figure 2).

Figure 1. Western Pacific Region Immunization Coverage 1998-2000

![Bar chart showing immunization coverage](source)

* Data of Hib vaccine were from some PICs, Australia

Figure 2. Cumulative AFP Cases since March 1997, Western Pacific Region

![Line graph showing cumulative AFP cases](source)
The Region needs to report 5000 non-polio AFP cases (1 per 100 000 children) under 15 years of age to meet minimal requirements of sensitivity of AFP surveillance. The Regional non-polio AFP rate for 2000 was 1.49 per 100 000 children under age 15, and 90% of all AFP cases had two stool samples taken within 14 days of onset.

In 2001, the surveillance quality has been sustained, with over 3000 non-polio AFP cases reported as of 10 August 2001 and the adequate stool sample collection rate was 87% (See Figure 3). All countries maintained a high level of performance after the Region was certified as poliomyelitis-free in terms of non-polio AFP rates and adequate stool specimen collection rates.

Supplementary immunization activities (SIAs) with OPV were conducted in Cambodia, China, Mongolia, Lao People's Democratic Republic and Viet Nam during 2000/2001. The SIAs were focused on selected areas where the risk of wild poliovirus importation was high, immunization coverage low and AFP surveillance weak.

Accreditation visits were made to all poliomyelitis laboratories within the network during 2000/2001 and all laboratories were found performing at WHO standard. Except two laboratories, which were provisionally accredited, all laboratories achieved full accreditation status.

National laboratory inventories of wild polioviruses and potentially infectious materials have been completed in 27 countries including 17 PICs. Among the remaining countries, five countries are close to complete and four countries with a great number of laboratories need to continue their work in 2002.

Although the Region has been certified as poliomyelitis free, the risk of importation of wild poliovirus continues, as it is still circulating in some countries of neighbouring Regions.

Further more, there have recently been outbreaks of poliomyelitis caused by VDPV in the Dominican Republic and Haiti, which has led to 19 laboratory confirmed cases since July 2000. This has shown the potential for outbreaks of paralysis cases caused by VDPV in a region certified as poliomyelitis-free. It was a consequence of a failure to maintain high immunization coverage and the high quality of AFP surveillance.

In the Region, a joint WHO/Centers for Disease Control and Prevention (CDC) team conducted a review of laboratory and epidemiological data of potential VDPVs in China in June 2001. The conclusion suggested there is no evidence of sustained transmission and no evidence of extensive, progressive
sequence divergence from typical Sabin type 2 viruses. Unlike the situation in Hispaniola, VDPVs were unable to establish themselves in the communities.

A single VDPV was detected in an AFP case from the Philippines in 2001, but no epidemiological evidence of VDPV circulation was found so far, despite thorough and intensified investigations.

### 2.1.2 Accelerated measles control

The region has achieved the target of reduction of measles mortality and morbidity by 95% and 90% respectively, compared with the pre-vaccine era, through implementation of the EPI program (see Figure 4). However, it is estimated that in the Region there are over 300 000 cases of measles each year and over 20 000 children die each year from measles and its complications.

**Figure 4: Reported Measles Cases and Vaccine Coverage**

**Western Pacific Region, 1974-2000**

A Western Pacific Regional Plan of Action for Accelerated Measles Control first prepared in 1996 was revised and updated in 2001. The two main objectives of the Plan of Action are: (1) to achieve and maintain the interruption of measles transmission in countries with an elimination goal; and 2) to achieve further mortality and morbidity reductions in the remaining countries as a basis for the eventual elimination of measles in the Region.

The strategies to achieve this are: (1) extremely high coverage (>95%) with two doses of a measles vaccine; (2) active surveillance, with laboratory confirmation of suspected cases; (3) timely and appropriate responses to outbreaks of measles based on rapid routine analysis of surveillance data; and (4) a regional laboratory network capable of monitoring the circulation of viral strains and identifying imported cases and their sources.

Twenty PICs, Australia, Mongolia, New Zealand, the Philippines and the Republic of Korea have established measles elimination goals and implemented elimination strategies. It seemed that measles transmission has been interrupted in the PICs, Australia and Mongolia.

Measles surveillance was integrated with AFP surveillance to collect and analyse case information in Cambodia, China, Lao People's Democratic Republic, Mongolia, Papua New Guinea, PICs, the Philippines and Viet Nam. An electronic measles surveillance database has been developed and is currently being piloted in Cambodia, China, the Philippines and Viet Nam.
The establishment of the Regional Measles Laboratory network is progressing well, with national laboratories for most countries identified. Laboratory supplies and equipment were provided for selected laboratories. Measles laboratory training has been successfully conducted in Cambodia and Lao People's Democratic Republic.

2.1.3 Maternal and neonatal elimination

There has been major progress towards neonatal tetanus elimination in the Western Pacific Region during the past 10 years, but the disease remains an important public health problem in six countries: Cambodia, China, the Lao People’s Democratic Republic, Papua New Guinea, the Philippines and Viet Nam. More than 17 000 cases are estimated to occur per year, accounting for 12 500 neonatal deaths. This corresponds to an estimated average NT mortality rate for the six countries of 1.68 per 1000 LB. The United Nations Population Fund (UNFPA), UNICEF, and WHO agreed in December 1999 to set the year 2005 as the target date for worldwide elimination. Maternal tetanus has now been added to the elimination goal.

The major strategies for maternal and neonatal tetanus (MNT) elimination include: effective surveillance for NT cases, which should be integrated into existing active surveillance systems for measles and AFP cases; supplementary immunization with tetanus toxoid (TT) in high-risk areas to reach all women of child-bearing age (CBAW); and strengthened routine immunization, with a target coverage of 90% with at least two doses of tetanus toxoid.

Progress has been made to implement MNT elimination activities in close cooperation with UNICEF in the Region.

A WHO/UNICEF Joint Meeting on Maternal and Neonatal Tetanus Elimination was held in the WHO Regional Office, Manila in November 2000 to develop common strategies and targets for MNT elimination. The Regional Plan of Action and Technical Guidelines for Maternal and Neonatal Tetanus Elimination were revised and updated.

A joint WHO/UNICEF Inter-regional workshop was held in June 2001 to brief national EPI managers on the latest developments, review the country information and data and discuss strategies for development and implementation of national plan of actions.

The tools for planning and monitoring the initiative have been jointly developed by WHO and UNICEF. Joint visit to Cambodia, China, Lao People's Democratic Republic and Viet Nam were conducted to support the development of national plan of action for MNT elimination. Information exchange between WHO and UNICEF is being constantly improved to ensure coordination of the activities and regular reviews to monitor progress at regional and country levels.

In order to improve surveillance data management at the country level, a prototype MNT surveillance database has been developed at the Regional Office. The first country to benefit from this initiative will be the Philippines, followed by Cambodia and the Lao People's Democratic Republic.

2.1.4 Maintaining the quality of immunization services

Routine immunization

The Region as a whole has maintained high immunization coverage and countries with low immunization coverage have shown a steadily increasing trend of immunization coverage. Improving and sustaining routine immunization is the most important work of national immunization programs. The followings are critical components for achieving the objectives:

- experience gained from poliomyelitis eradication needs to be applied in improving routine immunization through micro-planning, good monitoring, effective social mobilization and guidance by surveillance information;
• reducing drop out rates and increasing access through outreach are effective ways to increase coverage;
• medium term plans need to be developed and planning and management needs to be strengthened for national immunization programs;
• sustainability of service needs to be strengthened through advocacy for adequate funding of national programs through both national budgets and partner agency support;
• attention needs to be placed in planning and service delivery on identifying and reaching population groups who are underserved; and
• establishing and maintaining an effective cold chain and good vaccine-handling procedures needs to be promoted in all countries through training, planning and provision of equipment.

Improving immunization safety

Countries and areas in the Region have made considerable progress in ensuring immunization safety.

Cambodia, China, the Lao People's Democratic Republic, Mongolia, the Philippines, Papua New Guinea and several PICs have developed safe injection policies and plans of action. Some of them have also established national safe injection committees.

Cambodia, the Lao People's Democratic Republic and several PICs used auto-disable (AD) syringes and safety boxes during recent measles campaigns.

Deployment of incinerators has increased gradually. In Cambodia, incinerators have been installed widely with a system for collection and transport of used syringes. Incinerators were field tested in Cambodia and the Lao People's Democratic Republic, and after field testing modifications were made to improve efficiency and effectiveness. Vietnam and several PICs have also installed incinerators for syringe disposal.

The emission and residual ash content of the different models of incinerators that were field tested in Cambodia was assessed and the preliminary results were supportive to the current policy of incineration.

Although not all countries have access to a National Regulatory Authority (NRA) that meets critical WHO criteria for the regulation of vaccines, some progress has been made in this area. Review of NRAs was conducted in China and Vietnam and specific plans were developed to help countries to fulfil obligations of NRA.

Introduction of new/under utilized vaccines

Several new vaccines have become available over recent years and many more are expected in the near future. There has been growing international concern that these new vaccines have not been introduced in developing countries as quickly as in industrialized countries.

In response to these concerns, WHO and its partners established the Global Alliance for Vaccines and Immunization (GAVI) in late 1999. GAVI is not an organization, but an alliance of all the partners involved in immunization, including WHO. A Regional Working Group (RWG) of the partners has been established in the Region to maximize the benefits of the GAVI initiative for the Region's countries. The Regional Office for the Western Pacific is currently acting as the secretariat for the RWG.

Cambodia and the Lao People's Democratic Republic, which are the only two countries in the region that have not added hepatitis B vaccine to the national immunization program, applied successfully for support from GAVI for the introduction of hepatitis B vaccine. Both countries will carry out a phased introduction from late 2001, using combination DPT-hepatitis B vaccine. An application for support to extend hepatitis B vaccine to the whole country was made in October 2001 and granted conditional approval.
2.2 Poliomyelitis eradication

2.2.1 Update on global situation

In 2000, there were 23 countries with indigenous wild poliovirus transmission. In 2001, this was reduced to 11 countries. This is attributed to continuous acceleration of activities including a large increase in the number of immunization staff funded by the poliomyelitis eradication programme. Remaining constraints include accessing children in difficult areas, sustaining political support in countries, and a funding gap of US$400 million for the programme globally.

A poliomyelitis outbreak occurred in the Cape Verde Islands from August to December 2000 with 44 cases reported and wild poliovirus type 1 isolated from 11 cases. Sequence analysis revealed 98% similarity of the strain identified with wild poliovirus strains recently circulating in Angola. Seventy-three percent of the cases were under 15 years old and only 38% were fully immunized. Enhanced surveillance found clustering of AFP cases in mainly three islands. Cape Verde had not reported poliomyelitis cases for 15 years; however, since 1995 routine immunization coverage has been below 80%. No supplemental immunization was conducted prior to this outbreak. Two rounds of mopping-up were conducted house-to-house in October and November 2000. The last poliomyelitis case had onset on 13 December 2000 and still had been missed by the supplementary immunization activities.

From 12 July 2000 to 8 February 2001, twelve laboratory-confirmed poliomyelitis cases attributed to VDPV type 1 were identified in the Dominican Republic. Of these, 11 (92%) case-patients were under seven years of age and the date of paralysis onset of the last case was 2 January 2001. All case-patients were inadequately vaccinated or unvaccinated. In Haiti, one confirmed poliomyelitis case attributed to VDPV type 1 was reported in an unvaccinated two-year old child with onset of paralysis on 30 August 2000.

The Ministries of Health of the Dominican Republic and Haiti conducted large-scale immunization responses and active searches for AFP cases to stop the circulation of VDPV. The outbreak was made possible by very low immunization coverage with poor AFP surveillance that allowed continued viral circulation without detection. The outbreak was controlled by supplementary immunization with OPV. Prolonged circulation of OPV-derived polioviruses in areas of very low OPV coverage had been documented in only one other setting – type 2 VDPV circulated in Egypt for an estimated 10 years (1983-1993) and was associated with over 30 cases.

One implication of circulating VDPV is the overarching importance of emphasizing the need for maintaining high immunization coverage and high quality AFP surveillance. A poliomyelitis outbreak due to VDPV should be treated in a similar way to the importation of wild poliovirus. Further research is being conducted to look at the implications of VDPV circulation for the poliomyelitis programme.

Among the 11 countries with wild poliovirus transmission in 2001, the Republic of Yemen reported one case in February but had no virus isolation in 2000, and Mauritania reported one case in March 2001 with no virus isolation in 2000.

Although the last indigenous poliomyelitis case in the WHO European Region was registered in November 1998, between March and May 2001 an outbreak of imported poliomyelitis was registered in Bulgaria after a 10-year poliomyelitis-free period. Three cases of unvaccinated gypsy children were identified in two neighbouring districts in south eastern Bulgaria; two cases were confirmed by isolation of wild poliovirus type 1 and the third case was confirmed based on clinical findings. The P1 isolated from the cases was most closely genetically linked to viruses isolated from northern India in 2000-2001.

In the WHO Southeast Asia Region wild poliovirus circulation in India was limited to the states of Uttar Pradesh and Bihar and with a main wild poliovirus transmission focus in western Uttar Pradesh near the capital, New Delhi, under conditions of high quality surveillance. Surveillance quality in all other recently endemic countries in the Region appears to have reached certification standards.

In the WHO Eastern Mediterranean Region, wild poliovirus circulation continues in Afghanistan, Egypt, Pakistan, Somalia and Sudan. Transmission in Pakistan appears to be still relatively widespread and surveillance systems in Somalia and Sudan are likely to still underestimate transmission. In the WHO African Region, wild poliovirus was isolated in 2001 in Ethiopia, Mauritania and Nigeria.
Further improvements are observed in the quality of AFP surveillance in terms of completeness of reporting whereas the improvements in adequate stool specimen collection are relatively slower. Geographic priorities continue to be Angola, Democratic Republic of Congo, Egypt, Ethiopia, Nigeria and Pakistan. Identifying high-risk districts through surveillance and targeting them with high quality supplementary immunization remains one of the essential approaches in eliminating poliomyelitis from countries where it is still present.

2.2.2 Update on regional situation after poliomyelitis-free certification

Certification process

Since the last TAG meeting in October 2000, the RCC submitted its report on certifying the Region as poliomyelitis-free to the Global Commission for the Certification of the Eradication of Poliomyelitis (GCC).

During its 6th meeting, held in Washington, D.C., 28-29 March 2001, the GCC reviewed and endorsed the report of the RCC. The GCC congratulated the Western Pacific Region on its achievement and concurred with the RCC’s finding that the transmission of indigenous wild polioviruses has been interrupted.

The RCC requires the national and sub-regional certification committees to continue to function until global certification is achieved in order for the RCC to fulfil its obligations to the GCC. The GCC endorsed the RCC’s plan for monitoring the poliomyelitis-free status of countries and areas in the Region following Regional certification until global certification is achieved. In particular, the GCC endorsed the continuation of annual meetings of the RCC and enhanced work on the full implementation of the Regional plan for laboratory containment of wild poliovirus infectious/potentially infectious materials.

The RCC will continue to meet on an annual basis to review progress reports from all countries and areas with particular emphasis on: progress with laboratory containment of wild poliovirus infectious/potentially infectious materials; ongoing high quality surveillance and timely analysis of surveillance data; maintenance of high immunization rates; high quality laboratory performance; capacity to respond to poliomyelitis cases if they are detected; and evidence of continued political commitment.

AFP surveillance quality

During its last meeting, the TAG emphasized that AFP surveillance must not be allowed to fall in quality in the critical first year after Regional poliomyelitis-free certification when wild poliovirus is circulating in neighbouring regions and there is a high risk of importation. For countries, which were poliomyelitis endemic when the Regional initiative began, continued high quality AFP surveillance is required. Countries which were non-endemic at the beginning of the initiative will have to continue to conduct whichever method they used to document their poliomyelitis-free status, whether this is accomplished through AFP surveillance, enterovirus surveillance, a combination of both or through other indirect methods.

The annualized Regional non-polio AFP rate for 2001 was 1.15 per 100,000 under 15 years of age (dataset as of 10 August 2001). Most countries achieved or exceeded the target so far as shown in Figure 5; however, to date lower rates have been reported by Mongolia and Papua New Guinea.
Among the countries that were non-endemic at the beginning of the initiative and conduct AFP surveillance, non-polio AFP rates have remained at certification standards in most countries (Figure 6). Lower rates have up to date been reported by Brunei Darussalam, the PICs and Singapore.

In countries that were poliomyelitis endemic at the beginning at the Regional initiative, adequate stool specimen collection rates in 2001 are at certification levels except in Malaysia and Papua New Guinea (Figure 7). Rates in these two countries to date remain below the levels achieved in 2000.
Following the outbreak of poliomyelitis due to circulation of neurovirulent VDPV in Haiti and the Dominican Republic in 2000/2001, a WHO team supported by CDC experts visited China in July 2001 to review available virological and epidemiological data for suspected VDPV circulation.

From careful review of the available epidemiological and virological data it appears that there may have been transient, localized, limited spread of type 2 vaccine-derived poliovirus in Guizhou and possibly also in adjacent areas in Yunnan and Sichuan provinces for short periods of time between the years 1995 to 2000. However, unlike the VDPV situation in Hispaniola and Egypt, there is no evidence of long-term VDPV circulation in China.

Most cases for which there is adequate documentation have dates of onset of paralysis within three months after the sub-national immunization days (SNID), and there is little evidence of high-season transmission. These cases may have been typical recipient and contact vaccine-associated paralytic poliomyelitis (VAPP). There does not appear to be year-round spread, and no current evidence of extensive, progressive sequence divergence from typical Sabin type 2 viruses.

One type 1 VDPV was isolated from an AFP case in the Philippines and intratypic differentiation (ITD) and sequence analysis conducted at the Global Specialized Laboratory in Japan and the Regional Reference Laboratory in Australia showed a 3.1% difference from the Sabin vaccine strain. Extensive epidemiological investigation was conducted but no evidence for circulation has been found to date. As part of intensified surveillance activities, stool specimens were collected from healthy children and cases of aseptic meningitis and laboratory analysis is being carried out.

