Seventeenth Meeting of the Technical Advisory Group on Immunization and Vaccine Preventable Diseases in the Western Pacific Region

ADVISORY SESSIONS

Manila, Philippines
10–11 July 2008
REPORT

SEVENTEENTH MEETING OF THE TECHNICAL ADVISORY GROUP ON IMMUNIZATION AND VACCINE PREVENTABLE DISEASES IN THE WESTERN PACIFIC REGION

ADVISORY SESSIONS

Manila, Philippines
10-11 July 2008

Manila, Philippines
April 2009
REPORT

SEVENTEENTH MEETING OF THE TECHNICAL ADVISORY GROUP ON IMMUNIZATION AND VACCINE PREVENTABLE DISEASES IN THE WESTERN PACIFIC REGION:

ADVISORY SESSIONS

Convened by:

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

Not for sale

Printed and distributed by:

World Health Organization
Regional Office for the Western Pacific
Manila, Philippines

April 2009
NOTE

The views expressed in this report are those of the participants of the Seventeenth Meeting of the Technical Advisory Group on Immunization and Vaccine Preventable Diseases in the Western Pacific Region and do not necessarily reflect the policies of the World Health Organization.
Keywords:

Immunization / Sentinel surveillance / Vaccines

This report has been printed by the Regional Office for the Western Pacific of the World Health Organization for the participants of the Seventeenth Meeting of the Technical Advisory Group on Immunization and Vaccine Preventable Diseases in the Western Pacific Region, which was held in Manila, Philippines, from 10 to 11 July 2008.
LIST OF ACRONYMS

ACPE  Advisory Committee for Polio Eradication
AEFI  adverse events following immunization
AFP  acute flaccid paralysis
ANC  antenatal care
BCG  Bacille Calmette-Guérin vaccine
CBAW  child-bearing age women
CIF  care investigation form
CIP  coverage improvement plan
cMYP  Comprehensive Multi-Year Plan
CRS  congenital rubella syndrome
cVDPV  circulating vaccine-derived poliovirus
DTP  diphtheria–tetanus–pertussis vaccine
EPI  Expanded Programme on Immunization
EPID  Epidemiologic Identification
FSP  Financial Sustainability Plans
GACVS  Global Advisory Committee on Vaccine Safety
GAVI  Global Alliance and Vaccine Initiative
GFIMs  Global Framework on Immunization Monitoring and Surveillance
GISV  Global Immunization Vision and Strategy
GMP  good manufacturing practice
HbsAg  hepatitis B surface antigen
HBV  chronic hepatitis B
HepB  Hepatitis B
Hib  *Haemophilus influenzae* type b
HPV  *Human papilloma* virus
IMC  integrated management of childhood
IPV  inactivated poliovirus vaccine
ITD  intratypic differentiation
JE  Japanese encephalitis
JICA  Japan International Cooperation Agency
JRF  Joint Reporting Forms
MCH  mother and child health
MCV  measles-containing vaccine
MDG  Millennium Development Goals
MM  Measles-mumps
MMR  measles–mumps–rubella
MNTE  maternal and neonatal tetanus elimination
mOPV  monovalent oral poliovirus vaccine
MR  measles–rubella
NCC  national certification committee
NIID  National Institute of Infectious Diseases, Tokyo
NIP  national immunization programme
NML  national measles laboratory
NNDRS  National Notifiable Disease Reporting System
NPEV  non-polio enterovirus
NRAs  National Regulatory Authorities
NT  neonatal tetanus
OD  operational districts
OPV  oral polio vaccine
PCV  *Pneumococcal* conjugate vaccine
PIC  Pacific island countries and areas
PW  pregnant women
QALY  quality adjusted life year
QUIVARR  Quantitative Immunization and Vaccine Related Research Advisory Committee
RCC  Regional Certification Commission
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCV</td>
<td>Rubella containing vaccine</td>
</tr>
<tr>
<td>RED</td>
<td>reaching every district</td>
</tr>
<tr>
<td>SAGE</td>
<td>Strategic Advisory Group Experts</td>
</tr>
<tr>
<td>SIAAs</td>
<td>supplementary immunization activities</td>
</tr>
<tr>
<td>TAG</td>
<td>Technical Advisory Group</td>
</tr>
<tr>
<td>TBAs</td>
<td>traditional birth attendants</td>
</tr>
<tr>
<td>TT</td>
<td>tetanus toxoid</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Population Fund</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children's Fund</td>
</tr>
<tr>
<td>US CDC</td>
<td>United States Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>VDPV</td>
<td>vaccine-derived poliovirus</td>
</tr>
<tr>
<td>VPDs</td>
<td>vaccine preventable diseases</td>
</tr>
<tr>
<td>VVMs</td>
<td>vaccine vial monitors</td>
</tr>
<tr>
<td>WER</td>
<td>Weekly Epidemiological Record</td>
</tr>
<tr>
<td>WHA</td>
<td>World Health Assembly</td>
</tr>
</tbody>
</table>
# CONTENTS

1. INTRODUCTION ........................................................................................................... 6  
   1.1 Objectives ............................................................................................................. 6  
   1.2 Organization ......................................................................................................... 6  
   1.3 Opening ceremonies ............................................................................................ 7  

2. REPORT FROM PRESENTATION SESSIONS .................................................................. 8  
   2.1 Overview of issues ................................................................................................... 8  
   2.2 Achieving Measles Elimination by 2012 ............................................................... 11  
   2.3 Controlling Hepatitis B by 2012 ............................................................................ 14  
   2.4 Maintaining the Region poliomyelitis-free through 2012 ....................................... 18  
   2.5 Achieving maternal and neonatal tetanus elimination (MNTE) .............................. 20  
   2.6 Routine Immunization .......................................................................................... 21  
   2.7 Immunization Safety ............................................................................................. 23  
   2.8 Introduction of New and Underutilized Vaccines .................................................. 24  
   2.9 VPD Surveillance Workshop Conclusions & Recommendations.  
      See separate report .................................................................................................. 28  
   2.10 Laboratory Surveillance Network Conclusions & Recommendations.  
      See separate report ................................................................................................. 28  
   2.11 Integration ........................................................................................................... 29  

