REPORT

TASK FORCE MEETING ON MEASLES ELIMINATION IN THE WESTERN PACIFIC REGION

Manila, Philippines
29-30 July 2004

Manila, Philippines
November 2004
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IN THE WESTERN PACIFIC REGION

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NOTE

The views expressed in this report are those of the participants in the Task Force Meeting on Measles Elimination in the Western Pacific Region and do not necessarily reflect the policies of the World Health Organization.

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Keywords:

Measles elimination / Measles control / Preventive health services / Immunization / Expanded programme on immunization

This report has been printed by the Regional Office for the Western Pacific of the World Health Organization for the participants in the Task Force Meeting on Measles Elimination in the Western Pacific Region, which was held in Manila, Philippines, from 29 to 30 July 2004.
SUMMARY

The Task Force Meeting on Measles Elimination in the Western Pacific Region met in Manila from 29 to 30 July 2004. The Measles Task Force (MTF) met at the recommendation of the first annual review of progress towards elimination undertaken at the Fourteenth Meeting of the Technical Advisory Group on the Expanded Programme on Immunization and Poliomyelitis Eradication (TAG 14), held in March 2004.

TAG 14 recommended that WHO should convene the MTF to assess progress towards measles elimination and evaluate the epidemiological, financial, and programmatic factors involved, and recommend a possible target date for elimination to be considered at the fifty-sixth session of the Regional Committee in September 2005.

The MTF agreed that the Region is well on its way towards eliminating measles, and what remains urgent is the setting of a target date.

It was agreed at the meeting that the foundation for measles elimination is a strong routine immunization programme, achieving high coverage. The MTF concluded that two doses of measles vaccine are needed. It was also made clear that adequate planning and integration of measles elimination activities with routine EPI and health services is critical for achieving and maintaining high population immunity.

Nearly all countries in the Region are ready to set a target date for measles elimination. However, some countries in the Region are facing considerable challenges to reaching their populations or to making measles elimination of sufficient priority to be able to set a target date. Experience shows that if a measles elimination strategy includes a high quality initial campaign targeted to an appropriate age range, elimination can be achieved within one to three years. If the strategy is only with two age-scheduled doses it may take a decade or more.

Moving towards measles elimination requires a commitment from all countries in the Region. The MTF stated that it feels strongly that a goal should be set that all can aspire to reach and move together towards measles elimination.

Setting a target date for elimination will hasten political commitment and the mobilization of resources, which should be done as soon as possible. WHO should help countries to develop a national plan and estimate the costs to achieve and maintain elimination. The MTF recommends that WHO Western Pacific Regional Office should work with countries to build political commitment and define the resource mobilization requirements by the time of the fifty-sixth session of the Regional Committee in 2005, so that 2012 can be set as the target date.
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1. INTRODUCTION

The Expanded Programme on Immunization (EPI) in the Western Pacific Region achieved certification of poliomyelitis-free status on 29 October 2000. In addition, EPI has delivered other important health benefits to the Region: a reduction of over 95% in measles deaths, inclusion of hepatitis B vaccine in every programme, and neonatal tetanus elimination in all but six countries of the Region.

However, the Region is not yet receiving the full potential benefits of immunization. Many children continue to miss out on life-saving vaccines. Therefore, to strengthen the EPI so that its full benefits in protecting health could be achieved, two new EPI initiatives were proposed by the WHO Regional Committee for the Western Pacific at its fifty-fourth session in September 2003: measles elimination and hepatitis B control. Measles elimination is now a regional goal and the Regional Committee resolved to establish a target date at the earliest opportunity, based on an annual review of progress.

The first annual review of progress was undertaken at the 14th meeting of the Technical Advisory Group (TAG) on the Expanded Programme on Immunization and Poliomyelitis Eradication in March 2004. The TAG recommended that the WHO Western Pacific Region should convene a Task Force to further assess progress towards measles elimination and evaluate the epidemiological, financial, and programmatic factors involved, and to recommend a possible target date for elimination for consideration by the Regional Committee at its fifty-sixth session in September 2005.

1.1 Objectives

The Measles Task Force (MTF) held its meeting at the WHO Regional Office for the Western Pacific in Manila, Philippines, from 29 to 30 July 2004, with the following objectives:

(1) to review the status of measles elimination in the Region and indicators of progress;

(2) to confirm and further develop an approach to a comprehensive assessment of factors involved in setting a target date for measles elimination including epidemiological, financial and programmatic factors; and

(3) to recommend a possible target date for measles elimination in the Region.

1.2 Organization

The meeting was attended by ten MTF members, one representative from the United Nations Children’s Fund (UNICEF), one representative from WHO Headquarters, one consultant, and ten secretariat members. The timetable of the meeting and list of participants are in Annexes 1 and 2, respectively.

1.3 Opening ceremony

Dr Shigeru Omi, WHO Regional Director, welcomed the participants, and gave his personal views on the issue of setting a target date for regional measles elimination. He noted that setting a target date is a very difficult issue because there are sound arguments both for setting the earliest possible date and for being more cautious and setting a date far in the
future. Many countries and areas of the Region have already eliminated measles, others are close to doing so, and others have yet to set target dates for elimination. Some donor agencies are interested in supporting measles elimination as well as hepatitis B control. On the other hand, factors against setting a target date now include the fact that poliomyelitis has not yet been eradicated; that the additional resources required have not yet been mobilized; and that measles will be more challenging than poliomyelitis because it requires higher coverage with an injectable, as opposed to an oral vaccine.