### Significance of poliomyelitis-compatible cases

To assure the highest possible sensitivity of surveillance activities to rapidly detect and respond to virus importations, it is necessary to continue carefully scrutinizing poliomyelitis-compatible cases. Surveillance data should be monitored and mapped to allow early detection of clusters of compatibles and trigger further field investigations where appropriate. The number of poliomyelitis-compatible cases reported in the Region decreased from 70 cases in 1997 to 12 cases in 2000 (Table 1).

Expert panels should continue to review all cases with inadequate stool specimens who either have residual paralysis or no follow up (died, lost to follow up) to determine whether or not these should be classified as poliomyelitis-compatible.
Table 1: Classification of AFP cases 1997 to 2000 in recently endemic countries

<table>
<thead>
<tr>
<th>Country</th>
<th>1997</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AFP</td>
<td>confirmed</td>
</tr>
<tr>
<td>Cambodia</td>
<td>180</td>
<td>8</td>
</tr>
<tr>
<td>China</td>
<td>4730</td>
<td>0</td>
</tr>
<tr>
<td>Lao People's Democratic Republic</td>
<td>77</td>
<td>0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>87</td>
<td>0</td>
</tr>
<tr>
<td>Mongolia</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td>PNG</td>
<td>39</td>
<td>0</td>
</tr>
<tr>
<td>Philippines</td>
<td>293</td>
<td>0</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>463</td>
<td>1</td>
</tr>
<tr>
<td>Others</td>
<td>43</td>
<td>0</td>
</tr>
<tr>
<td>WPR</td>
<td>5930</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>AFP</td>
<td>confirmed</td>
</tr>
<tr>
<td>Cambodia</td>
<td>192</td>
<td>0</td>
</tr>
<tr>
<td>China</td>
<td>2079</td>
<td>1*</td>
</tr>
<tr>
<td>Lao People's Democratic Republic</td>
<td>96</td>
<td>0</td>
</tr>
<tr>
<td>Malaysia</td>
<td>88</td>
<td>0</td>
</tr>
<tr>
<td>Mongolia</td>
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<tr>
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<tr>
<td>Viet Nam</td>
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<td>Others</td>
<td>71</td>
<td>0</td>
</tr>
<tr>
<td>WPR</td>
<td>3354</td>
<td>1*</td>
</tr>
</tbody>
</table>

*due to imported wild poliovirus

Source: WHO WPRO EPI Surveillance System
The Region data as of 2 March 2001 showed that about 900 AFP cases with onset in 2000 (12.7%) were still pending final classification. On 30 May 2001, the number had decreased to 88 cases (1.3%). As of 10 August 2001, a total of 14 cases is still pending (see Table 1).

All cases reported in the remaining countries not included in the table were discarded as non-polio AFP except the cases from PICs. The delay in classifying the AFP cases reported from PICs is caused by the Sub-regional Certification Committee also serving as the expert review group with a meeting frequency of only once a year. The next meeting is scheduled in October 2001.

**Timeliness of investigation and final classification**

The Global Technical Consultative Group for Poliomyelitis Eradication (TCG) recommended that the interval between onset of paralysis and receipt of final ITD results should be reduced to ≤ 60 days (target >80%). Reasons for delays in ITD results should be analysed in detail to identify and correct problems. Specifically, the time needed for each step in the process should be scrutinized to identify bottlenecks (e.g. time from onset to notification, notification to investigation, investigation to specimen collection, collection to receipt in the laboratory, and laboratory to reporting of results).

The TCG also stated that countries and regions must track the number and proportion of cases pending final classification after 90 days following onset of paralysis. Reasons for delays in classification should be identified and corrected. Particular scrutiny should be applied to ensuring timely laboratory results, follow-up (if appropriate) and expert group review.

AFP cases with a high index of suspicion (i.e. fever at onset, age < 5 years, asymmetrical paralysis, unvaccinated, minority group) should be prioritized for investigation. Specimens should be immediately transported to a network laboratory for priority processing, and should be tracked through to final results and classification. It is the responsibility of the investigating surveillance medical officer to ensure ‘hot cases’ receive appropriate attention through final classification.

**Stool specimen collection**

The TAG stated during its last meeting that any future modification of surveillance standards could only take place under circumstances of consistently high quality performance of AFP and laboratory surveillance, together with supportive scientific evidence. The TAG requested that evidence from AFP surveillance and laboratory systems is to be presented on the question whether the region can adopt a one-stool policy.

Estimates of increase in sensitivity for detecting poliovirus by culturing the second stool specimen were calculated using two methods: directly and adjusting for false negatives based on articles published by H. Gary, M. Pallansch, and R. Sanders (Journal of Infectious Diseases, Vol 1, Supp 1, February 1997).

Based on the Regional data, the percentage of poliovirus-positive AFP cases detected by the second stool but not the first stool for data from 1996 to 2000 is 14% with a range among countries from 0-42%. These results suggest a considerable loss in sensitivity by moving from a two to one stool policy.

**Follow-up examination at 60 days**

The TCG confirmed that all AFP cases with inadequate specimens should undergo a 60-day follow-up examination. To monitor compliance with this recommendation, countries should track the ‘proportion of AFP cases with inadequate stool specimens that have follow up’ as a new indicator of surveillance quality. At least 80% of all such cases should receive follow-up. Recognizing the need for some countries to prioritize cases for follow-up examination, countries should give highest priority to “hot cases”, cases with no specimens and cases with specimens collected more than 30 days after onset of paralysis.

In 2000, 98% of AFP cases with inadequate stool specimens had follow up results available. In 2001 (as of 10 August), 60% of AFP cases with onset between 1 January and 31 May and inadequate stool specimens have follow up results available.
Surveillance for vaccine derived polioviruses

Following recommendations of the Global poliomyelitis laboratory network all poliovirus isolates, regardless of origin, should be forwarded to a WHO accredited laboratory for ITD by at least two approved methods, one of which must be antigenic (ELISA preferred) and one molecular (probe hybridization or diagnostic PCR preferred). Isolates should be forwarded for ITD in a timely manner within 14 days after isolation. Logistical and reporting requirements will be further discussed and defined during the 5\textsuperscript{th} Meeting of the Laboratory Surveillance for Poliomyelitis Eradication in the Western Pacific Region to be held after the 12\textsuperscript{th} TAG meeting.

All poliovirus isolates showing discrepant ITD results should be immediately sent to a Global Specialized Laboratory (or a laboratory recognized by WHO as having the capacity to carry out poliovirus sequence analysis) for ITD confirmation and analysis of genomic sequence. Timeliness and reporting mechanisms will again be further discussed during the laboratory meeting.

The national/sub-national AFP surveillance systems should analyse AFP data on at least a monthly basis, looking for evidence of clustering of cases. All poliovirus isolates from identified clusters should be sent to a Global Specialized Laboratory (or a laboratory recognized by WHO as having the capacity to carry out poliovirus sequence analysis) for ITD confirmation and screening for sequence analysis.

It might be necessary to conduct retrospective analysis of VDPV from areas identified as of potential risk for establishing circulation of VDPV.

If there is evidence for circulation of VDPV, immediate consultation between Ministries of Health and WHO country, Regional and Global poliomyelitis eradication teams and laboratories involved should commence to conclude on implications and necessary actions to be taken.

The GCC concluded that the investigation and response to a circulating VDPV must be similar to that of an imported wild poliovirus.

Immunization activities

Routine immunization coverage with three doses of OPV for infants has been maintained at high levels in most countries. However, slight decreases in coverage were observed in Cambodia and Lao People's Democratic Republic and generally low coverage levels continue in Papua New Guinea.

Supplementary immunization with OPV has been conducted in China for children under 4 years of age in high-risk areas of 21 provinces in December 2000 and January 2001 and again in 73 prefectures in seven provinces in March and April 2001 targeting almost seven million children.

Cambodia integrated OPV in its recent measles campaigns in high risk and remote areas.
Lao People's Democratic Republic conducted supplementary OPV immunization in January and February 2001 in 38 districts in seven border provinces.

Laboratory containment of wild poliovirus infectious/potentially infectious materials

It has been continuously emphasized that as circulation of indigenous wild poliovirus in the Region has been interrupted, the only known sources of wild poliovirus remaining are the Region’s laboratories. Substantial progress has been made with laboratory containment of wild polioviruses and potentially infectious materials and was acknowledged by the RCC.

All countries have a national plan of action in place and identified a responsible body for the containment process. Twenty-seven countries have completed the national inventory and five countries (French Polynesia, Guam, Malaysia, New Caledonia and the Republic of Korea) are close to completing the national inventory. Four countries (Australia, China, Japan and the Philippines) still require more time due to the large number of laboratories to be searched and are expected to complete the national inventory in 2002.
Over 17,000 institutions and laboratories have so far been identified to be included in the search; however, response rates are not yet always complete. Wild poliovirus infectious and/or potentially infectious materials have been identified in about 50 institutions/laboratories according to National Certification Documentations and further updates. Approximately 20% of the identified institutes/laboratories have already destroyed the materials so far.

Guidelines on the establishment of regional interim wild poliovirus repositories are currently under development by WHO Geneva. It was noted that the issue of legal ownership of stored isolates must be resolved and advice will be sought from the WHO legal department. Current assessment of requirements for a regional interim repository indicates that the Region might not need one but further discussions will be held.

2.2.3 Progress of poliomyelitis eradication in South East Asia (SEAR) Region

By 2000, wild poliovirus transmission was limited to four of the 10 countries in the region. During 2001 (as of June 2001), wild poliovirus had only been detected in four northern states of India.

In 2000, India reported routine OPV3 coverage of 95% among 1-year-old children. However, survey data for India suggested that the actual coverage was much lower (~59%). Reported infant OPV3 coverage for 2000 was 90% in Bangladesh, 90% in Bhutan, 91% in the Democratic People’s Republic of Korea, 66% in Indonesia, 98% in Maldives, 86% in Myanmar, 80% in Nepal, 100% in Sri Lanka and 89% in Thailand.

During the second half of 2000 and the first half of 2001, all countries in the region implemented at least two rounds of national immunization days (NIDs). Based on the May 1999 recommendations of the WHO/SEAR EPI Technical Consultative Group on vaccine-preventable diseases, India conducted four rounds of NIDs (monthly rounds from October 1999 to January 2000), followed by two rounds of SNIDs during February and March 2000 in eight high-risk northern states of India. Two rounds of SNIDs in the high-risk states and NIDs (2 rounds) were conducted in late 2000 to early 2001.

NIDs and SNIDs in Bangladesh, India and Nepal were intensified through door-to-door vaccine delivery in addition to fixed-post vaccination. NIDs and SNIDs in Bangladesh, Myanmar and Nepal were synchronized with India. Mop-up immunization in response to the detection of wild poliovirus commenced in Bangladesh, India, Myanmar and Nepal in 2000. In India, eight mop-up campaigns were conducted during 2000, targeting 22.7 million children.

During early 2001, intense sub-national campaigns (pre-emptive mopping-up) were conducted during the low transmission season, reaching 20.2 million children in 40 districts of Uttar Pradesh, 9.5 million children in 18 districts of Bihar and 3.7 million children in five districts of West Bengal. In addition, 11 mop-up campaigns were completed or were planned by June 2001.

AFP surveillance in four critical countries of the region is being facilitated through a network of surveillance medical officers who receive training and are responsible for a defined area. By June 2001, the number of officers was 207 in India, 32 in Bangladesh, nine in Myanmar and six in Nepal. Surveillance in Bangladesh, India and Nepal was strengthened by teams working under the Stop the Transmission of Poliomyelitis (STOP) initiative, supported by CDC, United States.

The number of AFP cases reported increased from 767 in 1999 to 1140 in 2000 in Bangladesh, and from 183 to 294 in Myanmar. Both countries achieved a non-polio AFP rate of >1 in 2000. India, Nepal, Sri Lanka and Thailand maintained non-polio AFP rates >1. In Indonesia the rate dropped from 1 in 1999 to 0.85 in 2000. During 2001, the non-polio AFP rate continues to be >1 in Bangladesh, India, Nepal, Sri Lanka and Thailand, but has dropped to below 0.5 in Indonesia.

In 2000, the percentage of AFP cases from which adequate specimens were collected was >80% in India, Indonesia, Sri Lanka and Thailand. Collection of adequate specimens improved between 1999 and 2000 in Bangladesh (48% to 68%), in the Democratic People’s Republic of Korea (33% to 74%), in Myanmar (from 66% to 74%) and in Nepal (76% to 79%). During 2001, environmental sampling in the city of Mumbai, India
(formerly Bombay, Maharashtra state) detected wild poliovirus type 1, genetically linked to poliovirus isolated previously in Uttar Pradesh.

From 1999 to 2000, the number of wild virus-confirmed poliomyelitis cases decreased in the South-East Asia Region from 1161 to 272, primarily reflecting the decrease in India (1126 to 265). In India, the greatest decline occurred in central and southern states, but a significant decrease was also observed in the highest-risk northern states of Bihar, Delhi, Uttar Pradesh and West Bengal.

Of 265 virus-confirmed cases in India in 2000, 138 (52%) were wild poliovirus type 1 (P1), 126 (48%) were wild poliovirus type 3 (P3); one case was a mixture of P1 and P3. The last reported case of wild poliovirus type 2 (P2) reported globally was isolated from an AFP case reported from Aligarh district, Uttar Pradesh state, in October 1999. The number of poliomyelitis cases reported from Bangladesh decreased from 393 (29 virus-confirmed) in 1999 to 197 (one virus-confirmed) in 2000. During that year, wild viruses were also isolated from two cases in Myanmar (along the border with Bangladesh) and four cases in Nepal (along the border with India). By 30 June 2001, only 31 virus-confirmed poliomyelitis cases had been detected in India, and no virus had been found elsewhere in the region.

The poliomyelitis laboratory network for the South-East Asia Region consists of 17 laboratories: nine in India, three in Indonesia and one each in Bangladesh, Democratic People’s Republic of Korea, Myanmar, Sri Lanka and Thailand. The network includes 10 national poliomyelitis laboratories, three regional reference laboratories and one global specialized laboratory (Mumbai, India), which is capable of genetic sequencing. By June 2001, 16 laboratories were fully accredited. The laboratory in Pyongyang (Democratic People’s Republic of Korea) is expected to be accredited later in 2001.

2.2.4 Country reports on sustaining poliomyelitis-free status

Cambodia

The Poliomyelitis Eradication Unit (PEU) has been merged into one NIP at the end of 2000. The surveillance unit of the NIP has retained all of the poliomyelitis eradication documentation duties that the PEU performed, and is still responsible for providing documentation to the National Certification Committee (NCC). The NCC has reviewed 28 AFP cases for year 2000, and discarded all but two cases. Another important task the NCC has initiated is investigating Sabin positive AFP cases to decide on VAPP cases and to be vigilant for the possibility of VDPV cases. NCC members participated in the investigation of three cases that were eventually determined to be VAPP.

AFP surveillance continues in 23 provincial health department surveillance sites and completeness and timeliness of reporting are 81% and 77% respectively up to date compared to 100% and 96% in 2000. The non-polio AFP rate to date is 1.95 per 100 000 under age 15 and only Kratie Provinces achieved a non-polio AFP rate less than 1 (0.85). Other provinces that have not achieved a rate of at least 1 during the last two years are provinces with populations so small that they are not expected to have an AFP case every year. An active search is planned for Kratie Province during its next round of supplementary TT immunization.

Cambodia’s adequate stool collection rates remain less than 80%, being 72% of year 2000, and 79% for 2001 to date. This is above the minimum standard for certification but should be improved in order to lessen the reliance on additional follow-up investigations and expert review to determine status of ambiguous cases.

The NCC has reviewed five potentially compatible cases in 2001 thus far, and all have been discarded as non-polio AFP. Twenty-eight cases were reviewed for year 2000, and all but two were discarded. The NCC judged these cases as compatible because they were lost to follow-up, had inadequate stool sample and did not have conclusive medical diagnosis from a health facility. There were three attempts made to locate the child whose family lives in a floating village on the Tonle Sap lake between Kompong Thom and Siem Reap Provinces. Several attempts also were made to locate the other case whose onset was in Kroch Chamar, Kg. Cham Province but then the family moved to Kg. Spue Province a few hundred kilometres away.
In 2000 a retrospective survey of records of six rehabilitation centres in Cambodia was conducted to validate the effectiveness of the AFP surveillance system. This survey identified a total of 40 patient records in the six facilities that were potentially cases of poliomyelitis occurring after the last known case. Twenty-nine of these patients were found and investigated. While several of them were old poliomyelitis cases, none of them had dates of onset after March 1997.

Active searching was an integral part of the recently conducted measles SNIDs that took place from December 2000 through May 2001. This activity targeted Cambodia's most remote and difficult areas, namely the Northeast Provinces bordering Viet Nam and Lao People's Democratic Republic, the former Khmer Rouge areas bordering Thailand, and Koh Kong Province that is densely forested and has several small islands in the Gulf of Thailand. These areas traditionally have low surveillance reporting due to poor infrastructure, ethnic minorities that do not speak or understand Khmer well, and health workers who usually have less training than in other parts of the country.

Routine immunization coverage in the country is improving, but still does not achieve uniformly high coverage throughout the country. Reported coverage for OPV3 in 2000 was 71%. For this reason, from now until the time global certification is achieved, supplementary OPV immunization activity will be necessary to maintain high immunity levels in certain areas. In the absence of circulating wild poliovirus, it is thought unnecessary to do this through additional special OPV supplementary immunization campaigns. During the next several years there will be measles and TT immunization campaigns conducted throughout the country. When campaigns are implemented in areas with poor OPV coverage, OPV immunizations will be added to the scheduled antigens.

The year 2000 Demographic Health Survey (DHS) having had an immunization component showed lower coverage than the reported administrative coverage. However, the Phnom Penh subsection of the DHS did not demonstrate as great a difference between the survey and reported data. The DHS reported OPV3 coverage as 54.7% for urban (provinces) children, rural children 51.0% and 84.1% in Phnom Penh. This is opposed to 71% reported nationwide by the NIP.