3. CONCLUSIONS AND RECOMMENDATIONS ................................................................ 30  
   3.1 Strategic direction of immunization in the Western Pacific Region: 2008-2012 .................................................. 30  
   3.2 Measles elimination by 2012 ................................................................................. 30  
      3.2.1 Recommendations: ......................................................................................... 30  
   3.3 Hepatitis B Control by 2012 ................................................................................ 31  
   3.4 Current status in maintaining the Region poliomyelitis-free and the Regional strategic plan for 2008-2012 .............. 33  
   3.5 Achieving Maternal and Neonatal Tetanus (MNT) Elimination ............................. 33  
   3.6 Routine Immunization .......................................................................................... 34  
   3.7 Vaccine Quality & Immunization Safety ............................................................... 34  
   3.8 Introduction of new and underutilized vaccines .................................................... 35  
   3.9 Rubella .................................................................................................................. 36  
   3.10 VPD Surveillance ................................................................................................. 36  
   3.11 Lab Network meeting .......................................................................................... 36  
   3.12 Inter-dependence and Partner’s Meeting .............................................................. 37  

**ANNEXES:**

ANNEX 1 TIMETABLES  
ANNEX 2 LIST OF ATTENDEES TO THE TAG MEETING  
ANNEX 3 COUNTRY FEEDBACK FROM GROUP WORKS  
ANNEX 4 LIST OF ATTENDEES TO THE ICC MEETING
1. INTRODUCTION

The 17th Meeting of the Technical Advisory Group (TAG) on Immunization and Vaccine Preventable Diseases in the Western Pacific Region was held from 7 to 11 July 2008 in Manila, Philippines. The 17th meeting was divided into three sessions: the first two sessions, the Laboratory Network Meeting and the Vaccine Preventable Diseases (VPDs) Surveillance Workshop, were held concurrently from 7 to 9 July; the advisory session was held from 10 to 11 July and addressed technical issues related to various aspects of the expanded programme on immunization (EPI) in the Western Pacific Region.

1.1 Objectives

The objectives of this meeting were:

(1) to review surveillance needs for disease eradication, elimination and control; to discuss country strategies and activities for VPD surveillance and identify best practices; and to develop country workplans for VPD surveillance with special reference to measles, poliomyelitis and new vaccines;

(2) to review the performance of regional reference laboratories and national laboratories for poliomyelitis and measles, to discuss new laboratory algorithms and case-based laboratory reporting related to poliomyelitis and measles, respectively, and to develop a plan for the establishment of a Japanese encephalitis (JE) laboratory network in selected countries;

(3) to review and update recommendations on achieving and monitoring progress towards measles elimination and hepatitis B control, sustaining poliomyelitis-free status, and the process for certifying achievement of the hepatitis B control goal;

(4) to review technical and programmatic aspects of introduction of new and underutilized vaccines with particular reference to Haemophilus influenzae type b (Hib), pneumococcal and rotavirus vaccines; and

(5) to review and update recommendations on strengthening routine immunization services in the context of the Global Immunization Vision and Strategy (GIVS).

1.2 Organization

Attending the Laboratory Network meeting were six TAG members, two temporary advisers, 44 participants from 16 countries and areas, two representatives from two partner agencies, and 19 WHO staff from HQ, regional office and country offices. Attending the VPD Surveillance Workshop were six TAG members, 23 participants from nine priority countries, three representatives from the United States Centres for Disease Control and Prevention (US CDC), Atlanta, and 19 WHO staff from HQ, Regional office and country offices. Attending the advisory session were six TAG members, three temporary advisers, 38 participants from 16 countries and areas, 28 representatives from eight partner agencies, seven United Nations Children's Fund (UNICEF) officials from HQ, Regional Office, and country offices, and 23 WHO staff from HQ, Regional Office and country offices. The timetables of the three sessions are provided in Annexes 1A, 1B and 1C.
1.3 Opening ceremonies

Dr Takeshi Kasai, Acting Director of the Division for Combating Communicable Diseases, welcomed the TAG members, partners, and participants to the two concurrent lead-off sessions including the Laboratory Network Meeting and the VPD Surveillance Workshop, noting the critical importance of the regional laboratory network and high quality case-based surveillance to achieve regional goals and objectives. Dr Shigeru Omi, Regional Director of the World Health Organization Regional Office of the Western Pacific, then welcomed TAG members, partner representatives and participants to the Advisory Session, noting the leadership, vision and direction the TAG has provided to immunization programmes since 1991, providing the guidance needed to achieve polio-free status, establish the twin goals of measles elimination and hepatitis B control, and advise countries on introducing new and under-utilized vaccines and strengthening routine immunization systems in the context of the GIVS. Acknowledging the Region's past successes, he noted the forward looking posture of the Region, requesting TAG support for strategic advice related to vaccine preventable diseases in the Region and constituent initiatives on maintaining poliomyelitis free status, achieving measles elimination by 2012, and increasing access to and utilization of new and underutilized vaccines.
2. REPORT FROM PRESENTATION SESSIONS