Dr Omi explained that setting an ambitious target is more likely to lead to action, and the time appears to be right for setting the target. In 1988 the Regional Committee called for poliomyelitis eradication in the Region by 1995. That target was missed by two years in the Region (or five years if achievement is considered the certification date). It was understood that there were challenges, and everybody made his/her best effort. Most importantly, the goal was achieved only a short time after the target date. Now, what everyone recalls is the great achievement of regional poliomyelitis elimination; not the fact that it was slightly delayed. Hence, the earliest possible date should be set for measles elimination in the Region, and countries of the Region should aspire to eliminate measles by the earliest reasonable target.

Dr Omi closed by thanking the participants, in anticipation, for their deliberations and looked forward to the outcome of the meeting.

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

Dr Robert Hall : Chairperson
Dr Myrna Cabotaje : Vice-chairperson
Dr Peter Strebel : Rapporteur

2. PROCEEDINGS

2.1 Overview

The MTF deliberations were focused around three key requirements for measles elimination: technical capacity; financial and human resources; and political commitment. Country reports highlighted issues in these areas. From the presentations, country reports and subsequent discussions, a synthesis was prepared for each of the topic areas. The three syntheses led the MTF to recommend a 2012 target date for regional measles elimination, as well as define the work needed in the Region to prepare for, and achieve, measles elimination.

A compact disc (CD) is available with all the presentations and related materials. This report provides a summary of the context (including the country presentations) and the synthesis for each of the topic areas leading to the MTF’s conclusions and recommendations.
Operational definition of measles elimination:

1. Less than one confirmed measles case reported per million population per year (excluding imported cases); not applicable in countries with less than one million population.
2. Excellent surveillance with comprehensive reporting and investigation of all fever and rash cases and chains of transmission, as demonstrated by:
   a. at least one suspected measles case reported per 100 000 population per year in at least 80% of districts (or equivalent, as used for AFP surveillance);
   b. serum samples adequate for detecting measles IgM collected in at least 80% of suspected measles cases (excluding from the denominator cases that are epidemiologically linked to a laboratory-confirmed case); and
   c. viral isolate obtained from every confirmed chain of transmission (for genotyping to help identify source of virus)
3. Maintaining 95% immunity to measles in each cohort in every district, as demonstrated by:
   a. at least 95% coverage with two doses of measles-containing vaccine
   b. importations leading only to small outbreaks (< 100 cases, < three months duration)

2.2 Definition of elimination

The initial discussion noted the need, before setting the target, to achieve a consensus on the definition of measles elimination. The participants concurred with the operational definition of measles elimination that is in the newly released measles field guide, which is designed to help countries implement the regional plan for measles elimination:

2.3 Experience in other regions

There is ample experience and success globally in both measles elimination and control programmes, as well as efforts in poliomyelitis eradication. Several countries and the WHO Region of the Americas have achieved elimination (defined in that region as absence of endemic measles, with no indigenous chains of transmission lasting for over one year).

2.3.1 What is required to achieve elimination

The definition used in the Western hemisphere (above) differs slightly from the one being used in the Western Pacific Region in that, in this region, the maximum duration of a chain of transmission following an importation is three months – if transmission persists beyond three months, then endemic transmission has been re-established. The definition used in the Western Pacific Region originates from discussions at the Cape Town global measles

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meeting, and, compared with that of the WHO Region of the Americas, it is more stringent in the criterion for re-establishment of endemic transmission.

**Achieving measles elimination requires population immunity of approx. 95%.** With this level of immunity transmission stops and all persons, including the most vulnerable (e.g. infants, immune-suppressed), are protected against measles. There are two approaches that have been used and have been shown to achieve elimination (with time ranges to elimination):

<table>
<thead>
<tr>
<th>Approach: Time to elimination</th>
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<tr>
<td>• Routine immunization only: 12-30+ years</td>
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<tr>
<td>• Routine + campaigns:</td>
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<tr>
<td>o Country level: 1-4 years</td>
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<td>o Regionwide (e.g. Region of the Americas): 8 years</td>
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**Achieving elimination requires very high coverage with two doses.** As 95% population immunity is required, practically every child must be reached. A campaign does not need to be time limited. The analogy of building a wall may be useful. The sooner the wall is built, the earlier protection is achieved, and the ongoing disease burden prevented. However, in the long term, it is the quality and height of the wall, rather than the speed of protection, that is ultimately most important. High coverage is essential; achieving it fast is ideal.

2.3.2 Scheduling the two doses

Delivery of two scheduled doses through routine immunization services can achieve measles elimination, but will take significantly more time unless there is also a catch-up campaign targeted at those age groups with less than 95% immunity. The age groups to be targeted in the catch-up campaign should be assessed through surveillance data, supplemented by a serosurvey if needed.

It is also possible to give the second dose through a cycle that takes place every two to four years and targets all children who missed the previous cycle. For example, a cycle targeting all children aged 1 to 3 years held every three years.

2.3.3 Time-frame to achieve elimination

In Finland it took 12 years from the start of a two-dose schedule, while in the United States of America, with school entry immunization requirements in place for >10 years, it took about eight years after the addition of the second dose. Neither country undertook campaigns as part of their elimination strategy. In the Republic of Korea, elimination was achieved within one year of a school-based campaign; in addition, a second dose and school entry requirements had recently been introduced. In Canada, elimination was achieved within two years of adding a second dose, accompanied by school-based campaigns.