OPV has been included in the 2000-2001 measles SNIDs, and in the October/November 2000 Phnom Penh slum TT supplementary immunization activity. The measles SNIDs was an ambitious effort to reach the most difficult to access populations in Cambodia. It was a multi-antigen and multi-intervention activity that was able to access many areas that have only recently been opened up to health services, including the traditionally inaccessible hilly Northeast provinces. A significant proportion of the children targeted in the measles SNIDs belonged to ethnic minorities. The overall OPV coverage in the SNIDs was 84.2%. This is lower than national figures for other SNIDs but comparable to the coverage achieved for the remote areas in other supplementary immunizations and should be balanced with the number of other antigens and services delivered.

In addition, SNIDs of very limited scope were conducted in isolated districts of Siem Reap during 1999, reaching a total of 18 353 children. Beginning in 2000, OPV supplementary immunization activities have been incorporated into other supplementary immunization activities for either measles or TT vaccination. The OPV component of the supplementary TT immunizations given in Phnom Penh slums followed conventional OPV SNIDs implementation, and attained reported coverage >90% in each round.

Two additional supplementary immunization activities included OPV in 2001. One was a response finding a high-risk case that was later determined to be a VAPP case in low routine coverage and densely populated area on the main national highway leading to the Thai border. The other OPV supplementary immunization activity was limited to one commune in a remote area of Kompong Thom Province that is subject to new migration because of increased security and logging. The reason for this supplementary activity was finding another high-risk VAPP case that got infected through contact rather than vaccination.

The special supplementary immunization activity conducted in Battambang and Banteay Meanchey Provinces along National Route 5 is being used as a model for future immunization response to low routine coverage. This campaign not only included OPV, but also all other childhood antigens plus vitamin A and mebendazole for deworming children older than two years.
China

Since 1995, the rate of reported non-polio AFP cases has exceeded 1.0 per 100 000, and since 1997, the percentage of AFP cases that had two adequate stool specimens taken within 14 days of onset of paralysis has exceeded 80% (Figure 8).

**Figure 8. Non-polio AFP rate and percentage of AFP cases with adequate stool specimens by year China, 1994-May 2001**

Reports of the numbers of AFP cases, including zero-reports, should be submitted by all hospitals at county-level and above every 10 days. In 2000, 36 048 (98%) of these 35 052 expected reports were received; 33 998 (97%) of the reports were sent on time. The percentage of AFP cases reported within 14 days of the onset of paralysis was 91.3%; 73.3% were reported within 7 days. In 2000, the reported non-polio AFP rate was ≥ 1.0 per 0-14 year old population in all 31 (100%) provinces; in 28 (90%) provinces, the percentage of AFP cases with adequate stool specimens for culture was ≥80%, the exceptions being Xinjiang (73%), Ningxia (72%) and Tibet (22%). In 2000, there were a total of 34 (10%) of 331 prefectures that reported less than the expected number of AFP cases.

In 1997, China moved from the clinical to the virological classification scheme and expert panels were established in all provinces to review AFP cases with inadequate stool specimens and residual paralysis, who were lost to follow-up, or who died. In 2000, 19 AFP cases were classified as polio-compatible. One cluster of three cases was found in Rijin City, Jiangxi Province. This cluster was investigated by the provincial health department; no unreported cases of paralysis were found and there was no evidence of circulating wild poliovirus.

Reported routine immunization coverage is high, but is based on numbers of target children immunized. Because there is significant under-reporting of target and immunized children with unregistered children assumed not to be included, reported coverage data currently has limited use for identifying areas with low coverage. Quick surveys conducted during supplementary campaigns have identified pockets of low coverage in all provinces, and many of these areas have been the targets of house-to-house vaccination specifically to reach under-immunized children.

Since regional certification in October 2000, China has conducted two supplementary immunization campaigns with OPV. Two rounds of SNIDs were conducted in December 2000/January 2001 in 21 Provinces (Figure 9). Two additional rounds, with emphasis on reaching previously unreached children in high risk and low coverage areas, were conducted in March/April 2001 in 326 counties and 73 prefectures in 7 provinces (Figure 10).
Figure 9. Provinces conducting supplemental activities during the 2000/2001 winter SNID China, December 2000-January 2001 (activities were not necessarily province-wide).

Figure 10. Areas covered by the supplementary OPV campaign targeting high-risk and low coverage populations in Tibet, Xinjiang, Gansu, Qinghai, Sichuan Yunnan and Guizhou, March-April 2001.
Containment of wild poliovirus infectious and potentially infectious laboratory materials is overseen by an inter-ministerial task force with representatives from the Ministry of Health, Ministry of Education, Chinese Academy of Science, National Environmental Protection Bureau, and the State Drug Administration. The task force is chaired by a Vice-Minister of Health. Laboratory containment in China is being conducted in two phases: the first phase agencies under the administration of the Ministry of Health; the second phase agencies under the administration of other Ministries.

Guidelines were first issued on 2 June 2000 to all provincial Health Bureaus requesting the development of an inventory of all infectious and potentially infectious materials by all institutions under their administration. The director of each institution was required to submit a signed document by 31 August 2000, confirming the contents of the inventory, or that no such materials existed. To date, the inventory of all wild poliovirus infectious and potentially infectious materials has been completed by all laboratories under the administration of the Ministry of Health. This includes the national and all provincial poliomyelitis laboratories, which possess the largest number of wild poliovirus isolates, and the majority of hospitals. These facilities have identified a total of 1779 infectious and potentially infectious specimens, including 169 wild poliovirus isolates at national poliomyelitis laboratory. All specimens are being stored under BSL-2/polio conditions in accordance with WHO recommendations.

On 9 January 2001, the regional guidelines for containment were distributed by the inter-ministerial task force to all relevant agencies, and a deadline of March 2001 was given to submit materials for completion of a national inventory of wild poliovirus infectious and potentially infectious materials. Feedback from these agencies is still ongoing. Data are currently being prepared by the agencies for submission and it is anticipated that a second meeting of the inter-ministerial task force will be held in late 2001 to review the available data, discuss how to address gaps and develop a time-frame and deadline to close those gaps.

Following the outbreak of poliomyelitis due to circulation of VDPV in Haiti and the Dominican Republic in 2000/2001 and limited data published in 1997 suggesting possible VDPV in China, a team of international experts visited China in July 2001 to review available virological and epidemiological data for evidence of more recent VDPV circulation.

Interpretation of available limited information suggests that there may have been transient, localized, limited spread of type 2 vaccine-derived poliovirus in China for short periods of time between 1995 and 2000. Most cases have dates of onset of paralysis immediately after the SNIDs and may be typical recipient and contact VAPP. There is currently no evidence of year-round spread or evidence of extensive, progressive sequence divergence from typical Sabin type 2 viruses.

Based on the mission findings, the following recommendations are being implemented:

- existing sequence data on vaccine-derived polioviruses isolated in China during the past two years will be re-analysed with regard to accuracy of interpretation, and Chinese Academy of Medicine (CAPM) laboratory staff trained in all aspects of sequencing and sequence analysis;
- poliovirus isolates from AFP cases in zero-dose children and isolates with atypical PCR-RFLP results in China will be prioritized and sequenced as soon as possible;
- a system will be established to screen all poliovirus isolates in China using two recommended methods for ITD, sequencing all atypical isolates and reporting these results in a timely manner to the poliomyelitis eradication initiative; and
- vaccination coverage will be reviewed systematically and regularly in China to identify low-coverage prefectures and counties. AFP surveillance performance should be sustained at certification level.

Lao People's Democratic Republic

AFP surveillance reporting completeness and timeliness continues to be maintained at a high level. For 2000, reporting completeness was 93% and reporting timeliness was 85%. AFP case investigation completeness is being maintained at the highest standard. In 2000, 100% of the 70 reported AFP cases were investigated,
60 (86%) of them within 14 days of onset. Sixty-day follow-up was completed for 38 (54%) of cases. All reported cases with inadequate stools received 60-day follow-up.

One hundred per cent of reported AFP cases had two stools collected and 81% had two stools collected within 14 days of onset. For 2000 the non-polio AFP rate for children under the age of 15 was 2.93 (with three cases pending final classification). For children under the age of five years it was 4.58.

 Surveillance monitoring information for 2001 indicates these same high standards are being maintained, although by the end of June only 17 AFP cases had been reported, compared to 35 cases reported in 2000 with dates of onset by the end of June.

Routine immunization coverage appears to have declined slightly since 1996. Methods for calculating coverage estimates may have to be adjusted in order to bring about more accurate estimates. This may result in a further lowering of existing estimates. Given that 40% of the national population lives in villages requiring at least one overnight stay for health workers to reach and then return to their base, and that many of the villages in which this population lives cannot be accessed at all for 4-6 months of the year, maintenance of high routine coverage in children under the age of 12 months will be a continuing challenge.

Because of relatively low coverage for OPV3 in children under the age of five years, the Lao People's Democratic Republic EPI recognizes the need for continued supplementary immunization activities. SIAs will be needed to maintain reasonably high coverage in areas considered to be at highest risk for wild poliovirus importation and in areas with suspected low AFP surveillance performance. In January and February of 2000, SIAs for OPV were conducted in 13 of 18 provinces, representing 64 of the 142 districts in the country. The target age group was all children under the age of five years. Estimated coverage in the target area was about 90%. In January and February of 2001, SIAs for OPV were conducted in seven of 18 provinces, representing 39 of the 142 districts. Again, the target age group was all children under the age of five years. Estimated coverage was high (85-90%).

At the time of certification, 26 of 27 institutes, centres and laboratories at national and provincial levels had responded to survey questionnaires regarding the possible storage of wild polioviruses (WPV) or of materials that might contain WPVs. The results of the survey indicated that only nine laboratories had freezers. Only two of the laboratory freezers were documented as being in place before 1996 (the year of the last confirmed WPV case in Lao People's Democratic Republic). Three laboratories received their freezers after 1996. Four of the laboratories were not sure of the date of freezer installation.

On the basis of the 26 questionnaire responses, and inspection visits to the main laboratories in the country, it was concluded in October 2000 that no WPV, or materials that could contain WPV, were being maintained in the country. Since certification at the end of October 2000, the one unreturned questionnaire has been received (from Bokeo Provincial Laboratory). This questionnaire confirms that the Bokeo laboratory does not have, and has never had, a freezer as part of its equipment. Unless otherwise instructed by the RCC, Lao People's Democratic Republic considers that it has addressed outstanding laboratory containment issues and questions.

At present the greatest problems being faced in Lao People's Democratic Republic for maintenance of poliomyelitis-free status are low OPV3 coverage and silent AFP reporting from some areas of the country. There is also decreased motivation of staff at all levels, but particularly at province and district levels. This decreased motivation is primarily due to the prevailing view that since poliomyelitis is already eradicated, OPV immunization and AFP surveillance are no longer of critical importance.

Malaysia

The non-polio AFP rate achieved in 2000 was 1.58 per 100 000 children under age 15 and the annualized rate for 2001 as of 8 June is 1.12. Timely collection of two stool specimens within two weeks of onset of paralysis reached 70% in 2000 with a slight decline in 2001, so far (62%). Timely collection of two stool samples below 60%, however, was observed in Sabah, Perak, Penang and Perlis in 2000 and in Sabah, Johor, Sarawak, Kelantan, Kuala Lumpur, Negeri Sembilan and Terengganu in 2001. It was noted that although adequate stool specimens for AFP surveillance ideally require a quantity of at least five grams for complete
analysis, several AFP cases with onset in 2001 had either one or both stool samples taken as rectal swabs. The national poliovirus laboratory was still able to isolate non-polio enteroviruses (NPEV) from such swabs.

Follow up results were available for all but one AFP case with onset in 2000. Two cases died, one with a final diagnosis of GBS and one case diagnosed with brain abscess. In 2001 to date follow up results are available for 89% of AFP cases and one case died so far with final diagnosis of mediastinal tumor.

Malaysia has been using the virological case classification since 1997. In 2000, a total of 103 AFP cases had timely stool specimens taken which tested negative for wild poliovirus and were thus discarded as non-polio AFP cases. Of the 44 cases without adequate stool samples, 34 cases had no residual paralysis and were discarded based on the findings of the follow-up examination. The remaining cases were discarded as non-polio AFP cases after detailed review of all clinical and laboratory data available by the expert panel.

All AFP cases with onset in 2000 have a final diagnosis available with the majority of cases being Gillian Barre Syndrome ([GBS] 28%), meningo-/encephalitis (16%) and transverse myelitis (11%).

In 2001, a total of 54 AFP cases so far had timely stool specimens taken which tested negative for wild poliovirus and were thus discarded as non-polio AFP cases. Of the 35 cases without adequate stool samples, 21 cases had no residual paralysis and were discarded based on the findings of the follow-up examination. The remaining cases are either still pending follow up examination or final classification by the expert panel.

All AFP cases with onset in 2001 have a final diagnosis available with the majority of cases being GBS (35%), transverse myelitis (19%) and meningo-/encephalitis (12%).

In 2000, all districts in the country achieved an OPV3 coverage of above 90%. In order to assess reported low coverage in Kuala Lumpur and ascertain more accurately the proportion of immunization given by the private sector, a coverage survey was conducted in 2000 and revealed that 89.1% of children included had completed their third dose of OPV before the age of one year.

Analysis of the immunization status of AFP cases, which can be considered a relatively representative sample of the population, showed that 85% (2001) to 90% (2000) were fully immunized. The percentage of zero dose children was below two percent in both years (Table 2).

Table 2: Immunization status of reported AFP cases, Malaysia 2000 and 2001

<table>
<thead>
<tr>
<th>Immunization status</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>zero dose OPV</td>
<td>1.4%</td>
<td>2%</td>
</tr>
<tr>
<td>1-2 doses OPV</td>
<td>3.4%</td>
<td>8%</td>
</tr>
<tr>
<td>unknown</td>
<td>4.8%</td>
<td>4%</td>
</tr>
<tr>
<td>3++ OPV</td>
<td>90.4%</td>
<td>86%</td>
</tr>
</tbody>
</table>

No supplementary immunization has been carried out since the declaration of certification of poliomyelitis-free status in October 2000.

To establish a national inventory of wild poliovirus infectious and potentially infectious materials survey forms were sent to a total of 223 agencies involving 415 laboratories, comprising government hospitals (119), private hospitals (32), private laboratories (63), institutions (6) and universities (3).

A summary of results at the end of May 2001 indicated that all Government hospitals, institutions and universities replied. Of the private laboratories 56% replied while 57% of the private hospitals responded. Materials found in two laboratories so far were destroyed according to the set protocol. To monitor response
rates and organize follow-up of non-responders, a computerized national database has been developed to manage the national inventory.

**Mongolia**

In 2000, a total of 17 AFP cases was reported. The percentage of routine reports received during the year was 83.3%. The percentage of AFP cases reported within 14 days of onset of paralysis was 70.5%. The adequate stool specimen collection rate was 70.5%. All cases were investigated within 48 hours and 94.1% of cases had a follow-up examination conducted. All cases were reviewed by the expert panel and discarded as non-polio AFP achieving a non-polio AFP rate of 1.95.

Reported coverage for OPV3 was 94% on a national level with all provinces achieving a coverage above 80%. Two rounds of supplementary immunization were conducted in major population centres in May and June 2000 targeting almost 14 000 children under the age of five years and achieving over 90% coverage.

**Papua New Guinea**

The annualized non-polio AFP rate for 2001 has not yet reached the level of previous years with being only 0.6 per 100 000 population <15 years of age. Timeliness of reporting within 14 days of paralysis has continued to improve over the years with 92% of the AFP cases reported within 14 days from onset to date. There has been a notable decline in the timeliness of investigation, though, which is of concern and has been addressed through regular telephone contacts and visits to provinces.

However there are still practical problems that hinder this activity and this is mainly due to lack of reliable telecommunication services, the non-availability of provincial surveillance officers who often have several other responsibilities, or the high turnover of trained staff. Other important issues are: the lack of continued education; the lack of awareness on the part of the public to recognize cases and bring them in early for investigation; the readiness of the health workers to detect these cases and refer them to the AFP surveillance system; and lastly the difficult geographical terrain.

Given the geographical and communication network problem in Papua New Guinea, adequate timely stool collection has been a problem but there appears to be remarkable and steady improvements. In 1998, 63% of cases had adequate stool specimens, then 43% in 1999, 48% in 2000 and 67% in 2001. Performance of collection of one stool specimen from AFP cases within 14 days from onset is better with 81% in 1998, 53% in 1999, 63% in 2000 and 75% in 2001. Adequate stool collection for 2001 looks promising and is the highest rate ever.

Regular analysis of AFP cases continues to identify clusters, which are further investigated by the national AFP surveillance officers. One cluster was reported so far in 2001 in the southern part of Western Province near the international border with Indonesia.

The national AFP surveillance officers also continue to carry out retrospective record reviews for unreported AFP cases during provincial visits. While on these visits, awareness building on AFP surveillance to medical officers, surveillance officers and other available health workers is conducted with priority given to provinces with low performances or when there has been a change of trained surveillance officers.

The national poliomyelitis laboratory in Goroka continues to conduct an aseptic meningitis study involving children under five years of age admitted to Goroka General Hospital for neurological diseases other than AFP, whereby stool specimens are tested for polio- and other enteroviruses.

Routine immunization coverage remains very low. The official coverage for children under one year old for four doses of OPV in 2000 was 46%. For the period January to June 2001 with only 61% of reports received it was at 19.8%. Among the reasons identified there are a vaccine shortage from September 2000 until June 2001 and distribution problems due to funding restraints. Since the last TAG meeting, no supplementary immunization was carried out.
Philippines

AFP surveillance officers, designated as EPI surveillance officers since February 2001, are now conducting surveillance for measles and neonatal tetanus cases as well. Alignment of these two additional EPI target diseases into AFP surveillance had no negative impact on performance. In effect, the AFP surveillance system is showing for the years 2000 and 2001 the highest performance achievements since it was established in 1991.

From January 1st to July 28, 2001 a total of 172 AFP cases were reported throughout the country. The expected number of AFP cases for the same period is 166 with a non-polio AFP rate of 1.04 per 100,000 children below 15 years of age. Stool specimen collection rate for the same period is 80%. Completeness of report is 87% and timeliness of report is 85% in the same period.