2.1 Overview of issues

2.1.1 Update of Regional Immunization Programme

Many disease control eradication and elimination goals have been established by different bodies. These include the Millenium Development Goal (MDG) # 4, Reduce under-five mortality by 2/3 between 1990 and 2015 and the GIVS goals of reducing overall childhood morbidity and mortality due to VPDs by at least 2/3 between 2000 and 2015 and reducing measles mortality by 90% between 2000 and 2010. A World Health Assembly (WHA) goal of global polio eradication by 2000 was shifted to 2005; subsequently, due to further delays, WHO established milestones of interruption of poliovirus type P1 circulation by the end of 2008 and type P3 circulation by the end of 2009, with certification expected by 2012. Similarly, a WHA-resolution endorsing a maternal and neonatal tetanus elimination goal by 1999 was revised to 2005 by WHO, UNICEF and United Nations Population Fund (UNFPA). With steady progress being made despite challenging circumstances; UNICEF is subsequently proposing global elimination by 2012. Western Pacific Regional goals include elimination of measles and control of Hepatitis B (reducing chronic infection rates to <2% in 5-year old children as an interim goal with eventual reduction to <1%) by 2012 and maintaining poliomyelitis-free status.

In the Western Pacific Region, estimated measles mortality decreased by 80% from 2000 to 2006; the same model estimates a 91% reduction in 2007 as a result of successful supplementary immunization activities (SIAs) in six Member States the same year. Republic of Korea was the first country to declare measles elimination in November 2006, and was also the first to be certified for achieving the Hepatitis B interim goal in 2008 with <2% chronic Hepatitis B infection rates among five year old children. China has reduced seroprevalence among five-year old children from approximately 10% in 1992 to <2% in 2006. Twenty-two countries and areas have achieved ≥ 85% HepB3 and ≥ 80% HepB birth dose coverage, targets for reaching <2% chronic Hepatitis B infection among five year old children. The Region has remained poliomyelitis-free in spite of importations into Singapore in 2006 and Australia in 2007, and emergence of vaccine derived polioviruses in China.

Routine immunization coverage has further improved in the past two years. The number of countries and areas with ≥ 90% diphtheria tetanus pertussis (DTP3) coverage has increased from nine to 21 in 2006 vs. 2007. Similarly, the number of countries with ≥ 90% coverage with a first dose of measles containing vaccine (MCV1) has increased from nine to 21. In 2004, 50% of districts in 17 countries reporting had DTP3 coverage ≥ 90%; in 2007, 88% of districts in 19 countries achieved this goal.

More and more countries in the Region are introducing new and underutilized vaccines. Rubella containing vaccine (RCV) is now used by 28 countries and areas, and China, Mongolia, Viet Nam and the Philippines may introduce RCV in the coming years. Japanese Encephalitis (JE) is believed to be endemic in 11 countries of the Region. Japan and Republic of Korea use JE vaccine nationwide; Malaysia uses JE vaccine in two states it has identified as endemic; China and Viet Nam are in the process of nationwide expansion. Disease burden assessments are being conducted in Cambodia, Lao People's Democratic Republic, the Philippines, and Papua New Guinea. As of June 2008, Hib vaccine is being used in 21 countries and areas; the Global Alliance for Vaccines and Immunization (GAVI) support will be used to support Hib vaccine introduction in Solomon Islands and Kitibati in 2008; Viet Nam and the Lao People's Democratic Republic in 2009; and Cambodia in 2010. Pneumococcal conjugate vaccine (PCV) is used in Australia, New Zealand and nine Pacific Island countries (PICs); Human papilloma Virus (HPV) vaccine is used in Australia, American Samoa, Guam, the Marshal Islands, and the
Northern Marianas Islands; Fiji and Tonga are evaluating HPV disease burden with WPRO support. Rotavirus vaccine is used in Australia, Federated States of Micronesia, Marshall Islands and Niue; disease burden assessments are ongoing in eight additional countries.

Despite impressive progress on many fronts, EPI faces numerous challenges including reaching the unreached, achieving 95% coverage with MCV1 and MCV2, achieving high-quality, case-based surveillance for measles and acute flaccid paralysis (AFP), and achieving <2% chronic Hepatitis B infection rates, especially in countries such as the Lao People's Democratic Republic and Papua New Guinea with poor routine immunization infrastructure and Viet Nam where adverse events following immunization resulted in a dramatic decrease in HepB3 and birth dose coverage. Uptake of new vaccines is desirable and, together with activities addressing these other challenges, will help to achieve MDG #4, the GIVS goals, and the Regional goals. Resource mobilization, both from national sources and development partners, and political commitment remain as fundamental challenges that affect our ability to address other challenges.

2.1.2 Strategic Advisory Group of Experts (SAGE) Conclusions and Recommendations from their April 2008 Meeting

SAGE addressed issues on new vaccines, immunization financing, pandemic preparedness, and immunization schedules. Hepatitis B (HepB) vaccine has been introduced in 177 (92%) of all countries in the world; Hib in 144 (75%); PCV in 25, and Rotavirus vaccine in 16. Introduction of new and underutilized vaccines has led to challenges to cold chain capacity; SAGE agreed that prioritization of support to cold chain and vaccine management and logistics. SAGE also endorsed the programme of work on vaccine prequalification and strengthening of National Regulatory Authorities (NRAs), and called on WHO to increase technical support to countries to ensure immunization safety and monitoring through adverse events following immunization (AEFI) surveillance. SAGE also suggested that WHO and GAVI work together to align WHO’s VPD “categorization” process and country vaccine prioritization with GAVI’s vaccine investment strategy. Finally, SAGE encouraged WHO to conduct further situational analyses and consultations with lower middle-income countries and partners to increase uptake of new and underutilized vaccines.