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International experience suggests that time to elimination is best measured starting from the date when there is a serious commitment to achieve high coverage with two doses of vaccine. The speed will depend on whether there is also a campaign (or supplemental immunization activity) that targets all age groups with less than 95% immunity.

2.3.4 Cost-benefit analysis of measles elimination

Economic evaluations of measles elimination strategies have found them to be cost-saving from both a societal perspective and a health services perspective. One of the benefits of achieving high levels of population immunity is that expensive outbreak responses are no longer necessary. As long as the levels of population immunity are maintained at elimination levels, importations will only lead to small and self-limiting outbreaks.

2.3.5 Global goal: measles mortality reduction

The 2003 World Health Assembly (WHA) adopted a resolution to reduce measles mortality by 50% by 2005 compared with 1999 levels, in keeping with UN General Assembly Special Session on Children (2002). WHO and UNICEF globally have defined 45 priority countries where 94% of all measles deaths occurred in 2001. Four of those countries are in the Western Pacific Region: Cambodia, the Lao People's Democratic Republic, Papua New Guinea and Viet Nam. Modelling of the impact of different strategies for all 45 countries is shown in Figure 1.

The figure shows the need to strengthen routine immunization as the fundamental long-term strategy, but a ‘catch-up’ campaign is needed to achieve rapid increases in population immunity.

Countries with strong immunization programmes have eliminated measles. Over 98% of measles deaths occur in countries that are eligible for funding from the Global Alliance for Vaccines and Immunization (GAVI). As a result GAVI will now fund measles control in African countries, and there may be funding in the future for GAVI-eligible countries in this Region.


Figure 1. Projected impact of different measles vaccination strategies on measles deaths in 45 WHO/UNICEF Priority Countries, 2000-2025

Annual measles deaths

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<tr>
<th>Year</th>
<th>1,400,000</th>
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Note: routine strengthening assumes 2.3% annual improvement in routine immunization coverage until 99%

2.3.6 Rubella

As measles control improves, rubella is seen as a problem because of increased laboratory testing of acute fever and rash cases. Therefore, rubella control also needs to be considered as part of measles control. Good surveillance is the key to establishing rubella epidemiology and the potential use of measles-rubella (MR) vaccine.

2.3.7 Target setting experience in other regions

In the WHO Region of the Americas, the target date for measles elimination was set in 1994 at the same time as poliomyelitis elimination was certified, because of motivation and political commitment. The date set, 2000, was considered realistic but challenging, and was achieved by November 2002.

In the WHO European Region and the WHO Eastern Mediterranean Region, it was decided that about 10 years would be needed, based on the experience in the Region of the Americas. The other WHO regions, the African Region and the South-East Asia Region, have not yet set targets.

2.4 Western Pacific Region progress towards measles elimination

There has been a reduction of over 95% in reported measles cases since 1974 and there is now an elimination goal in the Region, building upon existing achievements of EPI in preventing disease. Three other regions have an elimination goal with a target date. The Task Force now needs to start the process so that the Region has a target date for the goal.
Measles causes suffering, hospitalizations and complications (blindness, and brain damage), as well as deaths.

Resolution RC54.R3, adopted by the Regional Committee at its fifty-fourth session:

- "URGES Member States to "develop or strengthen national plans for measles elimination....; to offer, in principle, all children two doses of measles vaccine....; to develop or strengthen measles surveillance systems and laboratory confirmation.....

- REQUESTS the Regional Director to report progress regularly to the Regional Committee and to propose a target date for regional elimination in due course."

To date, the process for setting a target date has been based on three strategies: two doses of measles vaccine, case-based surveillance, and laboratory support. Assessment of the readiness of each country has been based on having planned or implemented these strategies. However, the process of an annual review of progress (classifying countries as "in progress", "ready" or "not ready") has several limitations:

- The classification process is reactive and not pro-active.
- Some issues are complex to assess.
- Financial aspects are not included.
- It does not address political commitment.

Therefore, the MTF was convened to further assess the situation and make a recommendation on setting a target date.

2.5 Country reports

Each country representative gave an account of progress towards measles elimination and constraints to achieving it. Each country report was given to stimulate discussion on one of the three topic areas. However, they are all presented here together to give an overview of each country’s issues and challenges, as there are issues across more than one topic area for each country.

2.5.1 Cambodia

Cambodia started measles immunization in 1986, but had low coverage leading to a three-yearly epidemic cycle in the 1990s. The country undertook a national catch-up campaign, phased over three years, from 2001 to 2003. In phase I, only children up to the age of five years were targeted, and there was ongoing measles in older children. In phases II and III, all children aged 9 months to 14 years were targeted. In early 2004, there was a supplemental campaign for those aged 7 to 14 years in Phase I areas.

As a result of the national campaign, delivered over four years, there has been a dramatic decline in reported cases, even in the presence of improved surveillance (Figure 2).
Figure 2. Measles cases and measles vaccination coverage, Cambodia

![Graph showing measles cases and vaccination coverage in Cambodia]

In Phase I, coverage in Cambodia was not as high as hoped (only 80%), in part because of delivery of too many other interventions. However, as these were remote areas it was an important opportunity to deliver other health services.

Genomic analysis of viral isolates in 2001 in Cambodia found predominantly the D5 type that circulates in Thailand. Over the past four years, about 70% of samples tested (about 20% of cases) have tested positive for measles. The relatively high rate of confirmed measles among acute fever and rash cases suggest that, even although circulation has been reduced, there is still a lot of measles virus in circulation and that surveillance is only identifying a small proportion of all cases.