With the new laboratory testing requirements implemented, a VDPV was isolated from an AFP case in Cagayan de Oro City in the southern Philippines. Viral isolates from stools specimens showed 3.1% difference from Sabin 1 (28/906), confirming that this virus is a VDPV strain. The AFP case, an 8-year-old male had onset of paralysis on 15 March 2001 and resides in a slum area (Lapaz 1) of Barangay Lapasan, Cagayan de Oro City, province of Misamis Oriental, Region X (Northern Mindanao) (Figure 11).

Figure 11. Location map of suspected VDPV

On March 15 the patient presented with "flank pain radiating to the epigastric region and both lower extremities causing inability to walk". No fever was noted.

With a preliminary diagnosis of Pott disease (TB of vertebrae) the patient was admitted to the Northern Mindanao Medical Centre on 27 March 2001. Clinical examination on admission showed "flaccid paralysis of both lower extremities and reduced deep tendon reflexes". The case was investigated the same day by the EPI Surveillance Officer for Region X and had stools specimens collected on 27 and 30 March 2001. Vaccination history indicated three doses of OPV, however, three of his six siblings had not been vaccinated. Follow up examination conducted on May 17 revealed severe residual paralysis with the patient unable to walk. Final case classification is still pending on the next AFP/Polio Expert Panel meeting on 22 August 2001.

Cagayan de Oro had another suspect AFP case reported in February 2001, initially clustering with the suspect VDPD according to local criteria (two or more AFP cases with onset within 2 months in the same province). This was a 14-year-old male with reported onset of paralysis on 24 February 2001. The patient had two stools specimens collected on 1 and 2 March 2001, both of which were negative for poliovirus. Further investigation showed that the case had progressive paralysis (probably spastic) of both extremities for three years,
with history of frequent seizures, and had been bed-ridden during the year preceding last admission. The patient died on 20 April 2001 with a final diagnosis of TB meningitis. The Expert Panel discarded the case as not AFP.

Region X has had a very good performing AFP surveillance system since 1997, with non-polio AFP rates around or above 1 and stools specimen collection rates >= 80% for the period 1998-2001.

Reported routine immunization coverage for Region X on a province or city basis has been high (usually above 80%) for the same period, but despite the high reported coverage figures at the different levels, focal areas of persistent low coverage for OPV and other antigens could be expected to be found (e.g. in slum areas like the one the case comes from).

A quick coverage assessment was conducted by a National-Regional team of investigators, from 10 to 17 June 2001 in Barangay Lapasan, including Lapaz 1, the case area, on 312 children 9 months to 4 years of age using standard methodology. Estimated OPV3 coverage was 92% for the whole Barangay and above 80% for each of the areas assessed individually, including Lapaz 1. Intensified active surveillance, with an active search of AFP cases at the two Barangay Health Stations catering to all health needs of the population in that area and at the community level, was also conducted in the same period. No new AFP cases or missed AFP cases were detected.

Despite the negative results in the preliminary investigation, AFP case contact tracing with stool specimen collection was conducted in the area from 31 July 31 to 2 August. All stool specimens are being processed at the national poliovirus laboratory. In addition, extended surveillance for viral meningitis is being piloted in Northern Mindanao Medical Centre and preliminary results will be available in the forth-coming weeks.

Routine immunization coverage is reported between 80 and 90% with regional and provincial variability. In spite of major changes being established according to the new Health Sector Reform Agenda for 2001-2004, performance of routine immunization services seems to be preserved so far. However, regarding the effects of the Health Sector Reform on immunization services, no formal assessment has been conducted in the Philippines. Essential central level immunization functions (formulation of national policies, strategies, standards and guidelines; international coordination; procurement and quality assurance of vaccines and equipment; information analysis; monitoring and operational research or other activities to improve the quality and uptake of immunization services) continue under the responsibility of the national level, but at the same time there was a reduction of 80% of the immunization programme staff at the central level in 2000.

As the capacity for specific technical skills and functions need to be preserved or strengthened at all levels to ensure high quality performance of the immunization services, a reassessment of these functions as well as of other EPI components (vaccine requirements, vaccine storage and distribution, stock management, transport, vaccine wastage, record keeping and reporting, immunization safety policies and practices, human resources and training needs, and all resource implications including costing and funding) becomes a top priority at this stage of the reform process. The last National Immunization Programme Review was held in 1991. For these reasons a comprehensive National Immunization Programme Review is being proposed for the near future.

It should be noted that the apparent declining trends in coverage of the fully immunized child (FIC) according to officially reported figures are not confirmed by surveys conducted countrywide including the Maternal and Child Health Survey conducted in 2000. However, in some high risk areas, such as urban slum areas, lower coverage than the national average should be expected.

Viet Nam

The reported proportion of fully immunized children under one year of age was 96% nationwide. Among 623 districts in the whole country, 606 districts attained the coverage of 80% for DPT3. In addition, SNIDs for OPV were conducted in December 2000 in all the border districts (115 districts in 24 provinces, with coverage of 99% among 1.7 million children under five years).

The AFP reporting rate has remained above 1 per 100 000, with only five provinces with a rate less than 0.8. Other AFP indicators, including two adequate stool samples, were maintained at above 90%.
Plans for the next year include continuing the high routine immunization coverage and high quality AFP surveillance (supplemented by active searches in weak areas) and SNIDs in 39 high-risk districts in the southern and Highlands areas.

Australia

Active AFP surveillance was initiated in Australia during March 1995 as a necessary requirement for Australia to meet the certification standards required for the World Health Organization (WHO) poliomyelitis eradication program. During 2000, the coordination of clinical AFP surveillance was transferred from the Department of Health and Aged Care (DOHAC) in Canberra to the Victorian Infectious Diseases Reference Laboratory (VIDRL) in Melbourne.

Sixty-seven notifications were received, 66 with onset of paralysis between 1 January and 31 December 2000, and one with date of onset in 1999. Twelve cases were duplicate notifications. One case was an error in reporting by the notifying doctor and one case was from Noumea. Despite repeated attempts, follow-up of five cases was unsuccessful. Forty-five cases have been reviewed by the Poliomyelitis Expert Committee (PEC) and two very late notifications are pending review. Of the 45 reviewed cases, 43 have been classified as AFP (non-polio) and two were discarded as non-AFP. It is likely that the two pending cases will be classified in the same category by the PEC.

The year 2000 was the first year in which Australia reached the surveillance target of one case per 100 000 population aged less than 15 years by prospective surveillance. In previous years this target was not reached or was reached by including cases ascertained by retrospective review of hospital records. The proportion of patients with 60-day questionnaires completed increased to 89% and the proportion with one or two stool specimens collected increased to 47%. With continued promotion of the need for ongoing AFP surveillance in Australia and the efficiency of having virological and clinical surveillance both coordinated at VIDRL, Australia’s AFP surveillance program continues to improve.

Routine immunization coverage currently stands at 92% in Australia for children aged 12-15 months. The five-dose OPV immunization regime is being reviewed by the Australian Technical Advisory Group on Immunization (ATAGI). The ATAGI is deliberating changing the Australian Standard Vaccination Schedule to include a partial or full IPV immunization regime, an outcome is expected by the end of 2001.

In an effort to sustain the momentum of the poliomyelitis eradication initiative, DOHAC held a Strategic Planning Workshop on Poliomyelitis Eradication in Australia in February 2001. The aim of the workshop was to develop a draft action plan that outlined the next stage in Australia's efforts towards the goal of global eradication of poliomyelitis. The workshop also considered the future role of the NCC and PEC and agreed that it was necessary for both these committees to continue until the global eradication of poliomyelitis is achieved. In particular, the workshop focused on issues of containment and destruction of wild poliovirus, poliomyelitis surveillance and outbreak response strategy.

In addition to ensuring that Australia remains free of poliomyelitis, the Commonwealth Government has provided funding for supplementary immunization activities across the Region.

Australia is one of the first nations to undertake laboratory containment of wild poliovirus. Within a short timeframe significant progress has been achieved. As a consequence of establishing a database of all organizations that might store biological samples and setting up a call centre to facilitate the survey, over 80 per cent of organizations had been successfully surveyed in three stages by the end of year 2000. It appears that reference, regulatory, manufacturing and environmental testing laboratories are most likely, and research laboratories less likely, to retain stocks of wild poliovirus. The survey of research laboratories (especially those within universities) was incomplete at the end of December 2000. Commercial pathology laboratories throughout Australia appear extremely unlikely to store material containing poliovirus. Where such materials have been identified, an inventory of these has been provided and the national inventory of wild poliovirus stocks (and potentially infectious materials) has been started.

It has been perceived as disappointing that over a five-month period in 2000, despite a vigorous and active program to contact them in various ways, 20% of all the organizations on the database did not respond (or
provided incomplete responses) to various stages of the survey. As a consequence the national inventory of poliovirus infectious or potentially infectious material was, at the end of year 2000, incomplete.

**Brunei Darussalam**

The NIP was established in Brunei Darussalam in 1957. The programme has undergone several reviews and modification as per the latest WHO recommendations. To date nine antigens are included.

Generally, the EPI programme is very well accepted by the community of Brunei Darussalam. Coupled with the high population accessibility to health care services, the EPI coverage has been maintained at optimal level (> 95%) since 1992. In year 2000, an immunization coverage survey was carried using 30-cluster sampling technique in each district and revealed that coverage level was consistently high. In view of the sustained high coverage of immunization nationally and sub-nationally no supplementary immunization activities undertaken or proposed to date.

During the period between 1997 until June 2001 a total of six AFP cases were reported to the Disease Control Unit. All six cases (100%) were reported within 14 days of onset of paralysis and all investigated within 48 hours of being notified. The time lag between onset of paralysis and notification for the six ranged between 1 to 11 days with the average lag period being 3.7 days. As for the “60-day follow-up” the level achieved is 80% (5 out of 6 cases). Four cases fully recovered while one child still had residual paralysis. The remaining one case (reported in 1999) died two week short of the scheduled 60-day follow-up date.

For all the six cases (100%) two adequate stool specimens were collected from each, within 14 days of onset of paralysis and sent to the Regional Reference Laboratory in Australia for virological analysis. All specimens tested negative for wild poliovirus.

The NCC, which also served as Expert Panel, reviewed the six AFP cases and classified all as non-polio AFP. Based on this performance up till year 2000, the overall non-polio AFP rate is 1.38 per 100 000 populations below the age of 15 years and 3.25 per 100 000 populations below the age of 5 years.

**Hong Kong (China)**

All routine AFP surveillance reports were received each month for the year 2000. 67% of AFP cases were reported within 14 days of the onset of paralysis. Case investigation was complete, with 100% of AFP cases investigated and 100% followed up after 60 days after onset of paralysis. All AFP cases were investigated within 48 hours of receipt of report.

Seventy eight per cent of AFP cases had two stool specimens sent to the laboratory for investigation, while 61% of AFP cases had two adequate stool specimens taken within 14 days of onset of paralysis.

The non-polio AFP rate was 1.54 per 100 000 population under 15 years with the good performance continuing in 2001 to date with an annualized non-polio AFP rate of 1.58 per 100 000 population under 15 years.

Reported routine immunization coverage for OPV3 was 88% in 2000. No supplementary immunization has been conducted.

**Japan**

In response to two alleged cases of OPV-derived paralysis in a prefecture in April and May 2000, the Communicable Diseases Control Panel of the Public Health Council established a task force and conducted a comprehensive laboratory and epidemiological investigation. The conclusion of the investigation rejected a positive relationship between health hazards and the OPV. However, since the prefecture had ceased OPV immunization until firm safety was ensured, use of the same lot of OPV vaccines was stopped nationally and in fact all OPV immunization was suspended temporarily.
As such a decision with wide implication was made by a prefecture, the decision-making process itself was also reviewed. Taking advantage of this case, a standard response protocol for dealing with such alleged cases of vaccine-derived incidence was developed and endorsed by the panel in August 2000. The coverage of OPV recovered in the autumn session of the immunization plans, but the provisional figure of annual coverage for year 2000 was around 89%, which is about 10% lower than in previous years. Whether full recovery and catching up of those who did not receive OPV will be observed in 2001 sessions is a current concern.

The laboratory of enteroviruses at the National Institute of Infectious Diseases (NIID) continues to coordinate a nationwide network of 71 district public health laboratories. In 2000, 993 samples from 15 prefectures were tested for polioviruses and other enteroviruses.

Macao (China)

In 2000, all reporting sites gave expected routine reports while more than 90% of reports arrived at the surveillance centre in time. In 2000, all AFP cases were reported to the surveillance centre within 14 days of onset. One AFP was reported in the first half year of 2001 but not within two weeks of onset of paralysis. Investigation was conducted within 48 hours of the hospital coordinator being notified the case.

All AFP cases in 2000 and first half of 2001 were investigated, but only 50% AFP case had follow up after 60 days of onset of paralysis. As two adequate stool samples were collected and no poliovirus was detected, these cases were discarded as non-polio AFP cases. The non-polio AFP rate per 100 000 of the population under 15 years of age was two in 2000 and two in the first half of 2001.

The coverage of OPV3 immunization among infants at their first birthday was 85.3% in 1996, 87.75 in 1997, 91.2% in 1998, and 91.6% in 1999 and 2000. Taking into account that some children no longer live in Macao but are still registered in the computer system, the actual immunization coverage should be higher than the rate reflected by the computer system.

As high coverage of routine immunization has been maintained for many years and is expected to be maintained in the future, supplementary immunization is currently not recommended in Macao. There is enough stock of polio vaccine for at least one round of supplementary immunization for children in an age group of a five-year interval (e.g. children at age of 0-4, 5-9 or 10-14) in case there is any imported case of poliomyelitis.

New Zealand

Surveillance reporting completeness reached 94% in 2000. Fifty-seven percent of AFP cases were reported within 14 days of the onset of paralysis. Case investigation was complete, with 100% of AFP cases investigated and 93% followed up after 60 days after onset of paralysis. Half of the AFP cases were investigated within 48 hours of receipt of report.

Seventy-nine per cent of AFP cases had at least one stool specimen sent to the laboratory for investigation, whilst 71% of AFP cases had two adequate stool specimens taken within 14 days of onset of paralysis.

The non-polio AFP rate was 1.7 per 100 000 population under 15 years.

Routine immunization coverage for OPV3 was 82% in 2000. No supplementary immunization has been conducted.

Republic of Korea

In 2000, 661 reports of monthly zero reporting and 35 AFP cases were reported from 70 hospitals nationwide. This makes 78.7% of completeness in reporting with 74.8% of reports received on time. All AFP cases were investigated and had follow-up examinations conducted. All cases were investigated within 48 hours of onset and had at least one stool specimen collected. Seventy-four percent of AFP cases had adequate stool samples taken. All cases were reviewed by the expert panel and discarded as non-polio AFP resulting in a non-
polio AFP rate of 0.35 per 100000 of the population under 15 years. In 2001 to date, a non-polio AFP rate of 0.21 has been achieved with all cases having adequate stool specimens collected.

AFP surveillance is mainly focused on the major population centres of Seoul and Pusan and is supplemented on a nationwide basis by enterovirus surveillance coordinated by the national poliomyelitis laboratory. This system is mainly targeting aseptic meningitis patients but virologic testing has also commenced in 2001 for hand-foot-mouth disease/herpangina in a respective surveillance system.

Coverage of OPV3 has been maintained over 95% for a long time, since OPV was first introduced. According to survey results in 1994, coverage levels for OPV1, OPV2 and OPV3 were over 98% and OPV4 over 90%. There are no supplementary immunization activities conducted and no plans for such in the future.

Singapore

All expected routine AFP surveillance reports were received each month for the year 2000. One hundred percent of AFP cases were reported within 14 days of the onset of paralysis. Case investigation was complete, with 100% of AFP cases investigated and 100% followed up 60 days after onset of paralysis. All AFP cases were investigated within 48 hours of receipt of report.

All AFP cases had at least one stool specimen sent to the laboratory for investigation, while 83% of AFP cases had at least two adequate stool specimens sent to the laboratory. All the AFP cases had at least one stool specimen taken within 14 days of onset of paralysis. Eighty-three percent of AFP cases had two adequate stool specimens taken within 14 days of onset of paralysis.

The non-polio AFP rate was 0.9 per 100 000 of the population under 15 years and 0.9 per 100 000 of the population under 5 years.

Routine immunisation coverage was 90% by one year of age in the year 2000. No supplementary immunization has been conducted.

2.3 Regional poliomyelitis laboratory network overview

The poliomyelitis laboratory network continuous to be well established in this Region, and is being used to provide essential information for action in responding to importation of wild poliovirus and detection of vaccine derived polioviruses. Performance levels have been maintained at those required for certification of poliomyelitis eradication since the Region was declared as poliomyelitis-free. The formal system for annual accreditation of Network Laboratories is well established and all laboratories in the Regional Laboratory Network are performing at WHO accreditation standard. For those laboratories that are provisionally accredited, appropriate steps have been undertaken to improve their laboratory performance.

The majority of outstanding laboratory equipment needs have now been met, mainly through the generosity of the partner agencies and governments but support is still required for maintenance of such equipment, specifically under bio-safety concerns. The workload of the laboratory network is expected to further increase, mainly due to the new requirements for intratypic differentiation of all poliovirus isolates. Thus, even more funding support is required to ensure that the laboratory network is maintained at least until global certification. Special attention needs to be given to further standardizing the laboratory data management system, establishing a support system for equipment maintenance, distribution of selected supplies and developing standardized approaches on in-house quality control. Additional support is also required to meet the continuing demand for training in basic laboratory techniques. Long-term commitment to supporting the laboratory network would allow better long-term planning and coordination and subsequently more efficient use of resources. The poliomyelitis laboratory network is a tremendous resource for the Region, which can be built upon for the control of other diseases, including measles, and eventually allow countries to develop responsive communicable disease surveillance systems closely linked to public health laboratories.
2.3.1 Laboratory results

More than 13,500 stool specimens from over 6,800 AFP cases were processed by national and sub-national poliomyelitis laboratories in the Region in 2000 (see Tables 3 and 4). From January to 31 July 2001 (data as of 10 August 2001) a total of 6,297 stool samples from 3,213 AFP cases were processed (see Tables 5 and 6). No wild polioviruses were detected in 2000 or 2001.