SAGE heard updates on pandemic preparedness including Influenza H5N1 vaccine stockpiles, manufacture of live attenuated influenza vaccines, and promotion of seasonal influenza vaccine use in order to increase production capacity. SAGE reviewed routine immunization schedules and position papers on more than 20 vaccines, and acknowledged nine universally-recommended antigens: Bacille Calmette-Guérin Vaccine (BCG), DTP vaccine, inactivated poliovirus vaccine/oral poliovirus vaccine (IPV/OPV), measles-containing vaccine (MCV), HepB, Hib, and PCV.

Finally, SAGE reviewed reports from the Advisory Committee on Polio Eradication (ACPE), Global Advisory Committee on Vaccine Safety (GACVS), and the Quantitative Immunization and Vaccine Related Research Advisory Committee (QUIVARR).

2.1.3 Key issues for the 2008 TAG

The key issues for which TAG guidance was sought involved primarily those related to recently developed strategic documents including Strategic Direction of Immunization in the Western Pacific Region, 2008-2012, Strategic Plan for Measles Elimination in the Western Pacific Region, 2008-2012; optimal routine immunization schedules for MCV1 and MCV2; operationalizing the Hepatitis B Control Plan of Action and certification Guidelines, Strategic Plan for Maintaining Polio-Free Status in the Western Pacific Region, 2008-2012; Strategic Plan for New and Underutilized Vaccine Introduction in the Western Pacific Region, 2008-2015; and rubella vaccine introduction and options for a regional goal.
2.1.4 Strategic Direction for Immunization in the Western Pacific Region, 2008-2012

The Regional Office prepared the draft Strategic Direction document to provide guidance to Member States at a time when EPI has reached maturity, when opportunities for synergistic integration are increasing, and prospects for protecting more children are greater than ever. Growing importance of and attention to different health priorities create competition for human, material and financial resources that threaten the ability of national immunization programmes to capitalize on new potential funding streams. Finally, as the Region needs to take stock of its progress and chart the way forward having reached the chronological mid-point towards the 2012 twin goals.

The Western Pacific Region’s strategic direction is focused on four strategic goals. The first is to close the gaps to protect more people in a changing world. Achieving Regional disease-specific goals and objectives requires strengthening routine immunization systems by prioritizing development and use of multi-year plans, reaching every district to reach the unreached, ensuring immunization safety and optimizing immunization schedules. The second strategic goal is to expand the scope of immunization to introduce new vaccines and technologies. This includes a building national capacity to conduct situational analysis of specific diseases burden caused by particular vaccine preventable infections and cost effectiveness analyses to estimate impact and prioritize utility of specific vaccines; building cold chain and vaccine management capacity to incorporate new vaccine introduction, encouraging vaccine production by regional manufacturers, and strengthening capacity of National Regulatory Authorities (NRAs) ensure immunization safety and AEFI/post marketing surveillance. The third is to broaden the reach of immunization through integrating immunization with other health related interventions and surveillance. Objectives to reach this goal include working closely with other programmes such as child survival, maternal and child health, roll back malaria, and nutrition to identify and utilize potential synergies; expanding virological and bacteriological laboratory capacities and networks, and developing integrated VPD surveillance and programme monitoring systems. The fourth goal is to ensure sustainability through effective partnerships, human resource management and advocacy and social mobilization.

The Expanded Programme on Immunization (EPI) of the WHO Western Pacific Region in 2008 is a programme maturing beyond infancy, capitalizing on synergies with other programmes and interventions, and growing to protect more children from disease and death due to meningitis, pneumonia and diarrhea.

Specific regional goals of measles elimination and hepatitis B control were established in 2003, to be achieved in 2012 and to strengthen overall immunization and health systems. Particularly focusing on the first and last recommended vaccination during the infancy period of a child (hepatitis B vaccine birth dose and measles vaccine) was perceived as offering new opportunities to complete the whole schedule. In the broader context of generally strengthening routine immunization services additional VPDs could be averted and further contributions made to reducing childhood mortality as well as maternal mortality, the latter mainly through prevention of tetanus. Both will support achieving the important respective MDGs.

Since these regional twin goals were established, efforts are also being made at regional and national levels to prepare countries to take informed decisions on introduction and expansion of new and underutilized vaccines against Hib, *Streptococcus pneumoniae*, Rotavirus, rubella, and JE. Introduction of new and expansion of underutilized vaccines will offer additional opportunities to reduce childhood deaths. Looking at these opportunities, it becomes apparent that the Region’s overall goal of reaching all children by 2012 is not just about measles elimination or hepatitis B control but reaching all children as early as possible and beyond infancy.
Progress towards the measles elimination and hepatitis B control goals as well as recent developments on new and underutilized vaccine introduction warrant a summary review of the current situation and articulation of the Region’s strategic direction for immunization during the next five years; in addition to detailed Regional action plans developed for disease specific control and elimination approaches.

The strategic direction document is expected to not only serve as a clear statement of the Region’s progress and immunization goals, objectives, strategies and priorities, but also as a tool for advocacy and resource mobilization.

2.2 Achieving Measles Elimination by 2012

2.2.1 Progress towards Measles Elimination and Overview of the Strategic Plan for 2008-12

Since the beginning of intensified Region-wide efforts against measles in 1996, 31 of 36 countries and areas have conducted supplementary immunization activities (SIAs) and currently 28 provide routine MCV2. In 2007, six priority countries conducted measles SIAs, each one achieving 95% coverage or greater. Joint Reporting Forms (JRF) reports indicate that regional mean MCV1 coverage has been high for the past decade, reaching 92% in both 2006 and 2007. As a result, from 2000 to 2007, the reported number of annual measles cases, excluding China, decreased by 97% and estimated number of measles deaths for the entire Region from 2000 to 2006 decreased by 80%. However, measles incidence remains relatively high largely because of the many cases reported from China and Japan.