The main challenges for Cambodia to achieve elimination are to improve the quality of both surveillance and coverage with immunization services. If these can be achieved and regular follow-up supplementary immunization activities (SIA) implemented, a national target date of 2010 may be set during a mid-term assessment in 2007. A nationwide ‘follow-up’ SIA is planned for 2006.

2.5.2 China

China has made considerable progress in controlling measles since measles immunization was introduced in 1965. However, the level of progress is highly variable - associated with the level of poverty and remoteness of some of its populations. Each of the 31 provinces was put into one of four categories, based on measles incidence, for the national measles control plan. Six provinces are close to elimination. However, there are at least six provinces that will require considerable additional resources to be able to achieve elimination, given their current level of control.

The key issue for China is the relative priority of measles elimination among other communicable diseases, and mobilizing the funding required. In addition to the challenges faced by new emerging diseases, like SARS and avian influenza, there are other

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communicable diseases that have a higher burden (e.g. millions of tuberculosis (TB) cases, nearly 1 million HIV-positive cases, and hundreds of thousands of hepatitis B-related deaths). In comparison, there were just over 71,000 reported cases of measles in 2003. There is increasing concern over Japanese Encephalitis (JE) and its burden of death and disability from the 10,000 reported cases. Therefore, even within EPI, hepatitis B (increasing overall coverage, and especially a timely birth dose) and even integrating JE into immunization programmes may have higher priority than measles elimination.

To improve measles control, China is planning to change the age of the second scheduled dose from seven to two years of age. In conjunction with this, there will be a need for a campaign for older children who may have missed the second dose. A national catch-up campaign for children up to the age of 15 years would have a target of about 300 million children, and would thus require substantial funding (~US$300 million, assuming a cost of US$1 per child). These costs would be easier to justify in the provinces where measles is not well controlled. The need to change the vaccine dose from a 0.2 ml to a 0.5 ml may increase the cost by up to four times from the current price of about US$0.12 per dose. There is also the question of the capacity of the vaccine manufacturer to supply the large amount of vaccine needed for a one-time campaign.

Therefore, China has been reluctant to set a measles elimination target. A collaborative study between the Ministry of Health, WHO, and the Centers for Disease Control/Atlanta is currently looking at the cost of different elimination strategies for China, and results are expected next year.

Because of these constraints, and because China (with about 80% of the Region's population) must be part of a regional elimination programme, a target date of 2010 is seen as too early. The results of costing studies will be available next year, both for the routine programme (from a study supported by GAVI) and for measles elimination. These results and the EPI review planned for October to November 2004 will be useful in discussions on a target date for measles elimination in China.

It is likely that different strategies will be needed in different parts of China. There is a need to strengthen routine EPI services universally, but particularly in provinces with high measles disease burden. Enforcement of school entry requirements may be a useful way to check receipt of two doses of measles vaccine. Catch-up campaigns may be necessary to reduce susceptibility in older children and adolescents and prevent outbreaks in schools and institutions.

2.5.3 Japan

Japan started measles immunization in 1966 with a combination of live and killed vaccine, and then switched to live vaccine only in 1969. In October 1978, measles vaccine was introduced into the National Immunization Programme (i.e. made mandatory) and coverage increased. In 1989, mumps-measles-rubella (MMR) vaccine was introduced, but only the measles component was mandatory. MMR was discontinued in 1993 due to high rates of aseptic meningitis from the mumps component of the vaccine. Measles and rubella vaccines were re-introduced as separate monocomponent vaccines in 1994. Serosurveillance for immunity to measles is regularly conducted.

In 2001, coverage (by PA antibody positives) was approximately 50% by the second birthday, increasing to over 90% by the age of 59 months (Figure 3). The recommended age for measles immunization was 12 to 24 months, but this was changed to 12 to 15 months in November 2003, with the aim of increasing on-time vaccination.
Japan does not have national surveillance for measles, but rather uses reporting from sentinel sites (about 3000 paediatric clinics and 500 hospitals). Surveillance data show 1984, 1991 and 2001 as epidemic years on an endemic background, with seasonal peaks in other years. The 2001 epidemic was smaller than the previous two (Figure 4), consistent with recent improvements in coverage.

Since 2001, measles incidence has been declining, with a shift towards an increasing proportion of cases in persons aged 10 years or older.

Plans are being developed for the introduction of a second dose of measles vaccine in the immunization schedule and reintroduction of combined MR or MMR vaccines.
2.5.4 Papua New Guinea

There are many barriers to setting a target date for measles elimination in Papua New Guinea. These include ongoing government reforms, the limited infrastructure to serve a largely remote and scattered population, and the lack of effective management for EPI at all levels. Consequently, the quality of immunization services and surveillance require substantial strengthening to provide a foundation for achieving measles elimination.

With measles coverage only around 40%, Papua New Guinea has essentially pre-vaccine measles epidemiology. Since 1998, there have been many outbreaks leading to over 30,000 reported cases and several thousand deaths. A national campaign, targeted at children up to the age of 10 years, started in late 2003, and is being implemented province by province. Efforts are also being made to strengthen surveillance, including laboratory diagnosis.

Examples of successful measles strategies (e.g. intensive house-to-house activities conducted on a “rolling basis”) used in other countries in difficult circumstances (e.g. Afghanistan, Ethiopia, Haiti) may be useful in planning and implementing measles elimination in Papua New Guinea.