Table 3. National laboratory results 2000 as at 10 August 2001

<table>
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<tr>
<th>National Polio Laboratories</th>
<th>Country</th>
<th>AFP with specimens submitted in 2000</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>Polio mix</th>
<th>Polio/ NPEV</th>
<th>% AFP cases positive for NPEV</th>
<th>% of results reported within 28 days</th>
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<tbody>
<tr>
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<td>VIDRL, Melbourne PICs</td>
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</tr>
<tr>
<td>IMR, Goroka PNG</td>
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<td>0</td>
<td>17</td>
<td>81</td>
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</tr>
<tr>
<td>RITM, Manila PHL</td>
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<td>2</td>
<td>10</td>
<td>74</td>
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<tr>
<td>NIHE, Hanoi VTN</td>
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<td>0</td>
<td>1</td>
<td>24</td>
<td>94</td>
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</tr>
<tr>
<td>PI, Ho Chi Minh VTN</td>
<td>249</td>
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<td>0</td>
<td>22</td>
<td>98</td>
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<tr>
<td>VIDRL, Melbourne AUS (BRU)</td>
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<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>93</td>
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</tr>
<tr>
<td>PHLC, Hong Kong HK (MAC)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>97</td>
<td></td>
</tr>
<tr>
<td>NIH, Seoul KOR</td>
<td>40</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>ESR, Wellington NZ</td>
<td>10</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>SGH, Singapore SIN</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>25</td>
<td>100</td>
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</tr>
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<td><strong>Total</strong></td>
<td><strong>6,855</strong></td>
<td><strong>80</strong></td>
<td><strong>126</strong></td>
<td><strong>76</strong></td>
<td><strong>97</strong></td>
<td><strong>28</strong></td>
<td><strong>12</strong></td>
<td><strong>87</strong></td>
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</tr>
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</table>

Source: WHO WPRO EPI Surveillance System
### Table 4. Intratypic differentiation results 2000 as at 10 August 2001

<table>
<thead>
<tr>
<th>Regional Reference Laboratory</th>
<th>Country</th>
<th>AFP with wild virus in 1999</th>
<th>AFP with polio isolates submitted to Reference laboratories in 2000</th>
<th>Intratypic differentiation results</th>
<th>ID results within 90 days of onset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Polio 1</td>
<td>Polio 2</td>
</tr>
<tr>
<td>NIID, Tokyo</td>
<td>CAM</td>
<td>0</td>
<td>7</td>
<td>1</td>
<td>0</td>
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<td>CAPM, Beijing</td>
<td>CHN</td>
<td>1*</td>
<td>384</td>
<td>198</td>
<td>0</td>
</tr>
<tr>
<td>NIID Tokyo</td>
<td>LAO</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>VIDRL, Melbourne</td>
<td>MAA</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NIID Tokyo</td>
<td>MOG</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NIID Tokyo</td>
<td>VTN</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>VIDRL, Melbourne</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PNG</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PHL</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
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</tr>
<tr>
<td></td>
<td>NZ</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>PICs</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>SIN</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NIID, Tokyo</td>
<td>KOR</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>1*</td>
<td>409</td>
</tr>
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</table>

* AFP case resulting from importation of wild poliovirus

Source: WHO WPRO EPI Surveillance System

### Table 5. National laboratory results 2001 as at 10 August 2001

<table>
<thead>
<tr>
<th>National Polio Laboratories</th>
<th>Country</th>
<th>AFP with specimens submitted in 2001</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>Polio mix</th>
<th>Polio/ NPEV</th>
<th>AFP cases pending lab results</th>
<th>% AFP cases positive for NPEV</th>
<th>% of results reported within 28 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIID, Tokyo</td>
<td>CAM</td>
<td>92</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>100</td>
</tr>
<tr>
<td>Prov. Laboratories</td>
<td>CHN</td>
<td>2609</td>
<td>24</td>
<td>61</td>
<td>29</td>
<td>35</td>
<td>5</td>
<td>542</td>
<td>8</td>
<td>89</td>
</tr>
<tr>
<td>NIID, Tokyo</td>
<td>LAO</td>
<td>21</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>19</td>
<td>100</td>
</tr>
<tr>
<td>IMR, Kuala Lumpur</td>
<td>MAA</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>PHI, Ulaanbaatar</td>
<td>MOG</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>VIDRL, Melbourne</td>
<td>PICs</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>IMR, Goroka</td>
<td>PNG</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>17</td>
<td>100</td>
</tr>
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<td>RTIM, Manila</td>
<td>PHL</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>NIH, Hanoi</td>
<td>VTN</td>
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<td>1</td>
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<td>0</td>
<td>0</td>
<td>9</td>
<td>14</td>
<td>97</td>
</tr>
<tr>
<td>PI, Ho Chi Minh</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>21</td>
<td>94</td>
</tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>14</td>
<td>98</td>
</tr>
<tr>
<td>PHLC, Hong Kong</td>
<td>HK (MAC)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100</td>
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<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>ESR, Wellington</td>
<td>NZ</td>
<td>3</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>67</td>
<td>100</td>
</tr>
<tr>
<td>SGH, Singapore</td>
<td>SIN</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3204</td>
<td>29</td>
<td>63</td>
<td>31</td>
<td>6</td>
<td>584</td>
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<td>92</td>
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</tr>
</tbody>
</table>

Source: WHO WPRO EPI Surveillance System
Table 6. Intratypic differentiation results 2001 as at 10 August 2001

<table>
<thead>
<tr>
<th>Regional Reference Laboratory</th>
<th>Country</th>
<th>AFP with wild virus in 2000</th>
<th>AFP with polio isolates submitted to Reference laboratories in 2001</th>
<th>Intratypic differentiation results within 90 days of onset</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Wild</td>
<td>Total</td>
</tr>
<tr>
<td>Polio 1</td>
<td>Polio 2</td>
<td>Polio 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIID, Tokyo CAM</td>
<td>CAM</td>
<td>0</td>
<td>3</td>
<td>1</td>
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<td>154</td>
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<td>NIID, Tokyo LAO</td>
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<td>1</td>
<td>0</td>
</tr>
<tr>
<td>VIDRL, Melbourne MAA</td>
<td>MAA</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>NIID, Tokyo MOG</td>
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<td>3</td>
<td>1</td>
</tr>
<tr>
<td>NIID, Tokyo VTN</td>
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<td>0</td>
<td>3</td>
<td>1</td>
</tr>
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<td>VIDRL, Melbourne PNG</td>
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<td>0</td>
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<td>PHL</td>
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<td>2</td>
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</tr>
<tr>
<td>AUS</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HK</td>
<td>HK</td>
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<td>PICs</td>
<td>PICs</td>
<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>SIN</td>
<td>SIN</td>
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<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NIID, Tokyo KOR</td>
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<tr>
<td>Total</td>
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<td>166</td>
<td>72</td>
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</tbody>
</table>

Source: WHO WPRO EPI Surveillance System

2.3.2 Routine proficiency monitoring

Monitoring of routine laboratory proficiency, timeliness and non-polio enterovirus (NPEV) isolation rate, has continued through the monthly laboratory results reporting system. Routine proficiency monitoring results are included in Tables 3 to 6. For the Region as a whole in 2000, 87% of laboratory results were available within 28 days of the specimens’ receipt in the laboratory, and 91% of results were available within 42 days. In 2001 up to 10 August, 92% of laboratory results were available within 28 days of the specimens’ receipt in the laboratory, and 100% of results were available within 42 days.

Since 1996 the criterion for surveillance timelines has been used; that is, 80% of all poliomyelitis isolates should have intratypic differentiation results available within 90 days of onset of paralysis. Eighty-five percent of all cases with poliovirus isolates had final results available within 90 days in 2000. As of 10 August 2001, 90% of all poliomyelitis isolates from AFP cases in 2001 have intratypic differentiation results available within 90 days of onset of paralysis. The TCG recommended during its last meeting in May 2001 to reduce the interval between onset of paralysis and receipt of intratypic differentiation results to = 60 days (target >80%).

Although no longer a criterion for laboratory accreditation, the NPEV isolation rate is still used as an indirect measure of laboratory sensitivity. For the Region as a whole, the NPEV isolation rate in 2000 was 12%. Rates vary from laboratory to laboratory (4-50%), but all national laboratories in the network continue to report NPEV isolation rates compatible with the geography, climate and social factors present in the areas they serve. The Regional NPEV isolation rate in 2001 up to 10 August is 9%.
2.3.3 Status of WHO laboratory accreditation

The WHO poliomyelitis laboratory accreditation scheme continues to provide documentation that a laboratory has the capability and the capacity to detect, identify and promptly report wild polioviruses that may be present in clinical and environmental specimens. The accreditation process further provides a mechanism for identifying resource and training needs, a measure of progress, and a link to the Global WHO Laboratory Network. Accreditation is reviewed annually by WHO and is based on laboratory performance during the immediately preceding 12 months with complete data.

A laboratory proficiency test was carried out in the second quarter of 2000. All of the 10 national laboratories tested achieved a score of 100% during the first distribution. The 2001 proficiency test is currently (August to September) been carried out.

All national laboratories have been visited and reviewed using the standard accreditation checklist. All laboratories were accredited with one national laboratory provisionally accredited for 2000 (Papua New Guinea). A detailed plan of action was developed for the laboratory in Papua New Guinea. Provisional accreditation was mainly based on the low number of stool samples processed. An aseptic meningitis study has commenced again to provide additional stool specimens for poliovirus testing (number of expected AFP cases is only 20) and timeliness of test results, which was below the required 80% for the period reviewed during the accreditation visit improved significantly in 2001.

The accreditation status of the Regional Reference Laboratories is presented in Table 7. The visit to the Regional Reference Laboratory in Australia is scheduled during the first half of August and the visit to Japan is scheduled at the end of August 2001.

Table 7. Accreditation status of Regional Reference Laboratories

<table>
<thead>
<tr>
<th>Country</th>
<th>Laboratory</th>
<th>Date last reviewed</th>
<th>Current status</th>
<th>Most recent proficiency test score - isolation</th>
<th>Most recent proficiency test score – ITD</th>
<th>Operating procedures and work practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>Chinese Academy of Preventive Medicine, Beijing</td>
<td>January 2001</td>
<td>Accredited</td>
<td>100</td>
<td>NA</td>
<td>100</td>
</tr>
<tr>
<td>Japan</td>
<td>National Institute of Infectious Diseases, Tokyo</td>
<td>November 1999</td>
<td>Accredited</td>
<td>100</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>Australia</td>
<td>Victorian Infectious Diseases Reference Laboratory, Melbourne</td>
<td>December 1999</td>
<td>Accredited</td>
<td>100</td>
<td>100</td>
<td>96</td>
</tr>
</tbody>
</table>

The poliomyelitis laboratory network in China has been conducting annual proficiency tests since 1992. Proficiency standards have consistently improved since that time, with all 31 passing the test in 2000 and 2001. Furthermore, since 1999 all except one of the 31 provincial poliomyelitis laboratories in China demonstrated to be operating at WHO accreditation standard and were accredited (Table 8).
Table 8. Accreditation status of provincial poliomyelitis laboratories in China

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>100</td>
</tr>
<tr>
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<td>100</td>
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</tr>
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<td>Hebei</td>
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<td>100</td>
<td>100</td>
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</tr>
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<td>Inner Mongolia</td>
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</tr>
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2.3.4 Coordination of the laboratory surveillance system

Coordination of laboratory activities is founded on the monthly laboratory reporting system established in 1994. The system continues to work well, with network laboratories reporting results and performance indicators on a regular basis. Results and performance feedback continue to be provided to all laboratories in the network on a monthly basis, and laboratory results are regularly reported in the Poliomyelitis Surveillance Weekly Report issued by the Regional Office.

One of the performance criteria for the laboratory network in the Western Pacific is that all poliovirus isolates, regardless of their source, are being referred to a Regional Reference Laboratory for intratypic differentiation. In order to decrease the workload of the Regional Reference Laboratories, staff of selected national laboratories were trained to use PCR technology for enterovirus and other virus testing. Proficiency tests are currently being conducted.

Since the beginning of 2001, and stimulated by recent poliomyelitis outbreaks in Haiti and the Dominican Republic caused by VDPV, all poliovirus isolates have to undergo two intratypic differentiation methods recommended by the Global poliomyelitis laboratory network (one method should be antigenic and the other one
molecular). All isolates with non-conclusive intratypic differentiation results should be immediately referred to a Global Specialized Laboratory for sequence analysis. Regional guidelines are being developed to specify surveillance (including virological) requirements to allow timely and reliable detection of VDPVs and determine the extent of circulation.

One putative VDPV was isolated from an AFP case in the Philippines with 96-98% homology to Sabin 1 in 5-NTR, capsid and 2A regions. The 3' end sequence revealed an unknown unique enterovirus sequence and the main conclusion was that the isolate is a clear recombinant between the vaccine strain and some non-polio enterovirus. Further analysis showed that the virus was not derived from previous VDPVs including isolates from Haiti and the Dominican Republic. The 3D sequence was not related to any sequences of known polio and enteroviruses. An important reversion for neurovirulence was found but intensified epidemiological investigations revealed no indication for extended circulation of the virus.

2.3.5 Regional laboratory data management system

A review of the current mechanisms employed in poliomyelitis laboratories of the Regional network to record, maintain and report laboratory data, together with the mechanism used in the Regional Office to receive, consolidate, analyse and report that data was performed by an external consultant after a briefing at WHO Geneva on current laboratory data management systems and plans for establishing an integrated data management system. Based on findings and recommendations from this review, a plan of action will be developed and implemented to make the laboratory data management system more functional and appropriate.

2.4 Accelerated measles control

2.4.1 Update on regional situation/draft regional plan of action for measles control

In 1989, the World Health Assembly resolved to reduce measles morbidity by 90% and measles mortality by 95% by 1995 compared with measles in the pre-vaccine era. In 1990, the World Summit for Children established the goal of 90% vaccine coverage for measles in 12-month old children by 2000. In the Western Pacific Region, reported measles vaccine coverage achieved 95% by 1996 and the 1995 morbidity and mortality reduction goals were achieved. These were achieved by routine immunization with one dose of measles vaccine. Despite these successes, progress was not uniform throughout the Region and measles remained a significant problem. It is estimated that between 26 000 and 39 000 young children died of measles and its complications in 1995 in the Region. In addition, surveillance was inadequate, with surveys and sentinel surveillance indicating that a maximum of one-third of measles cases were being reported.

In response to this situation, the Western Pacific Regional Plan of Action for Accelerated Measles Control was prepared in 1996. The stated objectives were to reduce the burden of measles in every country of the Region starting in 1999 and to develop measles surveillance to the extent that outbreaks of measles can be rapidly investigated and controlled, and epidemics predicted and prevented.

On 29 March 2001, WHO and UNICEF released their global plan for measles control: *Measles: Mortality Reduction and Regional Elimination, Strategic Plan 2001 – 2005* (WHO/V&B/01.15). The objectives of this Strategic Plan are:

(1) to halve the annual number of measles deaths by 2005, relative to 1999 estimates;

(2) to achieve and maintain interruption of indigenous measles transmission in large geographical areas with established elimination goals; and

(3) to convene a global consultation meeting in 2005, in collaboration with other major partners, to review the progress and assess the feasibility of global measles eradication.
The strategies recommended for reducing measles mortality include:

(1) providing the first dose of measles vaccine to successive cohorts of infants;
(2) ensuring that all children have a second opportunity for measles vaccination;
(3) enhancing measles surveillance with integration of epidemiological and laboratory information; and
(4) improving the management of every measles case.

This global plan advises that countries and regions that have already adopted a measles elimination goal should pursue it, but that countries that have not done so should only adopt the goal of measles elimination once the country or region is poliomyelitis-free. Currently there is no Regional Committee resolution for measles elimination in the Western Pacific Region. The proposed revised Regional Plan of Action for Accelerated Measles Control presented at the meeting has similar objectives as the global plan.

All countries of the Region are expressing enthusiasm for the opportunity to reduce the burden of measles and most countries have adopted a national plan of action for accelerated measles control. Great successes have already been achieved in Mongolia, the 20 PICs, and Australia, where indigenous measles transmission has been interrupted.

All countries in the Region had made measles a reportable disease up until the end of 2000, and all had reported measles cases and measles vaccine coverage on the annual WHO/UNICEF Joint Reporting Form on Vaccine-Preventable Diseases.

All eight recently poliomyelitis-endemic countries (Cambodia, China, the Lao People’s Democratic Republic, Malaysia, Mongolia, Papua New Guinea, the Philippines and Viet Nam) are in the process of integrating active surveillance for measles into their current AFP surveillance systems. The 20 PICs already conduct active surveillance, with routine zero reports. Japan has a sentinel surveillance system, with over 3000 reporting sites, that detects outbreaks and accurately characterizes measles cases. Australia; Brunei Darussalam; Hong Kong (China); the Republic of Korea; Macao (China); New Zealand; and Singapore have diverse surveillance systems, but all have already achieved at least good control of measles and attempt to report all cases. A regional measles surveillance database is under development and is currently being piloted in Cambodia, China, the Philippines and Viet Nam.

A regional laboratory network, modelled on the network for poliomyelitis, is currently being established. One regional reference laboratory has been designated (VIDRL, Melbourne, Australia; two more are pending formal designation, Chinese Academy of Preventive Medicine (CAPM), Beijing, China, and NIID, Tokyo, Japan) and national laboratories in most countries have been identified.

The regional reference laboratories are to accredit national laboratories, perform confirmatory testing and viral isolation and genotyping. National laboratories are to perform immuno globulin M (IgM) capture or indirect assays, or both, for measles and rubella, and to ensure quality in subnational laboratories. Where necessary, training in IgM serological techniques is being conducted. Courses have been held in Cambodia, in September 2000, and the Lao People’s Democratic Republic, in May 2001. All laboratories are to test for both measles and rubella.

In addition, a subregional laboratory network for the PICs was established in April 2000. There are four laboratories (Fiji, French Polynesia, Guam and New Caledonia) testing for measles, rubella, dengue, cholera, influenza and leptospirosis. It is not clear if there are enough suspected measles cases to support these laboratories.