All countries in the Region conduct case-based surveillance for measles, and all but one submit these data to WPRO monthly. Completeness of monthly reporting to WPRO has increased from 51% in 2007 to 73% through May 2008, and timeliness (reporting by the 7th of every month) from 19% in 2007 to 46% in 2008. Surveillance performance indicators among countries that submitted necessary data and the PICs as a group approached or exceeded their established targets in 2007, with a discarded measles case rate among countries submitting classification data of 2.4 per 100 000 population (Target = ≥ 2.0) and blood specimens collected from 64.4% of suspected measles cases (target = 80%). Timeliness of serologic results from the laboratory (within seven days) was 79.8% in 2007 (Target = 80%), and 88.9% through May 2008.

WPRO has prepared a draft Strategic Plan for Measles Elimination in the Western Pacific Region, 2008-2012. The Strategic Plan is necessary because the previous plan covered 2003-2005 only; future SIAs need to be anticipated for proper vaccine forecasting; and partners need to be informed of anticipated intermediate term resource needs.

The Strategic Plan includes three objectives to achieve the goal of measles elimination by 2012: (1) 95% population immunity; (2) high quality case-bases measles surveillance; and (3) an accredited and accessible measles laboratory network. To achieve 95% population immunity, countries and areas should improve routine MCV1 and MCV2 coverage through established strategies described in GIVS and establishing school entry requirements; optimize MCV1 and MCV2 schedules, conduct catch-up and follow up SIAs when needed to increase population immunity, and, if necessary, to conduct targeted SIAs for particularly vulnerable groups such as university students, military recruits, factory workers, etc. Achieving high-quality, case-based surveillance may require re-designing surveillance systems to ensure maximum sensitivity, timeliness and completeness of reporting; revision of case investigation forms and data management systems; additional training at different levels; operational costs for case investigation and response, specimen collection and shipment, and laboratory needs; advocacy, social mobilization and communication; monitoring and supervision; and feedback to all levels of the system. Maintaining accredited measles laboratory networks requires periodic quality assurance methods such as annual accreditation, proficiency tests, parallel testing of a sample of specimens in regional reference laboratories, and technical updates and training. Finally, to
achieve all three strategic objectives, collaborative mechanisms for implementation are needed through a national coordination body, linkages with other programmes, annual work plans that include component strategies, and monitoring progress towards measles elimination using standard WHO-recommended indicators.

The Strategic Plan includes a budget to cover the estimated cost of SIAs, surveillance and laboratory, and technical assistance from WPRO and potentially, a measles elimination task force. For SIAs, standard rates were used for bundled vaccine and operational costs; for surveillance, \textit{per diem} and travel cost rates were based on country consultations. The plan includes a timeframe for additional follow-up SIA implementation by country based on available MCV1 and MCV2 coverage data and prior SIA coverage data. SIA implementation was recommended and provisionally planned in the year when the number of children susceptible to measles is expected to reach the size of one birth cohort. Specifically, in 2008, Samoa, Papua New Guinea and Viet Nam are or plan to conduct SIAs, and costs for these have already been covered. In 2009, nine PICs may consider conducting SIAs after reviewing local level data, including recent levels of MCV1 and MCV2 coverage; these include American Samoa, the Federated States of Micronesia, Fiji, Kiribati, Nauru, Solomon Islands, Tuvalu and Vanuatu. American Samoa and the Northern Mariana Islands may consider catch-up SIAs for children nine months to 14 years of age as no SIA has ever been conducted and routine MCV1 and MCV2 coverage historically has not been consistently high. In 2010, Cambodia, the Lao People's Republic and Papua New Guinea may consider conducting SIAs. No country appears to require an SIA in 2011. In 2012, Papua New Guinea and the Philippines may need to conduct SIAs, and among the PICs, Fiji, Kiribati, Samoa, Solomon Islands, and Vanuatu may also need to conduct SIAs if future MCV1 and MCV2 coverage remains unchanged. China plans to conduct SIAs in different provinces every year, and Japan plans to conduct a five-year rolling SIA by targeting 13- and 18-year old children every year from 2008 to 2012. Malaysia may need to conduct a sub-national SIA for high-risk groups but would likely self-finance the activity.

Estimated budget requirements for which donor support is needed, excluding China which has a separate plan and budget estimate by province, total approximately US$ 31.8 million for 2008-2012, of which approximately US$2.5 million is needed for 2009, including US$1.1 million for SIAs in nine PICs and US$1.1 million to strengthen surveillance throughout the Region.

2.2.2. Optimal routine immunization schedules for measles

Average seroconversion rates to measles vaccine increase with age from 80-85% at nine months to \( \geq 90\% \) at 12 months to \( \geq 95\% \) at 15 months and older. Seroconversion rates reach maximum levels at 15 months at age; no benefit of increased seroconversion is gained by waiting to administer MCV2 until school entry. The purpose of MCV2 is to protect children that did not seroconvert to MCV1 and provide a second opportunity to children that did not receive MCV1. Age of MCV1 administration is a compromise between the desire to protect children from measles early in life and obtaining optimal vaccine efficacy. In November 2006, the Strategic Advisory Group of Experts (SAGE) recommended that changing MCV1 schedules from nine months to 12 months is rational and desirable when measles transmission has been substantially reduced. In other words, when the force of infection is low, the probability of infant infection is so low that it may be preferable to administer MCV1 at 12 months of age to increase vaccine efficacy and hence population immunity.