To mount an elimination programme, additional financial resources will be required for both campaigns and strengthening routine delivery. An important aspect is to encourage national ownership of the programme (i.e. increasing government funding over time) because this increases the sustainability for the long term. Because of the high rate of measles in infants (and associated mortality), measles vaccination is recommended at six months of age and again at age nine months. The discussion around this schedule noted the need for a second dose after the age of 12 months. This can be scheduled at a specific age or in regular cycles. As soon as measles is better controlled, the vaccination at age six months may be removed from the schedule, and a new second dose added after the age of 13 months (possibly at school entry).

2.5.5 The Philippines

In 1998, the Philippines set a goal to eliminate measles by 2008. The goal was announced in a Presidential Proclamation and was followed by advocacy and social mobilization at all levels. The Philippines adopted the approach used in the Region of the Americas, and, in 1998, conducted an initial catch-up campaign targeting children aged 9 months to up to 15 years (26 million children); 96% coverage was reported. The follow-up campaign was conducted in 2004, and has, to date, reached 92% of the eligible population (17 million children). Although the percentage appears lower in 2004, it is a validated coverage figure. Following the 2004 campaign, there has been a 90% decline in cases at San Lazaro Hospital (primary surveillance site in Manila). In contrast, the 1998 campaign had little observable impact on hospitalizations at San Lazaro Hospital.

A critical factor in the success of the 2004 campaign was the widespread use of rapid assessments of coverage during the campaign. In areas with low coverage, further immunization efforts (mop-ups) were undertaken to reach every child. These assessments also showed the much higher coverage achieved with door-to-door strategies, thus persuading decision-makers to implement these in more areas.

Another success of the campaign was the development of an effective safety monitoring system. Adverse effects following immunization (AEFI) can destroy campaign efforts and can have a long-lasting impact. The very responsive and sensitive system resulted in all serious cases being investigated before reaching the press.
Immunization waste from the campaign was collected and buried in predetermined sites (over 300,000 safety boxes). It was the first national immunization campaign with an injectable vaccine that ensured safe disposal without incineration.

Future challenges to achieving and maintaining measles elimination are the need to strengthen routine immunization services to achieve at least 95% coverage in all municipalities and to improve surveillance with laboratory confirmation of suspected cases throughout the country.

2.5.6 The Republic of Korea

The Republic of Korea introduced measles immunization in 1965 and MMR in 1979. However, coverage was low until it was added to the National Immunization Programme (NIP) in 1983. A second dose of MMR was introduced in 1997. These led to low rates of disease until an outbreak that started at the end of 2000.

As a result of the 2000 outbreak, the country set a five-year goal to eliminate measles by 2005, with a school entry requirement for two doses of vaccine and a catch-up campaign for school-aged children. The target group for the campaign (8 to 16-year-olds) was based on the age distribution of reported cases and serosurvey data, which showed high attack rates and lower levels of immunity in these age groups. The cost per child vaccinated in the campaign was <US$1. As a result of the high quality of these interventions, endemic measles transmission has been stopped and fewer than 15 serologically-confirmed measles cases have been documented each year since 2002.

A cost-benefit analysis of different elimination strategies was undertaken and indicated the use of combined MR vaccine (rather than measles or MMR) in the catch-up campaign as the most cost-beneficial. The external technical support provided by WHO and the Centers for Disease Control, Atlanta, was very helpful in preparing for the interventions. The measles elimination programme has also provided opportunities to strengthen the public health infrastructure.

2.5.7 Viet Nam

Viet Nam has set a target to first achieve a level of measles of less than one per million population in each province; and then, after 2010, to interrupt all transmission. The strategies include high routine coverage with the first dose, a catch-up campaign for all children aged up to 10 years, and introduction of a second dose of measles vaccine to the immunization schedule (at age six years) in 2006. Thus, children who were too young for the catch-up campaign will get the second dose at the time of school entry.

The catch-up campaign was delivered in two phases (North in 2002; South in 2003), and achieved over 95% coverage, leading to a marked reduction in measles incidence. In addition, the proportion of suspected measles cases that tested positive for measles declined abruptly. Of the 324 measles cases reported to the National Institute of Hygiene and Epidemiology (NIHE) laboratory in the first six months of 2004, less than 1% were measles IgM positive (compared with nearly 70% before the campaign). Based on the very low reported incidence and the rarity of positive IgM results, it is likely that indigenous measles transmission has been interrupted.

The reduction in laboratory-confirmed measles cases has been accompanied by an increase in the proportion of IgM-positive rubella cases. This apparent increase in rubella is similar to the experience in the Region of the Americas and elsewhere when the number of measles cases declined and surveillance improved.
The additional financial cost of the campaign was US$12 million, or US$0.81 per vaccinated child. The cost of delivery of the first dose was US$4.8 million, or US$1.60 per child. The human resources required for the campaign included 170,000 health workers and over 300,000 volunteers. The resources for the routine immunization and the campaign were mobilized from both national and international sources; vaccine for the campaign was funded by the Japan International Cooperation Agency (JICA).

The high level of quality achieved by the Viet Nam programme provides a good example for other countries in planning and implementing measles elimination activities.

2.6 Technical capacity

The Global Measles Meeting, held in Atlanta, United States of America in 1996, concluded: “The major obstacles to measles elimination are not technical, but perceptual, political, and financial.” Although this statement remains true, significant technical capacity is needed to achieve elimination and additional resources are required to develop this capacity. In turn, strong political commitment is needed to mobilize the resources.

In some societies, there is a perception that measles is a benign illness or natural ‘rite of passage’ of childhood and this has reduced the relative priority of measles elimination compared with other important health interventions.