Summary tables on routine measles immunization schedules are in Annex 3, and supplemental measles immunization activities in the countries and areas of the Region are in Annex 4.

China, with over 1.2 billion people, adopted its five-year National Plan of Action for Accelerated Measles in 1998. Great progress is being made in most areas of the country, and there is a national two-dose
immunization schedule. Certain areas have additional regularly scheduled doses to also ensure extremely high coverage among the migrant population.

Countries and areas with an established goal of measles elimination include Mongolia, the Philippines, the PICs, Australia and the Republic of Korea. Mongolia, the Philippines, 13 PICs and the Republic of Korea have all conducted national mass immunization campaigns. In addition, Mongolia conducted follow-up a mass immunization activity in October 2000, targeting a narrower age range from nine months to seven years. Likewise, the 13 PICs plan to conduct follow-up interventions in 2001 and 2002, also targeting narrower age ranges. The Philippines plans a follow-up mass immunization campaign targeting children aged nine months to five years in 2003.

Papua New Guinea conducted a national supplementary immunization campaign, including measles, in 1997, targeting children aged nine months to 59 months. This was followed by subnational campaigns in 1998 and 1999 in areas where less than 70% coverage had been achieved in 1997. Papua New Guinea is currently reassessing the role national measles campaigns will have in future control efforts.

Cambodia, the Lao People’s Democratic Republic and Viet Nam have completed successful pilot measles immunization interventions and have decided to conduct supplementary immunization throughout their countries. The Lao People’s Democratic Republic conducted a national measles mass immunization campaign in March - April 2001, targeting children aged nine months to 59 months. Cambodia conducted a subnational mass immunization intervention in 2001, covering about one-third of its total target population, and plans to conduct another intervention in 2002 that will cover the remaining population. Viet Nam plans to complete its initial supplementary immunization activities by January 2003.

Two routine doses of measles vaccine after the age of nine months are given in 23 (62%) of the countries and areas in the Region. Countries and areas that have only single-dose schedules include Japan, Malaysia, the Philippines and Viet Nam, all of which have high enough single dose coverage to warrant the immediate addition of a second dose into their national immunization schedules. Likewise, the PICs are pursuing elimination, and Kiribati, Nauru, Solomon Islands, Tokelau, Tonga, Tuvalu, and Vanuatu should adopt two-dose schedules. Cambodia, the Lao People’s Democratic Republic and Papua New Guinea deliver only one routine dose after nine months, but they have relatively low coverage and it may be premature to introduce a routine second dose.

2.4.2 Measles elimination in Mongolia

In 1973, measles vaccine was first introduced in Mongolia for infants with a single dose of measles vaccine at nine months of age. Despite high immunization coverage, measles outbreaks continued to occur at four-year intervals, compared with two-year intervals in the pre-vaccine era. In 1993, a second dose of measles vaccine was introduced for all children aged 12 months. In October 1994, the Ministry of Health organized supplementary immunization for measles vaccine in selected areas. The coverage achieved was 70%.

A new system of active surveillance commenced in 1996 with weekly zero-reporting from every aimag to the national surveillance centre. In order to prevent the expected 1996/1997 outbreak, the Ministry conducted NIDs for measles vaccine in May 1996 targeting children aged nine months to 11 years nationwide. Coverage achieved was 97%. As a result, measles cases have been reduced and the expected peak of measles cases in the winter 1996/1997 had been averted.

Outbreak of rash and fever cases has been reported from November 1999. In October 2000, MOH conducted NIDs for measles vaccine for all children aged nine months to 10 years old throughout the country achieving coverage of 96%. Despite these measures, rash and fever cases continued to be reported. A total of 2420 rash and fever cases were reported from November 1999 to December 2000. These cases were investigated and serological tests conducted for measles and rubella antibodies. Eighty-three cases tested positive for the presence of measles IgM and 594 cases tested positive for rubella IgM. Thus serological testing confirmed rubella epidemics with a concurrent incidence of a small number of measles cases.
2.4.3 Measles immunization campaign in Cambodia

Measles was a severe problem prior and after the initiation of the EPI programme in 1986. Reported routine measles immunization coverage has been 60%-70% for the last five years but there are pockets with less than 50% coverage. The current vaccination schedule provides one dose of measles vaccine beginning at nine months of age. There are no plans to move to a second dose schedule until after national catch-up campaigns will be completed in 2003.

Measles is endemic in the country and most outbreaks occur in the dry season (December to April). Almost half of the cases are over five years old; 5% of cases are under one year of age and 10% of cases over 10 years old. From vitamin A deficiency data, it is suspected a three-year epidemic cycle with outbreaks in 1990, 1993, 1996 and 1999/2000. There were not many cases reported until 1998, with large increase in 1999 and 2000 due to intensified surveillance that is now linked with AFP surveillance.

Measles serological testing was established in 2000, and about 70% of the nearly 300 samples taken to date have tested positive for measles IgM. No outbreak responses are being conducted yet as there is still so much disease. In addition, the ability to do a timely response is limited. Vitamin A is given during outbreak, both as treatment and as prophylaxis.

Pilot and small campaigns have been conducted in 1999 and 2000 for children under five years of age. A more extensive campaign for children up to 14 years of age is planned to 2001 to 2002. The campaigns to date have involved multiple interventions (including vitamin A and mebendazole). It is now planned to only include oral vitamin A and mebendazole in the future and target fewer areas but those with the highest numbers of measles.

2.4.4 Measles elimination programme in the Philippines

The Department of Health started to give the measles vaccine routinely to nine-month-old infants in 1982. From 1989, more than 80% of nine-month-old children were receiving this vaccine every year, an excellent vaccination coverage comparable to the best in the Region.

In 1998, the Philippine government adopted the elimination of measles as a goal to be reached by 2008. The first siege to launch the attack against measles was a six-month mass measles vaccination targeted at more than 26 million children between nine months to less than 15 years old called the Ligtas Tigdas Campaign. As part of the Philippine Measles Elimination Campaign, a pilot laboratory-based surveillance was established in San Lazaro Hospital, National Capital Region (NCR), Vicente Sotto Memorial Medical Centre (region VII) and Davao Medical Centre (Mindanao). The following year, it was institutionalized nationwide in the 16 regional hospitals.

The campaign required approximately 33 million doses of measles containing vaccine. The total cost was estimated in US$ 7.6 million, 66% of which was for vaccine and injection equipment, 20% on personnel, logistics and other operational costs and 14% for social mobilization activities.

In spite of the high vaccination coverage, localized areas are still of concern following the campaign as shown by surveillance data. Following the year 1998, impact of the campaign is not as remarkable as should be expected. The reason for this was the remaining foci of measles transmission in localized areas, mainly in slum areas of important cities of the NCR, including Manila.

Measles transmission in the identified areas will need careful attention from planning to implementation of the Follow-Up Supplementary Immunization to be conducted in 2003 targeting all children under five years of age. Additional financial support for this forthcoming campaign will be required. Vaccine and injection equipment requirements have been estimated.
2.4.5 Measles surveillance project in China

Measles vaccine was first used in China in mass campaigns in 1967. Prior to use of measles vaccine, the average annual incidence rate of reported measles cases and measles deaths based on data reported to the National Notifiable Diseases Reporting System during 1956-1965 were 772.4 and 11.3 per 100,000 population, respectively. Measles vaccine was included as one of the four routine vaccines given to all children when the EPI program was established in 1978.

In 1978, when the EPI began, 2.4 million cases of measles were reported. Since the late 1980s and achievement of the universal childhood immunization (UCI) goals, routine coverage with the first dose of measles has been high and the average incidence rate of measles in the 1990s has been under 10 per 100,000 population - a 98% decrease in morbidity. In 2000, there were 66,841 reported cases for an incidence of 5.6 cases per 100,000 population, and 118 reported measles deaths for a proportional case fatality of 0.18%.

In 1999, national plans for accelerated measles control and measles surveillance were distributed to all provinces. According to the national plan, provinces fall into one of four epidemiological groups based on average measles incidence, with each group having a different level of measles control goal. The groups are as follows:

- **Group A**: average incidence <2 per 100,000 population, measles elimination goal.
- **Group B1**: average incidence 2-5 per 100,000 population, outbreak prevention goal.
- **Group B2**: average incidence 5-15 per 100,000 population, outbreak prevention goal.
- **Group C**: average incidence >15 cases per 100,000 population, measles control goal.

Based on the average annual incidence from 1991-1996, only two provinces (municipalities) met the criteria for Group A, Beijing and Tianjin. Since then, many provinces have made significant progress in improving measles control. Based on the most recent five-year annual average incidence rate, 1996-2000, 14 provinces meet the criteria for the next highest control group. Seven provinces moved from Group B1 to Group A; five provinces moved from B2 to B1, and two provinces moved from C to B2. Only one province, Beijing, moved down from Group A to B1, the result of recent large outbreaks in unimmunized floating population.

In general, measles incidence is lowest in the more developed eastern provinces and highest in the poorer western provinces.

Measles has been a reportable disease since 1954, when the National Notifiable Diseases Reporting System was established. Only numbers of cases by province, month and year are forwarded to the national level, and these numbers are published monthly. In January 1999, the Ministry of Health issued new guidelines to develop a measles-specific surveillance system. The goal of the plan is to build on the existing AFP surveillance to develop an active case-based measles surveillance system. Basic information is collected on each case including demographic information, clinical characteristics, immunization status, and laboratory confirmation. The main objectives of this surveillance system is to identify and investigate measles cases in a timely fashion, characterize the epidemiology of measles in China, identify high risk populations, and to provide information for formulating and revising accelerated measles control strategies. Data are supposed to be sent monthly by each province to CAPM, but reporting is often incomplete. In addition, variable database formats used by individual provinces has made compilation and analysis of a national measles surveillance database extremely difficult.

The age distribution of measles cases nationally is not known but is likely to vary by level of control. Age is not included on the National Notifiable Disease Reporting forms submitted to the national level. Although these data are not nationally representative, there are two peaks in cases. The first peak occurring in one to three-year old children who were either unimmunized or experienced primary vaccine failure due to the presence of maternal antibodies at the time of the first vaccine dose at eight months of age. Based on the available data, one-third of all reported cases occur before the age of the recommended second dose at seven years. The second peak occurs in children six-12 years old, corresponding to entry into primary school and higher likelihood of exposure. The immunization status of for nearly half (47%) of the measles cases reported from these 17 provinces is unknown.
The nationally recommended schedule for measles vaccine since the EPI was established in 1978 has been two doses: the first dose at eight months of age and the second dose at seven years of age, when many children begin entry into primary school. First dose of measles coverage is routinely reported and has been included in four national coverage surveys since 1989. In all coverage surveys, coverage with one dose of measles has been greater than 85%. Coverage with the second measles dose at seven years of age is not reported, has not been measured during surveys, and probably much lower.

Because of the high number of cases that occur prior to the recommended at of the nationally recommended second dose at seven years, many provinces have recently added additional doses at 18 to 24 months and/or four years of age. This seems to be useful in reducing transmission among pre-school children. In addition to routine immunizations, many provinces have conducted supplementary measles campaigns. These campaigns may cover the entire or part of the province, and usually target children eight months to seven or 14 years old. Individual provinces and prefectures determine the timing, area and target age for supplementary measles campaigns. Nationwide measles campaigns have not yet been conducted in China.

All measles vaccine in China is produced domestically at one of six facilities: Beijing Biological Institute, Shanghai Biological Institute, Lianzhou Biological Institute, Wuhan Biological Institute, Chengdu Biological Institute, Changchun Biological Institute. The vaccine is a live attenuated virus isolated originally from a child with acute measles infection in Shanghai and available in 1 ml glass ampoules (0.2 ml per dose).

The measles laboratory network in China includes a National Measles Laboratory at CAPM, provincial measles laboratories in each of the provincial centres for disease control (CDCs) , and prefecture measles laboratories. The National Measles Laboratory is responsible for providing national guidelines on laboratory diagnosis of measles/rubella, technical assistance to provincial and prefecture measles laboratories, providing confirmatory testing, developing and disseminating measles serological proficiency panels, serosurveys, genetic sequencing of measles virus isolates, and training provincial and prefectural measles laboratory staff. Provincial measles laboratories are responsible for conducting on-site reviews of prefecture laboratories, performing confirmatory laboratory tests, primary measles virus isolation, and training prefecture laboratory staff. Prefecture laboratories are responsible for performing measles serodiagnostics assays.

The most recent national measles control plan went into effect in January 1999. Based on this plan, all provinces should achieve and maintain routine immunization coverage at least 90%; identify high risk area with low vaccination coverage and take appropriate actions to ensure 90% immunization coverage in those areas; and, strengthen measles surveillance, case investigation and laboratory confirmation of outbreaks.

Provinces meeting criteria for Group A (incidence 0-2 cases per 100,000 population) can conduct additional strategies for measles elimination. This includes an initial “catch-up” mass campaign, laboratory confirmation of all cases, and follow-up campaigns to remove accumulated susceptible populations. The target age-groups of the catch-up and follow-up campaigns should be determined based on analysis of epidemiological and coverage data. High levels of routine coverage (first and second dose) should be maintained between campaigns.

Provinces meeting the criteria for Groups B1 and B2 (incidence 2-15 cases per 100,000 population) should focus on preventing outbreaks. These provinces should identify counties with immunization coverage and continued measles transmission, particularly in dense urban areas or remote areas, and develop and implement strategies to improve coverage; improve completeness of the measles surveillance with data on vaccination status, age and location for each suspected case; and begin building laboratory capacity for confirmatory measles diagnosis.

Provinces meeting the criteria for Group C (incidence >15 cases per 100,000 population) should focus on improving measles control and increase routine coverage for all antigens by improving the EPI (supplies, equipment, supervision, personnel management, financial resources). Surveillance data should be limited to basic demographic information and immunization status.
2.4.6 Measles elimination programme in the Republic of Korea

The Republic of Korea has embarked on a five-year programme of measles elimination in response to a large epidemic in 2000/01 with over 40 000 reported cases and seven deaths. A National Committee of Measles Elimination was formed to evaluate performance and to enhance inter-sectoral collaboration and community participation. The strengthening of a school entry requirement, with a requirement for certification of a second dose of measles containing vaccine for school entry led to coverage of over 99% of school entrants.

A mass immunization campaign was delivered from 21 May to 30 June 2001 in schools, for all children aged seven-16 years. Part of the campaign included a public relations effort to increase coverage and address safety concerns. At the press conference the Minister of Health received a dose of vaccine (measles-rubella vaccine from Serum Institute of India). Questionnaire and consent form were sent to the parents three days before the immunization and that date reviewed the day before to plan for the vaccination. Vaccination was provided by a nurse after a physical assessment by a doctor. The main reason for deferment was failure to provide the consent form, followed by doctor deferment and finally non-consent. Most adverse events were reported within two days of immunization and with no peaking at six-10 days post vaccination, suggesting that these events were not related to vaccination. The most common adverse events were related to hyperventilation from the injection rather than the vaccine. One death was reported but not related to the vaccine. A compensation scheme was in place as within the regular immunization programme where only moderate to severe events are being compensated. The overall coverage achieved was 96% (range by province from 94-98%), with nearly five million children vaccinated.

Next steps in the elimination programme include strengthening surveillance with investigation required for any measles cases in the target population of the mass immunization campaign. Virus isolation and sequencing is established to identify the source of any future cases.

2.5 MNT elimination

2.5.1 Update on regional situation/revised regional plan of action

NT is the second leading cause of death from vaccine preventable diseases among children worldwide. With a case fatality rate of 70% to 100%, NT is responsible for 14% (215 000) of all neonatal deaths (WHO, 1998). WHO estimates that only 5% of neonatal tetanus cases are actually reported. The disease is a serious public health problem in developing countries, particularly in the lowest income countries and those with the least developed health infrastructure. Reducing deaths from neonatal tetanus is one of the simplest and most cost-effective means to reduce the neonatal mortality rate. The main strategies are immunizing women with tetanus toxoid and improving clean delivery practices.

Since 1989, when the World Health Assembly called for the elimination of neonatal tetanus, 104 of 161 developing countries have achieved elimination (<1 case per 1000 LB per year in each district). However, because neonatal tetanus continues to be a significant problem in the 57 countries remaining, WHO, UNICEF and UNFPA in December 1999 agreed to set the year 2005 as the target date for worldwide elimination.

All countries in the Western Pacific Region have made progress towards NT elimination but six countries in the Region continue to report NT cases above elimination goal: Cambodia, China, Lao People's Democratic Republic, Papua New Guinea, the Philippines and Viet Nam. China, the Philippines and Viet Nam have succeeded in eliminating the disease to below one case per 1000 LB at the prefecture/region/province level (population unit of approximately one million) and are categorized as operational stage 2. Operational stage 1 includes all countries that already have achieved elimination.

Cambodia, Lao People's Democratic Republic and Papua New Guinea are considered countries with high-risk areas for MNT and not meeting elimination criteria at the provincial/prefecture level (stage 3). This operational staging differs slightly from the global classification status as included in the UNICEF, WHO, UNFPA, MNT elimination strategy paper but was consented upon as appropriate for the Region.
In 2000, a total of 4127 NT cases were reported in the Region with 20 cases reported from Malaysia, which has achieved elimination according to the definition. Fifteen countries reported coverage for two or more doses of tetanus toxoid (TT2+) in 2000 resulting in a Regional TT2+ coverage of 72% (without data from China). Details on case and coverage reporting from 1995 to 2000 are included in Annex 5.

TT is included to varying extent into the immunization schedules of 27 countries. In 18 countries TT given to pregnant women (in some additionally to child-bearing age women in high-risk areas), TT with reduced amount of diphtheria toxoid is given in five countries and diphtheria and tetanus toxoid (DT) is given in four countries. Details on tetanus TT schedules are provided in Annex 6.