Optimal age of MCV2 administration was estimated assuming first, that measles outbreaks are most likely to occur when the number of susceptible children reaches the size of one birth cohort, and second, the seroconversion rates given above. When MCV1 is administered at nine months of age, a birth-cohort size of susceptible children exists among children <44 months old with MCV1 coverage at 80%; <49 months old at 85%; <57 months old at 90%; and <68 months at 95%. When MCV1 is administered at 12 months of age, a birth-cohort size of susceptible
children exists among children <48 months old with MCV1 coverage = 80%; <57 months old at 85%; <68 months old at 90%; and <89 months at 95%. To prevent accumulation of susceptible children up to the "threshold" size of a birth cohort, optimal age of MCV2 administration would be before the ages given above, varying according to coverage and age of MCV1 administration. For example, if a programme wished to schedule MCV2 just prior to school entry and children do not enter school until six years (i.e., 72+ months) of age, MCV1 coverage at nine months would have to be ≥95% to prevent the accumulation of susceptible children to the threshold size of one birth cohort; MCV1 at 12 months would require coverage of at least 90%. If MCV1 coverage is lower, the number of susceptible children below the scheduled age of MCV2 administration would be greater than the size of one birth cohort, increasing the risk of a measles outbreak or ongoing measles virus transmission. In such a scenario, the programme should consider an earlier age of MCV2 administration while enforcing school entry requirements for fully immunized children.

Additional factors that support an early age of MCV2 administration include varying coverage by province and district, variable rates of seroconversion, variability in actual age of vaccination by several months about the scheduled age, and that transmission may occur before the number of susceptibles reaches the size of a birth cohort. Immunization programmes need to have a uniform national vaccination schedule, and require policies that optimize population immunity.

In countries with very low measles virus transmission rates, uniformly high (≥90%) MCV1 coverage and high rates of school enrolment, MCV1 at 12 months and MCV2 by the fifth birthday would maintain the number of susceptible children <5 years old at a size less than one birth cohort and therefore would be reasonable. Otherwise, administering MCV1 at nine months and MCV2 at 18-24 months of age, with a school entry requirement for fully immunized children, would provide early protection and achieve optimal population immunity among children <5 years old. Providing MCV2 at 18-24 months of age would also provide a platform for additional services such as DTP4, Vitamin A, deworming medicine, growth monitoring, and a well child visit.

2.2.3 Progress towards measles elimination in China

Before the introduction of measles vaccine in China in 1965, measles incidence ranged from 2000 to 16 000 cases per million population. Measles vaccine was incorporated into China’s national immunization programme (NIP) in 1978, and a two-dose strategy was adopted in 1986. Initially these doses were given at 8 months and seven years, and measles incidence decreased to 40-120 cases per million from 1990 to 1998, when a plan for accelerated measles control was developed. In 2005, the age of MCV2 administration was reduced to 18 – 24 months, and in 2006, a plan for measles elimination was formally adopted. From 1998-2006, measles incidence has ranged from 50 to 100 per million population. In 2007, measles incidence was 83 per million nationally: incidence was ≥100 per million population in 10 (32%) of 31 provinces; 50.0 - 99.9 in eight (26%); 10.0 - 49.9 in 10 (32%); and <10 per million in 3 (10%) provinces. Provinces with the highest incidence per million in 2007 included Guangdong (212); Sichuan (196), Chonqing (166), Yunnan (150), Beijing (144), Tianjin (142) Xinjiang (129) Shanxi (117), Zhejiang (109) and Henan (104). Nationally, 25% of cases are <12 months, 49% 1-14 years, and 26% ≥15 years old. Among the eight provinces with the highest incidence, the percentage of cases ≥15 years old varied from 16% in Sichuan and Chonqing to 49% in Tianjin and 61% in Beijing.

China’s measles elimination strategies include first, increase routine MCV1 and MCV2 coverage to >95% by providing measles–rubella (MR) at eight months and measles–mumps–rubella (MMR) at 18-24 months free of charge, and establishing an immunization registry system. Second, conduct SIAs in selected provinces targeting children --
(1) eight months to 14 years: in provinces with incidence ≥50 per million and, for provinces with incidence <50 per million, if the percentage of cases ≥14 years old is <30%; and

(2) 7-14 years: in provinces where MCV1 and MCV2 coverage >95% in 2-7 year old children

Third, enforce nationwide school entry requirements for immunization. Fourth conduct outreach services for special populations (migrants and high-risk adults). Fifth, strengthen surveillance so that all outbreaks are laboratory confirmed, all cases are investigated and >80% are laboratory-tested when incidence <10 per million, and all 331 national, provincial and prefectural measles laboratories achieve WHO-accreditation standards. Sixth, rapid outbreak response.

Nationally, reported MCV1 coverage is 94% and MCV2 coverage is 92%. From 2004 to 2007 China conducted planned SIAs in eight provinces and emergency catch up SIAs in three provinces. In 2008, China conducted catch up SIAs in Sichuan before the earthquake, and an emergency response SIA in the two prefectures in Gansu affected by the earthquake. China plans catch-up SIAs in nine additional provinces including the Western Provinces of Gansu, Chongqing, Yunnan, Shanxi and Inner Mongolia, as well as Guandong, Fujian, Tianjin, and Zhejiang, and follow-up SIAs in three provinces including Xingjiang, Guizhou and Shandong. Measles surveillance in China includes measles reports from township level and above; approximately 109,000 cases were reported in 2007, and 50-60% of suspected cases are laboratory tested.

China’s current plan of action includes strengthening routine immunization with 14 government supplied vaccines, establishing an updated cold chain, training and an immunization registry. Increasing MCV production capacity is also planned. Government will provide funding for measles vaccine and injection equipment and part of the vaccinator’s subsidy for SIAs, but seeks international support for operational costs, particularly in the western provinces. China also plans to develop standardized approaches to enforcing school entry requirements and strengthening surveillance by enhancing outbreak investigation capacity and surveillance among adults and infants.