Another important perception that needs to be addressed is that, not only is it possible to achieve measles elimination, but that it is cost-effective (and in some cases cost-saving) compared with control alone. Experience has shown that adequate measles control does not last long. Susceptible persons accumulate and periodically result in large-scale outbreaks (see Regional Plan)\(^9\). Thus measles elimination is the only appropriate goal to pursue once measles has become relatively well controlled.

In the Western Pacific Region, technical capacity is relatively well developed. It is clear the Region has the capacity to take on the challenge of elimination and succeed as the Region of the Americas did when, in 1994, it set a measles elimination goal for the year 2000. Comparisons with poliomyelitis raise another important perceptual obstacle for a Region that is having to ‘pay’ for having achieved the polio elimination goal ahead of other regions.\(^11\)

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\(^11\) The cost of AFP surveillance that must continue until eradication is certified and the cost of polio immunization that could arguably be stopped ahead of eradication – as long as the AFP surveillance is maintained at higher than certification standards and a rapid response capacity to any importation is maintained.
However, measles is not poliomyelitis — both virus and vaccine differ. The following table summarizes the key differences between the two:

<table>
<thead>
<tr>
<th>Poliomyelitis</th>
<th>Measles</th>
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</thead>
<tbody>
<tr>
<td>• Global eradication goal established in 1988</td>
<td>• Mortality reduction goal established in 2003</td>
</tr>
<tr>
<td>• Time-limited</td>
<td>• Long-term</td>
</tr>
<tr>
<td>• Strategy: mass campaigns, routine helpful, but not absolutely necessary</td>
<td>• Strategy: routine immunization complemented by periodic mass campaigns</td>
</tr>
<tr>
<td>• Surveillance to detect every AFP case</td>
<td>• Surveillance to detect outbreaks</td>
</tr>
<tr>
<td>• &quot;Vertical programmes&quot;</td>
<td>• &quot;Health system strengthening&quot;</td>
</tr>
</tbody>
</table>

The strategies for eliminating a viral infection through immunization remain fundamentally the same: achieve high enough levels of population immunity to prevent transmission and develop surveillance sensitive and specific enough to detect every chain of transmission and respond appropriately.

Poliomyelitis elimination started with a global target. There is also no imminent goal for global measles eradication. Even if there were a global measles eradication goal, the option of stopping immunization after regional elimination is not possible (risk of importations) and unlikely after eventual eradication (risk of bio-terrorism). The need to continue measles vaccination for the foreseeable future makes development of a strong routine immunization programme a key component of measles elimination efforts. Because strengthening the routine EPI can improve delivery of other preventive services, it has broader health benefits than just control of existing vaccine-preventable diseases. For this reason, technical capacity in strengthening routine immunization programmes using an integrated approach needs to be developed (see table below).
1. Strengthen immunization systems to reach every child consistently, systematically, and regularly (e.g. through the 'Reaching Every District' strategy)  
   Combine delivery of immunization services with other preventive measures where appropriate (e.g. malaria prevention, mass drug administration of anti-helminthic drugs etc.)  
   Add new (Hib, rubella, JE) or future (rotavirus, pneumococcal, meningococcal) vaccines when appropriate  
2. Provide technical assistance to countries for epidemiologic assessment and country-specific strategy development for measles elimination  
3. Improve measles surveillance  
4. Establish a measles regional laboratory network to enable reliable laboratory confirmation of an increasing proportion of cases as control improves, and provide genomic analysis to help understanding of epidemiology  
5. Increase intersectoral/international cooperation/coordination  
   • Better collaboration with Ministries of Education and Finance  
   • ICCs more focused on routine strengthening and measles elimination  
   • More regional technical cooperation/communication for routine strengthening and measles elimination  
   • Opportunity for a Member State of the Western Pacific Region to "champion" regional elimination

Laboratory

The geographical characteristics of Pacific island countries (PICs), 21 countries and territories where relatively small numbers of people live on scattered islands in a vast area, require an approach for testing measles specimens in an efficient manner. In this regard, it was advised to establish a "subregional network of measles laboratories" composed of four national measles laboratories (NMLs) in PICs, and a reference laboratory in Australia (Viral Diseases Research Laboratory [VIDRL]), and possibly an additional laboratory in New Zealand. The necessity of regular on-site review of the quality and capacity of the NMLs was recognized.

All laboratories are expected to function as either WHO regional measles reference laboratories (VIDRL) or subregional reference laboratories (NML in four PICs), that test not only domestic specimens but also samples of other countries without their own NML. Utilizing this subregional network, specimens taken anywhere in PICs will be transferred to an assigned measles laboratory in the most efficient manner, considering the feasibility of transportation, historical relationships and certain other factors.

12 Immunization in Practice 2004: WHO /IVB/ 04.06

13 Surveillance includes case/outbreak detection, reporting, investigation, analysis, and feedback of data. Surveillance is "information for action" — used to understand local measles epidemiology so as to guide the programme. Measles surveillance data can be compared with coverage data to help identify issues of data quality of routinely reported data.
2.7 Financial and human resources

Identifying the additional resources needed to achieve measles elimination is not straightforward. It starts with a plan that identifies the appropriate strategies for the country to achieve 95% population immunity in every district. The plan should focus on the development of technical and operational capacity to implement the immunization strategies as well as to develop epidemiological analysis and laboratory support. The actions and time-frame for each strategy are then defined, and the resources required estimated.