To achieve the Regional objective for MNT elimination (which was revised to 2005), the following main strategies are recommended:

- establishment of sensitive and reliable NT surveillance systems in order to detect, report and investigate all suspected NT cases through integration with pre-existing active surveillance systems for cases of AFP and measles;
- use of NT surveillance, immunization coverage and clean delivery data to identify high-risk areas for NT and silent areas, in order to target control measures effectively;
- implementation of routine and supplementary TT immunization to achieve 90% of newborns protected at birth against NT through routine immunization of pregnant women with TT, in addition to immunization of childbearing age in high-risk areas through supplemental immunization;
- immunization, where applicable, of school children with a booster of Td to maintain high immunity levels;
- promotion of clean delivery practices;
- responding to a report of a NT case; this response should include immunization and surveillance activities; and
- ensuring immunization safety of all injection procedures.

Sensitive and reliable surveillance was identified as the key element in MNT elimination in order to identify high-risk areas for targeted supplemental immunization activities and ultimately measure the success of elimination activities rather than through immunization coverage. Wherever possible, surveillance for NT cases should be integrated into existing active surveillance systems for cases of AFP and/or measles. It is recommended to investigate each NT case in districts not know to be high-risk whereas it might not be necessary to investigate each individual NT case in identified high-risk areas to order to plan and conduct appropriate response.

To monitor and evaluate MNT elimination activities several protection and impact indicators are recommended but should be used in a flexible manner according to the country situation and supplemented by surrogate indicators if data for standard indicators are not available. Main protection indicators include TT2+ coverage and protection at birth (PAB) monitoring. Main impact indicators include trends in reported number of NT cases and incidence as well as percentage of districts having eliminated NT.

For TT immunizations the term "campaigns" should no longer be used but replaced by "supplemental immunization activities" in order to reflect that the approach is targeted onto high-risk areas identified by surveillance. Special focus should be given to achieving high quality requiring flexibility in approaches based on country needs and situation. Activities should be started in a few districts to gain experience and rapid evaluation including convenience surveys should be conducted. A general experience made in several countries is the difficulty to achieve quality and high coverage when other antigens are included. Monitoring of accurate coverage achieved in SIAs is generally difficult but it should be standard to consider all women in round one as having received zero TT so far.
The involvement of MCH programs especially at country level is often limited. Advocacy of health promotion, however, should be a general component in MNT elimination activities whereas specific technical issues (e.g. disposable delivery kits, training of communities on clean delivery) need to be addressed at a country level and then incorporated into the national plan of action and resource requirements. Involvement of UNFPA in the discussions should be targeted.

As reported by UNICEF, required funds are currently available at least for the period 2001-2002. In order to avail, countries are requested to prepare a national plan of action (PoA) for which a template has been developed. The template collects data on situation analysis (country background), NT elimination by district, planned SIAs in high-risk districts, the work plan for the next 12 months and detailed budget requirements (SIA, surveillance, clean delivery). For each of the main strategies budget items for supplies and equipment, training and micro-planning, staff allowances, social mobilization and advocacy and operations should be identified. The template should be handled in a flexible way based on the best data available for the respective country.

The national PoA should be cleared by the country ICC where applicable and preferably as part of a national five-year immunization plan. The approved PoA for MNT elimination should be submitted to UNICEF headquarters through the respective country representative and also be endorsed by the WHO country representative.

2.5.2 Country report Cambodia

NT elimination activities started in 1998 and national facility-based surveillance was initiated at three paediatric referral hospitals in Phnom Penh. Community-based surveillance for NT cases was established during the mission in two operational districts (OD) in Kampot Province and three operational districts in Kandal province. The reported coverage for TT2+ of PW in 1999 was 33% and 42% in 2000. Supplementary immunization activities (SIAs) for TT were conducted in 65 districts in 15 provinces from 1999 to 2001 with most of the districts conducted one round as of February 2001. The activities targeted over 400 000 CBAW out of a total population of over 1.8 million.

Facility-based surveillance identified about one fifth of the NT cases reported in 2000. Although completeness and accuracy of community-based surveillance are still difficult to assess the system identified over 220 NT cases in 2000 and has clearly been useful in identifying the previously unrecognized disease burden of NT, with the successful participation of community volunteers.

The quality of SIA rounds conducted was reported to be good in most areas with usage of AD syringes, safety boxes and adequate cold chain management. However, most districts conducted only one round up to February 2001, missing on the proper time spacing for the second and third round. In general, difficulties were encounter with pre-registration and the subsequent use of data collected while adding a hug work burden. However, its value for social mobilization was clearly recognized.

Implementation of PAB indicator has begun but might require targeted validation before this indicator can be used to identify high-risk areas. Difficulties also exist in using TT2+ coverage, proportion of hospital deliveries or receipt of antenatal care to identify high-risk districts as generally still low without detectable variation across districts of the country.

A large percentage of deliveries is performed at home attended by untrained personnel and traditional practices with application of local remedies on the umbilical stump are widespread. The National Maternal and Child Health Center (NMCHC) is currently testing the sale of a home birth kit to be used by any birth attendant at home.

NT SIAs were found most successful in institutions such as garment factories and casinos. Coverage levels there exceeded 90 % for all three rounds. The effectiveness of using SIAs to target whole districts identified as high risk for NT has been variable. District size in Cambodia is large (100 000 to 200 000 people), and NT surveillance data presently do not report NT incidence rates for sub district areas, just for the whole OD. SIAs for TT, therefore, cannot be focused and the target populations become excessively large. Recent experience has shown that for these SIAs to be successful, they require significant support and supervision from
national level staff. A recent campaign in a district that did all their own planning and supervision achieved only 39% coverage as compared to 80% - 90% when national NIP staff are involved.

The target population of 309,719 women for TT SIA in 2002 appears ambitious and may make it difficult to achieve good coverage and quality for these SIAs. Recent experience gained by the NIP with accelerated measles control activities have shown that population target of this order require enormous amounts of supervision, not just of the vaccinators, but also for logistics support, safety box disposal and cold chain management. This will be even more so for TT SIA as they are given on three separate occasions with the first two rounds separated by only a four-week interval.

2.5.3 Country report Viet Nam

Viet Nam has made significant progress in MNT elimination since the early 1990s. A national plan of action had been developed in 1997 and a follow-up five-year activity plan has been drafted, targeting elimination by 2003 and maintaining elimination from then on.

Overall surveillance quality has greatly improved but a certain degree of underreporting must still be considered assuming remote areas with poor infrastructure and lack of accessibility at highest risk.

Reported routine immunization coverage is high but it is expected that there is regional variance due to lack of manpower in remote districts and communes, sub-optimal motivation of staff and low economical and educational level among pregnant women rural areas.

PAB indicator was introduced in 1995 and is now being used in all districts. Reported coverage for PAB is still increasing and there is great variance between the provinces.

When using a NT incidence greater than one case per 1000 LB, only nine districts are classified as high risk but might represent underreporting/underestimation. Thus, Viet Nam has started to use various other core and surrogate indicators to identify high-risk districts and identified 34 in 2001.

Many efforts have been made to improve/increase awareness among recipient populations as to the importance of TT injections, still, quality and availability of health education appears to be sub-optimal in most areas and IEC strategies used might not be always appropriate, especially for women at highest risk.

Lack of or limited access to quality maternal health care during pregnancy and delivery appears to exist in many communes and there is great variance in presence of risk factors of unclean delivery practices with women in remotest areas or in special populations to be at greatest risk.

2.6 Regional operational overview

2.6.1 Strengthening routine immunization

Over the past five years, the Regional Office for the Western Pacific has made substantial progress in initiating and implementing immunization safety strategies. Much of this progress can be attributed to increased political commitment from member countries in trying to improve overall immunization practices including, safe injections, adverse events, and vaccine quality.

In particular, many countries within the Region are facing a serious public health threat from the inappropriate use and disposal of used injection equipment at all levels of the public health system. However, member countries and WHO are investing considerable time and scarce resources in an effort to respond to this growing problem. WHO injection safety interventions within the region include; planning, advocacy, public awareness, fund raising, management, technology transfer to auto disable syringes, training of health workers, logistics, provision of suitable and sufficient injection equipment, provision of safety boxes for collection, systems for the transportation and destruction of used injection equipment.
In responding to the need to consolidate strategies at a national level, a generic national policy for injection safety and safe disposal of injection equipment, and a Regional Plan of Action (2001-2005) have been developed to improve immunization safety. Critical issues for improving injection safety are as follows:

- adaptation and implementation of safe injection policies at all member states;
- ensuring safe disposal and effective destruction of used injection equipment; and
- implementing the WHO, UNICEF Joint Global Policy on the use of AD syringes within the immunization programme.

National policy development

National policies to improve the safety of injections have been developed in Cambodia, Lao People's Democratic Republic, and Viet Nam. It is expected that Mongolia, Papua New Guinea, the Philippines and several PICs will develop injection safety policies in the next year.

Cambodia, China, Lao People's Democratic Republic and Viet Nam have developed national plans of actions ranging from one to five years in duration and Mongolia, Papua New Guinea, the Philippines, and several PICs are expected to adapt short term and long term Plans of Action in the next year.

Cambodia, China, Lao People's Democratic Republic and Viet Nam have established safe injection committees and it is anticipated that Mongolia, the Philippines and Papua New Guinea will follow next year.

Safe disposal and destruction of used injection equipment

The Regional Office for the Western Pacific recommends the use of auto-combustion incinerators, specifically the SICIM, Vulcain and De Monfort incinerators. It is important to note that EPI and the Regional Office for the Western Pacific do not advocate incineration as the final solution to the problem of destruction of used injection equipment. However, incineration is currently the best available method in the field, and is greatly preferable to the re-circulation of used injection material or the disposal of used injection material in the regular garbage or municipal dump.

Field trials

Since 1997 the Regional Office for the Western Pacific has been conducting field trials of various auto-combustion incinerators for the safe destruction of used injection equipment. Trials using the SICIM and Vulcain incinerator models were a success. To date WHO in collaboration with the Ministry of Health Cambodia have installed 15 incinerators in 15 provinces and it is expected that remaining provinces in the country will be supplied with an incinerator by the end of 2002. In Viet Nam two incinerators have been installed with another 10 to be installed in two northern provinces of Viet Nam in early 2002. Two incinerators have already arrived in Lao People's Democratic Republic and it is expected that these incinerators will be installed in the third quarter of 2001 prior to the introduction of hepatitis B vaccine in three provinces.

In order to ensure that auto-combustion incinerators provided by WHO within the Region are environmentally safe, WHO in collaboration with the Cambodian Ministry of Health and Ministry of Environment has recently contracted a team of environmental experts from one of Japan's leading environmental agencies to conduct the testing of emissions gases from the SICIM and Vulcain incinerators as well as an open barrel burning in Cambodia.

The use of AD syringes and safety boxes in immunization campaigns

The experience to date in Cambodia, Lao People's Democratic Republic and Viet Nam using AD syringes and syringe safety boxes has been very positive while conducting well managed and well supplied immunization campaigns. The supply of AD syringes and syringe safety boxes, however, is only part of an overall strategy to
ensure injection safety. To properly ensure that the equipment is safe from the point of use to the point of
destruction, a multi faceted approach needs to be adopted using not only AD syringe and syringe safety boxes but
also ensuring the safe collection, disposal and destruction of the used injection equipment.

Adverse events following immunization

WHO has produced Immunization Safety Surveillance Guidelines covering AEFI classification and
objectives of immunization safety surveillance, expected vaccine reaction rates, AEFI reporting, investigating, and
responding processes and communication strategy. The aim of these guidelines is to help countries to establish an
immunization safety surveillance system to effectively deal with AEFIs and other safety concerns and thus to
prevent negative impacts on the immunization programme, including community acceptance of immunization.

Vaccine production and national regulatory authority

WHO headquarters undertook an NRA review for China and Viet Nam in mid-2001 and has developed a
plan to enable these two NRAs to fulfil their obligations. The Philippines is also planning vaccine manufacture
and is developing its NRA to meet all requirements.

Technology transfer for auto-disable syringes

The Regional Office for the Western Pacific has been collaborating closely with the Vietnamese Ministry of
Health and the STAR Syringes Company (UK) to explore the potential for technology transfer for the
manufacturing of AD syringes within Viet Nam. With this technology transfer, Viet Nam could easily and
cheaply move from the production of ordinary disposable syringes to AD syringes. This would allow for the
national immunization program to almost immediately introduce AD syringes into the routine programme. In
addition, there would also be the potential for the export of AD syringes manufactured in Viet Nam to other
countries in the Region. To date, negotiations for the technology transfer of AD syringes have made much
progress and it is our hope that these negotiations will result in an agreement for technology transfer in the near
future.

2.6.2 Briefing on the Global Alliance for Vaccine (GAVI)

The Global Alliances for Vaccines and Immunization brings together traditional and new partners: "To
save children’s lives and protect people’s health through the widespread use of vaccines." GAVI is not an
organization, but an alliance of private and public sector partners including national governments, public health
and research institutions, the Bill and Melinda Gates Children’s Vaccine Program (CVP), the International
Federation of Pharmaceutical Manufacturers Association (IFPMA), the Rockefeller Foundation, UNICEF, the
World Bank Group, and WHO.

GAVI represents a renewal of interest and investment in global immunization programmes so that the
annual toll of three million deaths from vaccine preventable diseases can be prevented. GAVI partners have
established the Vaccine Fund to fund the 74 poorest countries in the world for new vaccine introduction (Hib,
hepatitis B, and yellow fever), strengthening routine services, and from June 2001 for safe injection.

In 2000, GAVI approved funding for introducing hepatitis B (as combination the Diptheria-hepatitis B
vaccine) to Cambodia and Lao People’s Democratic Republic. The introduction will be implemented in a phased
manner starting form late 2001. With these introductions, every immunization programme in the Region will have
hepatitis B vaccine. GAVI has also approved funding to Viet Nam for monovalent hepatitis B vaccine, as local
production can only supply about one fifth of national demand. China’s application for reducing the user-fees for
hepatitis B will be decided by October 2001.

The RWG is an informal network of GAVI partner agencies at regional level. The RWG was not part of
the initial structure of GAVI, but emerged in response to country needs. The RWG provides support to countries
in relation to GAVI application processes and implementation of Fund support. It also provides regional level
feedback from countries and agencies to GAVI.
The RWG organised a briefing for Agency field staff and potential consultants from 14-16 March 2001 in Bangkok. The compact disc (CD) of the meeting is available, and includes more information on GAVI and RWG as well as general immunization resources.

3. INTERAGENCY COORDINATION COMMITTEE

Mr Brian Knowles, the outgoing chairperson of ICC, opened the meeting reflecting the great success of the ICC in meeting all the needs identified over the past years. The format has tended to be working in small groups to identify the source of funding. Mr Knowles expressed his thanks for the support he had received from the ICC during his term as chairperson. He nominated Dr Akira Endo as the incoming chairperson who thanked Mr Knowles for his remarkable contribution to the ICC over the years.

Dr Sato thanked all the partners for their contributions that had enabled the Region to be certified poliomyelitis-free. He particularly outlined the contributions of the Japan International Cooperation Agency (JICA), CDC, the Australian Agency for International Development (AusAID) and Rotary International including Rotary International 2650 and 2640. It was emphasized that the Region continues to require support for the poliomyelitis eradication programme (to maintain poliomyelitis-free status), for strengthening routine EPI, for measles campaigns, and for strengthening immunization safety. The funding requirements for 2001-2003 were presented and it was clarified that these are the shortfalls at country level. It was requested that the total budget, and not just the shortfall, should be presented.

Dr Kylie Monro explained the support mechanisms of AusAID with the international programme providing a relatively small amount of support compared to country and Regional programmes. WHO currently receives more than half the international programme’s budget and uses WHO’s advice to help setting priorities. From this year all the funding for WPR is being channelled though WHO headquarters but with an explicit requirement that it is used for programmes in the Region. AusAID is likely to continue to support the Cambodian EPI programme and a safe injection and neonatal tetanus elimination programme in China. Australia intends to continue to support the programme as well as general EPI and has a special interest in measles as the next possible target for elimination.

Dr Peter Strebel outlined CDC’s support in the region: in the form of technical support and vaccine procurement. The support derives from an appropriation from Congress for measles and poliomyelitis control. Technical support to the Office of the Western Pacific Region increased from 1994 to 2000, with a slight decrease in 2001. Just over a third of the support is for staff costs, and a similar share is provided for the measles surveillance programme in China. Support is expected to continue at similar levels, but is dependent on the annual budget cycle from Congress. The two main areas are to maintain poliomyelitis eradication activities and to accelerate measles control.

Dr Akira Ida mentioned Rotary International District 2650’s support for the poliomyelitis eradication programme. The Rotary International District 2650 has provided vaccines and local cost in six countries since 1994. More than 200 Rotarians visited these countries and gave vaccines to well over two million children. He emphasized the importance of keeping high coverage of vaccine until global poliomyelitis eradication and expressed continuous support for the programme in future.

Dr Endo advised that JICA provides three types of technical cooperation support: project-type; Japan Overseas Cooperation Volunteers; and cooperation with local and Japanese NGOs. One example of project type technical cooperation was poliomyelitis control in China that lasted from 1991 to 1999, with 37 long-term and 96 short-term experts as well as over US$4 million for materials. JICA also provides grant cooperation i.e. to build infrastructure. Major contributions have been made for poliomyelitis eradication, but since 1999 there has also been support for several Regional countries for measles control. The government has recently announced that there will be a 10% budget cut for 2002. However, the Okinawa Infectious Disease Initiative has emphasised the important of controlling infectious disease, including EPI.
4. CONCLUSIONS AND RECOMMENDATION

4.1 Future of EPI in the Western Pacific Region

EPI has celebrated many successes since it started in the Region in 1979. However, vaccine-preventable diseases continue to cause a high burden of illness and death. Therefore, EPI will need to continue as a priority public health programme in the Region. The emphasis of EPI should not only be on achieving higher vaccination coverage but also on disease prevention in particular. In addition, much attention will need to be given to better quality vaccine delivery, better immunization services in general, immunization safety and hepatitis B utilization.

Poliomyelitis eradication, accelerated measles control, and MNT elimination will continue as the major disease control initiatives in the Region. However, EPI must be flexible and introduce vaccines against other vaccine-preventable diseases. While there is some uncertainty about which vaccine-preventable diseases should be added to EPI, additional research, especially disease burden and feasibility studies, will help determine which new vaccines may be candidates for introduction. An integral part of the introduction of a new vaccine is the concurrent introduction of adequate surveillance for this disease to monitor the impact of the introduction of a new vaccine.