Challenges to achieving measles elimination include persistently high incidence among infants and adults, achieving high coverage SIAs with limited vaccine supply and inadequate funding for operational costs, maintaining gains from catch-up SIAs by strengthening routine MCV1 and MCV2 coverage or conducting follow up SIAs, accurate monitoring of MCV1 and MCV2 coverage. China requests increased international support for operational costs of SIAs, particularly in the western provinces.

2.3 Controlling Hepatitis B by 2012

2.3.1 Operationalizing the Hepatitis B Control Plan and Certification Guidelines

Twenty-six out of 36 countries and areas that are home to 86.6% of regional population are believed to have achieved the regional hepatitis B control goal of less than 2% chronic hepatitis B (HBV) infection rate among children at least 5 years old based on vaccine coverage rates reported in 2007. Based on the current trends in vaccine coverage (both HepB3 and timely birth dose), the Lao People's Democratic Republic and Papua New Guinea are the two main countries that are at risk of missing the regional goal by the set date. Cambodia and Philippines are making good progress. The presentation discussed the need for certification for achievement of regional hepatitis B control goal in each member state, the criteria for certification, the certification procedure, and finally the tentative time-line for certification from now till 2012.
Setting up a time-bound goal requires continuous monitoring of the performance to measure achievement of the goal. The Western Pacific Regional Office of WHO has a responsibility of monitoring the goal at the regional level and coordinating the certification of each and every Member State for achievement of the goal. The Regional Office convened a hepatitis B expert group meeting in March 2007 which finalized the certification guidelines and procedures.

Certification is not a new process as there is experience with certification process with polio eradication goal earlier in which all the Western Pacific countries participated. However, the certification process for hepatitis B will be different from polio certification due to differences in the characteristics of the two diseases. One of the main differences is that hepatitis B is not targeted for eradication as for polio. In addition, hepatitis B is a chronic disease while polio is an acute disease with no long-term carriage.

Certification for polio involved setting-up of a regional certification commission (RCC). The RCC also recommended appointment of a national certification committee (NCC) for each country in the Region, along with a sub-regional committee for the 20 Pacific island countries and areas. All countries were required to provide adequate evidence consistent with the absence of wild poliovirus for three years, under conditions of high quality surveillance. Regular (at least annual) meetings led to regional certification in 2000. However, the monitoring is still continuing even after regional certification, with clearly defined performance standards for AFP surveillance.

For certification of achieving the hepatitis B regional goal, a country has to prove that it has achieved less than 2% seroprevalence of hepatitis B surface antigen (HBsAg) among children at least five years old for the interim goal and less than 1% for the final goal. The accuracy of the estimate has to be within plus minus 0.5%. The seroprevalence of HBsAg should be measured through a nationally representative population-based serosurvey sampling population at least five years old with a sample size sufficient to provide estimates with ±0.5% accuracy with 95% confidence.

Though the certification will be based on HBsAg seroprevalence levels, the certification panel will also take into account the vaccine coverage levels—both with HepB3 and timely birth dose, especially in the last five years. The HBsAg levels lower than 2% among children 5 year old would reflect the immunization services performance five years ago. However, if the vaccination coverage goes down subsequently, there is a risk that the HBsAg seroprevalence levels among younger children may increase again, especially in countries with high baseline chronic HBV infection rates. Proof of sustained high vaccination coverage in the last five years with seroprevalence measurement among children five years older will indicate that even younger children that were not included in the current serosurvey will not have more than 2% HBsAg positive rate.

Hence the vaccine coverage rates will be used to monitor the maintenance of certification level among the younger birth cohorts than those included in the serosurvey as well to guide to further control of hepatitis B in the country. For example, if a country is certified for achieving the less than 2% goal, then the country has to submit plans for achieving less than 1% goal. These plans will include activities to improve the vaccine coverage to higher levels.

An expert resource panel has been appointed by Regional Director of Western Pacific Regional Office comprising of 10 experts recognized in the field of hepatitis B working in different institutions in different countries. All appointments to the expert resource panel are honorary and on voluntary basis, though the members will serve in the temporary adviser capacity when called for the certification process in a particular country.

The certification will be done by a certification panel having three members drawn from the expert resource panel constituted for this purpose. WPRO is responsible for constitution of
certification panel. The certification process will be initiated at the request of a country, once the country feels confident based on its own internal evaluation and review process of having met the certification criteria. The country will submit the required documents to WPRO with a formal request to carry out the certification.

The documents submitted should include documents showing the detailed methodology and results from a serosurvey done among children five years or older.

On receiving the request from the country, WPRO will initiate the process for constituting a certification group by inviting three members from the expert resource panel constituted for this purpose.

WPRO will report the results of certification to Regional Committee Meeting each year. If possible, the results will also be published in Weekly Epidemiological Record (WER) of WHO.

Once the certification thresholds are met, the maintenance of the certification status will be ascertained by regular assessment of the vaccine coverage rates only reported through mechanisms such as the annual WHO/UNICEF Joint Reporting Forms on Immunization (JRF) or in Regional Technical Advisory Group/EPI managers meetings.

Countries that are certified for the interim goal the first time will have to reapply for the certification of the final goal. At the time of certification for the interim goal, the country will be required to submit plans for achieving the final goal of less than 1%.

WPRO also developed a tentative timeline for certification based on status of the hepatitis B programme in Member States. South Korea became the first country to be certified for achieving the final regional goal of less than 1% in June 2008, and Macao (China) is in the advance stage of certification. The document submitted by South Korea for certification was submitted to all the participants for their information.