As schools and pre-schools are often the setting for the highest rates of measles transmission, it makes sense to have a school entry requirement to check immunization status and update as necessary at the time of school entry. A legal requirement is unlikely to be effective unless systems and resources are in place to implement the school entry check.

Resource constraints are a major obstacle for most countries in the Region, especially those furthest from measles elimination. Developing adequate human and financial resources requires lead time. Hence, it is very challenging for some countries to set a realistic target date - unless the political commitment for measles elimination is higher than at present.

Because maintenance of measles elimination is a long-term task involving efforts to strengthen routine EPI services, it is better to pursue a "slower but surer" approach. One critical aspect of this is to encourage national ownership of measles elimination so that it is not seen as an external donor-driven activity. This means that the resources will need to come from national sources, while recognizing the limited ability of the poorest countries in the Region to mobilize resources. The national Inter-Agency Coordinating Committee, or similar body, will play an important role in developing effective local partnerships for resource mobilization and steering activities to strengthen routine services and achieve measles elimination.

Resource mobilization will be a major challenge. However, the Region has already been able to provide support for many measles control activities. It is likely that setting a target date will help with resource mobilization.

<table>
<thead>
<tr>
<th>Financial and human resources needed for measles elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Develop the appropriate strategies for immunization and surveillance (including laboratory support).</td>
</tr>
<tr>
<td>(2) Identify the activities and estimate a time-frame and resource requirements for each strategy.</td>
</tr>
<tr>
<td>(3) Mobilize the resources needed, using a combination of national and international resources.</td>
</tr>
</tbody>
</table>

2.8 Political commitment

Political commitment is the foundation and the essential ongoing factor to achieve measles elimination. Achieving political commitment requires good advocacy. Advocacy must use good science (including cost-benefit data) through a range of communication strategies targeted at key audiences. Defining the target audiences will differ according to country based on the organization and funding of health services (e.g. centralized versus decentralized health services) and the role of the private sector. At the highest level there needs to be national ownership of measles elimination as part of a commitment to reach all
children with preventive services. In all countries, the target audience for advocacy for measles elimination should include Ministries of Finance and Education, and other relevant ministries that need to be involved in measles elimination efforts. Ministers, other politicians, heads of department, and other senior decision-makers should be targeted.

Challenges to achieving political commitment for measles elimination include: the perception of measles as a normal childhood illness; failure to recognize the full burden of the disease, in part because of inadequate surveillance systems; strong competing health priorities in the face of limited resources; failure to have achieved global poliomyelitis eradication (including ongoing costs to maintain poliomyelitis elimination activities); not fully appreciating the differences between measles and poliomyelitis; and the fact that immunization has already reduced the measles disease burden by more than 95% in the Region.

The key messages for advocacy should be based on a child’s right to health and the fact that measles elimination is all about expanding preventive services to reach all children, regardless of socioeconomic, ethnic, religious or geographic barriers. Building the capacity for EPI to consistently and systematically reach every child that is born in the Region will lead to health benefits beyond just measles elimination. Therefore, it needs to be understood that cost-benefit assessments often only provide the benefits from the elimination of the remaining measles burden and not the indirect benefits that will arise from developing stronger EPI systems.

In addition to the system-wide benefits of measles elimination, the primary advocacy message for elimination is that measles continues to cause an important disease burden that is entirely preventable with a cheap, safe and effective vaccine. High quality surveillance systems are essential to document the full burden of disease and understand the local epidemiology of measles (e.g. identification of high-risk groups). Because measles is an epidemic disease, and large outbreaks will occur after years of good control (unless elimination levels of population immunity have been achieved), it should be emphasized that low measles incidence in any one year does not predict the next year’s disease burden, and that a large increase can occur after many years of declining incidence.

Another important point is the need to work together as a region to achieve a common goal, and the epidemiological benefit of doing so. Measles elimination is directly linked with effective hepatitis B control because of the primary role of strengthening routine EPI for both diseases. The timely delivery of a birth dose of hepatitis B vaccine coincides with administration of BCG and serves as an opportunity to register the infant for future preventive services, including measles vaccination.

**Political commitment for measles elimination in the Region**

1. Develop the case for elimination by comparing the costs and benefits of elimination with the current level of control
2. May use past measles disease burden to estimate likely future burden and its costs to health services and the community.
3. Should consider the broader benefits for health services, as well as the benefits of reaching previously unreached children and the equity for all that is achieved by measles elimination efforts
4. Identify the key target audiences for advocacy and the key messages, with a focus on the child’s right to health and life.
3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

(1) The foundation for measles elimination is strong immunization services that achieve high coverage of each new birth cohort with two doses of measles vaccine. Strengthening routine immunizations services is critical for the achievement and maintenance of elimination.

(2) Experience shows that, if a measles elimination strategy includes a high quality initial vaccination campaign targeted to an appropriate age range, elimination can be achieved within one to three years. If the strategy is only with two age-scheduled doses it may take a decade or more.

(3) Adequate planning and integration of measles elimination activities with routine EPI and health services is critical for achieving and maintaining high population immunity.

(4) In September 2003, at its fifty-fourth session, the Regional Committee for the Western Pacific resolved to have two pillars to revitalize EPI: measles elimination and hepatitis B control through immunization. Because of the need to build strong routine EPI services to achieve measles elimination and prevent hepatitis B infection, advocacy for measles elimination should be based, not just on the remaining disease burden of measles in the Region, but also on the likely impact that strengthening EPI will have on other vaccine-preventable diseases (e.g. hepatitis B and pertussis), as well as the beneficial effects on preventive health services in general.