4.1.2 Strengthening and sustaining EPI'

Progress continues to be made in increasing immunization coverage and adding other interventions to immunization services. To assure continued and sustained progress, programmes will need to continue to be of high quality and build on the successful lessons learned with poliomyelitis eradication and EPI in general. The TAG endorses the principles of improving the quality of immunization coverage data and analysing and using all available data (including disease surveillance data) at each level to prepare detailed plans to improve and sustain routine immunization coverage.

Recommendations

- Countries should consolidate and disseminate information on successful poliomyelitis eradication and other EPI experiences.
- There should be increased utilization of available methods to identify, prioritize and reach the unreached populations, including identifying problems and solutions related to low access and high drop-out rates.
- Guidelines and training materials should be issued to enable lower levels to carry out these activities.
- Sufficient resources need to be mobilized.
4.2 Maintaining poliomyelitis-free status

4.2.1 Immunization activities

High immunization coverage rates (resulting in high population immunity against all three types of polioviruses) in all districts must be achieved, documented and maintained until global certification of poliomyelitis eradication and appropriate conditions are met for stopping vaccination. Only through high population immunity can there be assurance that: 1) any imported poliovirus will not lead to prolonged transmission; and 2) vaccine-derived poliovirus cannot establish circulation. The poliomyelitis outbreak in Hispaniola in 2000-2001 was due to low OPV vaccination coverage nationally in Haiti and in selected provinces of the Dominican Republic. This outbreak emphasizes the need to monitor vaccination coverage, not only on a national level, but also down to district levels, to ensure that no low coverage areas remain undetected and without proper vaccination response.

Recommendations

• High OPV vaccination coverage should be maintained at all administrative levels; ideally ≥90% of birth cohorts should be vaccinated in the first year of life through routine immunization services.

• While NIDs are no longer recommended, SIAs with OPV may be required at sub-national levels to achieve uniformly high population immunity targeting high-risk districts. SIAs must be continued until routine coverage can be documented to reach high coverage levels reliably and consistently in all districts.

• Countries should establish a system to identify low-performing and other high-risk districts on an ongoing basis (at least every three months); and target these districts for increased scrutiny (supervision) and SIAs.

4.2.2 Surveillance

AFP surveillance was the basis for achieving regional certification of poliomyelitis-free status on 29 October 2000. Maintaining (or improving in some countries or areas within countries) AFP surveillance will assure that: 1) AFP cases due to wild or vaccine-derived polioviruses will be detected reliably in a timely manner; 2) no areas of “silent” circulation of wild poliovirus can be maintained for any prolonged period (i.e. >3 months); and 3) vaccine-associated paralytic poliomyelitis be reported with an expected frequency (i.e. 1 VAPP case per 2-4 million doses of OPV administered).

Recommendations

• High quality surveillance must be maintained until global certification of poliomyelitis eradication has been achieved, OPV vaccination has stopped and probably beyond. Continued external support will be required to carry out these activities.

• For countries, which were poliomyelitis-endemic when the initiative began, continued high-quality AFP surveillance meeting or exceeding certification standard performance levels is required. Countries that were not endemic at the beginning of the initiative should maintain the surveillance systems that provided the basis for certification (AFP surveillance, enterovirus surveillance, or a combination of both or through other surveillance systems).

• In order to avoid delays in case investigation and classification, all recently endemic countries should analyse surveillance data down to the district level at least monthly. This analysis should include AFP surveillance and laboratory indicators.

• Countries should aim at further reducing the interval between onset of paralysis and receipt of final intratypic differentiation (ITD) results, ideally to ≤60 days. Reason for delays should be analyzed on an ongoing basis to identify and correct problems.
• AFP cases with a high index of suspicion for poliomyelitis (i.e., fever at onset, age <5 years, asymmetrical paralysis, unvaccinated, minority groups) should be prioritized for investigation. Stool specimens should be transported immediately to a network laboratory and “tagged” for priority processing, and tracked through final results and classification.

• Countries should track AFP cases pending final classification after 90 days following onset of paralysis. Reasons for delays should be identified and corrected.

• In order to ensure high sensitivity for detecting poliovirus, countries should continue to collect two adequate stool samples from all cases of AFP.

• Expert panels should continue to review at least quarterly all AFP cases with inadequate specimens, which have residual paralysis or no follow-up to determine whether any of these cases should be classified as polio-compatible.

• Compatible cases should be monitored regularly and frequently (monthly) to permit early detection and appropriate programmatic response to any clusters.

• Expert classification panels should assign specific “presumptive” diagnoses for all AFP cases under their review. This information should be made available to WHO and presented during the next TAG meeting.

4.2.3 Poliomyelitis laboratory network

The TAG commends the laboratories in the Regional network for the high quality performance levels achieved and maintained. The WHO accreditation scheme continues to provide a powerful stimulus to improve laboratory performance in addition to providing essential documentation on the quality of laboratory work.

The TAG acknowledges the technical support that the network laboratories provide for establishing national inventories of wild poliovirus infectious and potentially infectious materials, thus making substantial progress towards achieving phase 1 of laboratory containment an essential part of ensuring that the Region remains poliomyelitis-free. The network laboratories are serving as models for reliable containment activities.

Recommendation

• The process of formal annual review and accreditation of poliovirus laboratories should continue and include ITD functions at selected national laboratories.

4.2.4 Vaccine-derived poliovirus

The outbreak of VDPV type 1 in Hispaniola and a previous outbreak due to type 2 poliovirus in Egypt highlight the need to institute systems that can reliably and quickly identify cases due to VDPV and areas of VDPV circulation. More recently in 2001, an AFP case with a VDPV was identified in the Philippines. In this instance, the national, regional and global specialized laboratories collaborated closely and were able to provide important sequence data to permit timely programmatic action. The GCC has stated that areas with confirmed circulation of VDPVs should be treated as with wild poliovirus importation and responded to according to national plans of action for the importation of wild poliovirus. To ensure minimal delays in processing and the timely availability of results for programmatic action, the global laboratory network has made the following recommendations. The TAG has reviewed and endorsed these recommendations.

Recommendations

• All poliovirus isolates, regardless of origin (i.e. AFP cases, enterovirus or environmental surveillance) should be forwarded to a WHO-accredited laboratory for ITD by at least two approved methods, one of which must be antigenic (ELISA preferred) and one molecular (probe hybridization or diagnostic PCR preferred).
• Isolates should be forward for ITD in a timely manner (ideally all isolates but definitely all isolates from AFP cases within 14 days after isolation) and logistical and reporting requirements should be defined in consultation with the regional poliomyelitis laboratory network.

• All poliovirus isolates showing discrepant ITD results should be immediately (ideally within seven days but definitively with 14 days) send to a Global Specialized Laboratory (or a laboratory recognized by WHO as having the capacity to carry out poliovirus sequence analysis) for ITD confirmation and analysis of genomic sequence. Timeliness of investigation steps and reporting mechanisms should again be defined in consultation with the Regional poliomyelitis laboratory network.

• In addition, the TAG endorses the following recommendations:
  - In addition to establishing systems (see above) that can reliably identify VDPV on an ongoing (prospective) basis, retrospective analysis of poliovirus isolates from areas identified as high-risk for establishing VDPV should be conducted in order to better define the frequency and magnitude of VDPV circulation.
  - If there is suspicion of VDPV circulation, immediate consultation between Ministries of Health and WHO country, regional and global poliomyelitis eradication teams and corresponding laboratory network heads/coordinators should commence to consider implications and necessary actions to be taken.

4.2.5 Laboratory containment of wild poliovirus and infectious/potentially infectious materials

To minimize the risk of wild poliovirus being introduced into a poliomyelitis-free country from a laboratory, to permit eventual global certification of poliomyelitis eradication and to facilitate the transition to stopping OPV vaccination, it is essential that laboratory containment be completed. Although Regional member countries are spearheading this effort, much remains to be done.

Recommendations

• The TAG urges all countries, which have not yet completed the national inventory to make every effort to complete phase 1 of the regional laboratory containment plan as soon as possible.

• Technical support should be provided to countries which have not completed inventories of laboratories retaining wild poliovirus infectious or potential infectious materials. Further development of a national prototype containment database and subsequently a regional database should be pursued.

• Methods should be developed to validate the completeness and accuracy of laboratory containment.

4.3 Accelerated measles control

Measles continues to be responsible for approximately 875 000 deaths (1999) every year globally (including an estimated 20 000 deaths following measles in the Region). To address this mortality burden, three WHO regions have established regional measles elimination targets (including the Americas, the Eastern Mediterranean and European Regions). In the Western Pacific Region, selected countries (and groups of countries [i.e., the Pacific Islands countries]) have established measles elimination targets and some countries have started to implement the elimination strategies including catch-up, keep-up and follow-up campaigns. The TAG commends those countries in the Region that are working towards interrupting the domestic transmission of measles virus. The TAG endorses achievement of the highest possible coverage with a single dose of measles vaccine, providing an opportunity for a second dose (if applicable), strengthening surveillance, obtaining laboratory confirmation of cases, and establishing data management and analysis capacity. These steps will greatly reduce measles morbidity and mortality in the region.
Recommendations

- The TAG supports the global target of 50% measles mortality reduction (from 1999 levels) to be accomplished by 2005. The secretariat should provide a progress report during the next TAG meeting (and annually thereafter).

- To achieve this mortality reduction objective, countries should accelerate measles control activities. Countries should use the Regional Plan of Action for Accelerated Measles Control, 2001-2005. The plan will need to be developed further by clarifying technical issues and budgetary requirements. The secretariat should also provide progress reports on implementation of the regional plan during the next TAG meeting.

- Countries should strive to achieve extremely high coverage with a single dose of measles vaccine administered to infants between nine months to 12 months of age through the routine immunization services. Countries that already use a two-dose measles vaccination schedule should strive to achieve extremely high coverage also with the second dose.

- Countries should adopt national plans of action to ensure that all children of each birth cohort will have two opportunities to receive doses of measles vaccine (where appropriate). This objective can be accomplished through routine doses or a combination of routine and supplemental doses.

- Mass campaigns may be needed in some countries as a short-term strategy to provide a second opportunity for measles vaccination. Before engaging on campaigns, countries must analyse available measles data to determine age groups to be covered during the campaign, and derive at calculations and projections for funding requirements, supplies and staff needs. The addition of supplemental doses of vitamin A should consider where appropriate.

- All cases of suspected measles should be reported. Given progress to national measles control, surveillance should move in a step-wise fashion until all countries have case-based, active surveillance with zero-case reporting. Where feasible, measles surveillance should be integrated into AFP surveillance, with the objective of strengthening surveillance for both conditions and maximizing efficient use of resources.

- A regional laboratory network for measles needs to be established in order to correctly classify rash and fever illness cases, standardize laboratory methods and procedures.

- Countries in the region are encouraged to collaborate with the measles network to better characterize measles viruses endemic to this region. This collaboration will provide the basis for characterizing indigenous measles viruses currently circulating in the region.

- A regional meeting of technical experts should be convened in 2002 to discuss the technical aspects of regional measles elimination, including research needs.

### 4.4 Neonatal and maternal tetanus elimination

The TAG commends the progress made in countries where NT is still a public health problem. Although several countries have started to integrate surveillance for NT cases into active surveillance for AFP and measles cases, the TAG notes that NT is still underreported and cases reported are not always investigated. The TAG recognises that TT immunization of pregnant women is an essential component for elimination but high-risk areas identified by careful analysis of core and surrogate indicators of risk may require supplementary immunization activities targeting CBAW. As such activities are aimed at women usually the hardest to reach, high quality micro-planning is required. In order to do so, a limited number of high-risk districts should be targeted in the beginning. Once experience is gained about the most successful strategies, then activities can be expanded. Surveillance for MNT should be conducted in a way that allows confidence in the results. As MNT becomes more rare, it will be necessary to re-define the geographic area for calculation of district-level results. The TAG recognises that clean deliveries are a major component for the long-term control of MNT and required in addition to TT immunization.
The TAG noted the close UNICEF/WHO collaboration and encourages both organizations to further strengthen this partnership by holding regular meetings for the staff of both organizations at country and Regional levels to review progress made and discuss next steps to be taken.

**Recommendations**

- The TAG endorses the revised Regional POA for MNT elimination by 2005 and requests the secretariat to report on progress toward implementation during the next TAG.

- NT surveillance should be integrated with existent active surveillance systems for cases of AFP and measles in order to detect, report and investigate in a timely manner all cases attended in all major health units already included in the systems. The purpose of the system is not only to identify high-risk areas, but also to evaluate the impact of the elimination programme on ongoing basis.

- Routine TT immunization services targeting all pregnant women should be strengthened using every opportunity to offer vaccination (i.e. during attendance of health services for antenatal care and childhood immunization sessions or children’s consultation). The target of immunization coverage should be 90% for at least two doses of TT for all women during pregnancy.

- To identify high-risk districts or areas, national programme managers should review data from existing health information systems to obtain core and surrogate indicators of risk.

- Supplemental immunization activities should be conducted in identified high risk areas with special focus given to achieving high quality requiring efficient micro-planning and flexibility in approaches based on country needs and situation.

- The quality of immunization practices should also be improved (i.e. ensuring immunization safety for all injections).

**4.5 Immunization safety**

Many countries have developed national plans of action to improve injection safety and are in the process of implementing these plans. The use of AD syringes is becoming widespread in EPI programmes in many countries. Injection safety in campaigns has been improving through better planning and increased use of AD and safety boxes, but plans for the collection and destruction of used injection equipment needs further strengthening.

**Recommendations**

- The TAG endorses the regional plan of action for immunization safety and requests the WHO secretariat to report on its implementation during the next TAG meeting.

- Efforts should continue to facilitate transfer of technology for production of AD syringes in China and Viet Nam.

- National regulatory authorities for vaccines in China and Viet Nam should be strengthened to ensure that they can carry out all essential control functions. External technical and financial support is needed to achieve to upgrade the performance of these NRAs.

**4.6 Introduction of new vaccines**

By the end of 2001, all countries in the region will have hepatitis B vaccine into their immunization programme. The priority for programmes is to ensure that full potential benefits of hepatitis B vaccines and other EPI vaccines can be realized by maximizing coverage.


**Recommendations**

- Strengthening routine EPI is the essential foundation for adding new vaccines.
- Careful assessments of costs and benefits based on disease burden, vaccine cost and safety and effectiveness are needed before adding a new vaccine.
- The priority is to deliver three doses of hepatitis B vaccine before the first birthday; in addition, delivering a dose of vaccine at birth will further decrease hepatitis B carriage.
- The TAG requests that hepatitis B seroprevalance data be presented during the next TAG meeting.

**5. ACKNOWLEDGEMENTS**

The TAG gratefully acknowledges the Regional Director, Dr S. Omi, for the invitation to hold this meeting at the WHO Regional Office for the Western Pacific in Manila, Philippines.

As in all previous meetings, the TAG gratefully acknowledges the outstanding contribution and participation of all the partners in the EPI and poliomyelitis eradication, including: the national governments of the WHO member countries; the Government of Australia, through AusAID; the Government of Japan, through JICA; the Centers for Disease Control and Prevention, Atlanta, USA; Rotary International; Rotary International 2650 and 2640; UNICEF; the World Bank, Shinnyo-en and the Agency for Cooperation in International Health. In addition to funds, partner agencies have generously contributed technical, management and promotional expertise.
## Tentative Timetable

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<td>REGISTRATION</td>
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<td>5. Accelerated measles control</td>
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<td>9. Conclusions and recommendations including presentation of ICC</td>
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<td>• Election of officers: Chairman</td>
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<td>e. Measles surveillance project - China</td>
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<td></td>
<td>• Vice Chairman and Rapporteur</td>
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<td>f. Measles elimination programme in Republic of Korea</td>
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<td>• Administrative announcements</td>
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<td>g. Discussion</td>
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<td>• Group photograph</td>
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<tr>
<td>0930 - 1000</td>
<td>COFFEE BREAK</td>
<td>1000 - 1030</td>
<td>6. MNT elimination</td>
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<td>Cont’d - Conclusion and recommendation including presentation of ICC</td>
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<td>1000 - 1030</td>
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<td>1030 - 1130</td>
<td>a. Update on regional situation/revised regional plan of action</td>
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<td>1030 – 1100</td>
<td>2. Regional EPI overview</td>
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<td>b. Country report – Cambodia</td>
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<tr>
<td></td>
<td>a. Update on global situation</td>
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<td>d. Discussion</td>
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<td>Closing ceremony</td>
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<td>b. Update on post polio-free certification in WPR</td>
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<td></td>
<td>c. Progress of polio eradication in SEAR</td>
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<tr>
<td>1200 – 1330</td>
<td>LUNCH BREAK</td>
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<td>7. Regional operational overview</td>
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<tr>
<td>1330 – 1500</td>
<td>d Country reports on sustaining polio-free status</td>
<td>1330 – 1500</td>
<td>a. Strengthening routine immunization</td>
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<td></td>
<td>(i) Cambodia</td>
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<td>Special Discussion with GAVI Regional Working Group - Technical support needs from GAVI- fund eligible countries</td>
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<td>(ii) China</td>
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<td>a. Cambodia</td>
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<td>(iii) Lao PDR</td>
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<td>b. Lao PDR</td>
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<td>(iv) Malaysia</td>
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<td>c. Viet Nam</td>
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<td>(v) Mongolia</td>
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<td>d. China</td>
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<td>(vi) Papua New Guinea</td>
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<td>e. Mongolia</td>
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<tr>
<td>1500 - 1530</td>
<td>COFFEE BREAK</td>
<td>1500 – 1530</td>
<td>8. Interagency Coordinating Committee meeting</td>
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<tr>
<td>1530 – 1600</td>
<td>(vii) Philippines</td>
<td>1530 – 1700</td>
<td>a. Presentation resource requirements</td>
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<tr>
<td>1600 - 1630</td>
<td>(viii) Viet Nam</td>
<td></td>
<td>b. Statements from partners</td>
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<td>1800</td>
<td></td>
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<td>c. Discussion</td>
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</table>

Cocktails
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