(5) Political commitment is critical. This involves developing sound advocacy tools and effective partnerships at country level (including with the private sector, paediatric societies, other ministries such as Finance, Education, and Welfare).

(6) Nearly all countries in the Region are ready to set a target date for measles elimination. However, there are some countries in the Region that are facing considerable challenges to reaching their populations or to making measles elimination of sufficient priority to be able to set a target date.

(7) Based on this experience, the MTF considers that the earliest possible target date for measles elimination is 2010 (i.e. five years from setting the target date). However, the MTF considers that 2010 is not realistic because of the resource requirements, the size of the hard-to-reach populations, and the time required to change immunization policy (e.g. introduce school entry requirements or alter the immunization schedule).

(8) The Fourteenth Meeting of the Technical Advisory Group on the Expanded Programme on Immunization and Poliomyelitis Eradication (TAG 14) suggested 2015 as the latest target date for consideration. The MTF considers that goals set for more than 10 years in the future are unlikely to generate sufficient political support or sense of urgency to stimulate action.

(9) Among options for a target date to be set in 2005, the MTF considers that 2012 is the earliest reasonable target date and represents an appropriate balance between the earliest possible date (2010) and a date too far in the future to command attention (2015). Before 2005, there needs to be further analysis of resource requirements.
(10) Moving towards measles elimination requires a commitment from all countries in the Region and the MTF feels strongly that a goal should be set that all can aspire to reach and move together towards measles elimination.

(11) To set a target at the fifty-sixth session of the Regional Committee in 2005, several issues will need to be addressed:

(a) developing political commitment at all levels to measles elimination as an urgent and high priority;

(b) defining the required financial, human, and material resources;

(c) initiating mobilization of resources from donors at regional level to complement national resources (options to be explored include development of the existing ICC or a new donor network focusing on measles elimination.); and

(d) securing the vaccine supply and related safe injection supplies.

3.2 Recommendations

(1) Setting a target date for elimination will hasten political commitment and the mobilization of resources and should be done as soon as possible. The MTF recommends that the Western Pacific Region should set 2012 as the target date for measles elimination.

(2) It is feasible but challenging to eliminate measles in every country in the Region by 2012, i.e. within seven years of setting the target. Overall, 2012 is the year that the Region should aspire to, but China represents a particular challenge. Measles elimination by 2012 will be feasible for some provinces, but others may require more time.

(3) The MTF recommends that the WHO Western Pacific Regional Office should work with countries to build political commitment and define the resource requirements by the time of the fifty-sixth session of the Regional Committee in 2005, so that 2012 can be set as the target date. WHO should help countries to estimate the costs to achieve and maintain elimination.

(4) To monitor and report the evolving epidemiology of measles in the Region, the MTF recommends establishment of an integrated epidemiological and laboratory surveillance system that includes an accredited laboratory network. Particular attention should be paid to establishing a subregional surveillance and laboratory network for the Pacific.
# Task Force Meeting on Measles Elimination in the Western Pacific Region

## Manila, Philippines

### 29-30 July 2004

### Tentative Timetable

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<th>Friday, 30 July</th>
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<td><strong>REGISTRATION</strong></td>
<td>0800-0900</td>
<td>8 Reports and plenary session</td>
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<tr>
<td>0815-0845</td>
<td>1. Opening ceremony</td>
<td>0900-1000</td>
<td>(a) Focus 1 - Ensuring the availability and application of technical capacity to move towards measles elimination in the Western Pacific Region</td>
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<tr>
<td></td>
<td>- Opening remarks</td>
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<td>(b) Focus 2 - Addressing adequate financial and human resources for the elimination of measles virus transmission in the Western Pacific Region</td>
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<td></td>
<td>- Self-introduction</td>
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<td>- Election of Chairman, Vice-Chairman and Rapporteur</td>
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<td>0845-0915</td>
<td><strong>COFFEE BREAK</strong></td>
<td>1000-1030</td>
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<tr>
<td>0915-0935</td>
<td>2. Review of agenda and objectives of the meeting; and Technical Advisory Group (TAG) perspective on progress towards measles elimination</td>
<td>1030-1130</td>
<td>(c) Focus 3 – The need for political commitment of all member states to eliminate measles virus transmission in the Western Pacific Region</td>
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<tr>
<td>0935-1000</td>
<td>3. Timeline experience in a successful elimination effort</td>
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<td>1005-1030</td>
<td>4. Measles disease burden in the Region</td>
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<td>1030-1200</td>
<td>5. Focus 1 – Ensuring the availability and application of technical capacity to move towards measles elimination in the Western Pacific Region</td>
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<td>- Cambodia</td>
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<td>- Republic of Korea</td>
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<td>1200-1300</td>
<td><strong>LUNCH BREAK</strong></td>
<td>1130-1330</td>
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<td>1300-1430</td>
<td>6. Focus 2 – Addressing adequate financial and human resources for the elimination of measles virus transmission in the Western Pacific Region</td>
<td>1330-1430</td>
<td>9 Conclusions and recommendations</td>
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<td>- China</td>
<td>1430</td>
<td>10 Closing ceremony</td>
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<td>- Papua New Guinea</td>
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<td>1430-1500</td>
<td><strong>COFFEE BREAK</strong></td>
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<td><strong>COFFEE</strong></td>
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<td>1500-1630</td>
<td>7. Focus 3 – The need for political commitment of all Member States to eliminate measles virus transmission in the Western Pacific Region</td>
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**ENGLISH ONLY**
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