2.3.2. Country reports on Hepatitis B control (Cambodia, the Lao People’s Democratic Republic and Papua New Guinea)

Cambodia. Cambodia introduced hepatitis B vaccine as tetravalent vaccine (DTP-HepB) with GAVI support in a phased manner starting in 2001 and expanding nationwide in August 2005. In addition to three doses of diphtheria-pertussis-tetanus-Hepatitis B (DPT-HepB) vaccine, monovalent HepB vaccine is included in the schedule to be given within 24 hours of birth. However, considering more than 85% home delivery rate, if newborn infant cannot be reached within 24 hours, health workers are instructed to give birth dose up to seven days after birth. A nationwide serosurvey conducted in 2006 among children 5 years old revealed a chronic HBV infection rate of 3.4%.

The coverage with HepB3 (delivered as tetravalent DTP-HepB) has been maintained 80% or above since 2005. One of the main challenges is to increase the coverage further including reaching floating and mobile communities, minority population groups and population living in remote areas. Coverage improvement plans (CIP) have been developed to support remote operational districts (ODs). Other activities include balancing outreach activities with increasing use of immunization services at health facilities (fixed immunization sessions), and special focused activities in high-risk geographical areas and population groups.

The coverage with hepatitis B birth dose within seven days increased from 28% in 2005 to 53% in 2007. In 2007, 25% of new born infants received hepatitis B birth dose within 24 hours of birth. The key challenges to increase timely birth dose coverage is high proportion of births taking place at home attended by traditional birth attendants (TBAs). Though the Ministry of Health in the Government of Cambodia is actively supporting policies and programmatic
strategies to increase number of births in health facilities, more than 80% of births in Cambodia still take place at home. TBAs still play a dominant role in home deliveries (more than 55%), despite efforts to increase availability of trained midwives for home-births. Due to high rate of home births, Cambodia is actively pursuing midwife strategy along with out of cold chain policy. Under this strategy, a midwife can take a single-dose vial of hepatitis B vaccine along with auto-disable (AD) syringe and immunization card when she goes out to attend home births. The midwife strategy is not yet implemented fully due to inadequate collaboration with maternal health programme and due to insufficient number of midwives at health centers that are available to attend the home deliveries. In addition, poor collaboration with the private health clinics is an issue that needs attention to increase timely birth dose coverage.

Financing of hepatitis B vaccine is sustainable in short- to mid-term with the Government of Cambodia financing monovalent hepatitis B vaccine. Tetravalent vaccine is currently supplied by GAVI and will be co-financed by the government of Cambodia beginning in 2010.

Though there are challenges, Cambodia seems to be well positioned to achieve the regional goal of reducing hepatitis B chronic carriage rates to less than 2% by 2012.

The Lao People's Democratic Republic: The seroprevalence of HBsAg among 8542 first-time blood donors screened at 11 blood transfusion sites in was more than 6% in all but one site and varied from 3.8% to almost 14%. This shows that hepatitis B is an important public health problem in the Lao People's Democratic Republic. Hepatitis B vaccine was first introduced in infant immunization programme in 2002 as tetravalent vaccine (DPT-HepB) with use of monovalent vaccine for birth dose. However, increasing and sustaining high immunization coverage remains a challenge with both coverage with DTP-HepB3 and timely birth dose, both of which remain far below the level required to reach the regional hepatitis B control goal.

The DPT-HepB3 coverage remained less than 60% in last three years with coverage declining to 50% in 2007 from 59% in 2006. Neglect of development of immunization services at health facilities with disproportionate reliance on delivery of immunization services by outreach four times a year even to communities that can easily access health facilities has been one of the main reasons for low immunization coverage.

Besides the overall low immunization coverage rate, delivery of timely birth dose to the newborn infants remains problematic. As of June 2008, birth dose was only given in Vientiane capital hospitals, and in 10 provincial hospitals. It is still not given to births taking place in other six provincial and 123 district hospitals, where it is intended to be expanded in 2008. Increasing overall birth dose coverage is a bigger challenge with almost 80% of births taking place outside health attended by unskilled birth attendants.

If the coverage levels for HepB3 and timely birth dose do not improve in short run, the Lao People's Democratic Republic runs the risks of missing the regional hepatitis B control goal by 2012. Planned introduction of Hib vaccine as pentavalent vaccine (DPT-HepB-Hib) in 2009 with focused social mobilization efforts is expected to increase the routine coverage. The cold chain is being planned to be in place in all the health centers which will boost the fixed immunization sessions in these health facilities, increasing immunization coverage in the communities accessible to these health facilities.

Papua New Guinea: More than 10% of blood donors in Port Moresby were found to be HBsAg positive in 2006 and 2007 across different hospitals with blood transfusion services. Coverage with both HepB3 and timely birth dose within 24 hours remains suboptimal in 2007 at 59% and 29%, respectively. The drop out rate from the HepB3 to HepB1 is high (from 80% to 59%). The timely birth dose coverage varies from less than 10% in some provinces to more than 60% in other. If the coverage levels are maintained at the same level, Papua New Guinea is not likely to achieve the hepatitis B control goal of less than 2% chronic hepatitis B infection rate by
2012. While a high rate of home-births is a major obstacle in increasing coverage with timely birth dose, coverage with timely birth dose is not universal even for easily accessible hospital births. A health facility assessment done in 2007 showed that hepatitis B vaccine is not always stocked in the hospital and monitoring systems are very poor. There is also a poor awareness on the importance of hepatitis B vaccination within 24 hours of birth. A joint pilot project of national department of health, WHO, UNICEF and Burnett institute (Australia) is started in Angoram District to test strategy of delivery of timely birth dose of hepatitis B vaccine through Aid post health workers for home births. The pilot project is linked with overall neonatal survival education and interventions. Efforts are also ongoing to increase the HepB3 coverage with micro-planning exercises at the district level.

2.4 Maintaining the Region poliomyelitis-free through 2012

2.4.1 Current Status and Overview of the Strategic Plan

Despite of the encouraging global progress in suppressing wild poliovirus type 1 in all endemic countries, wild poliovirus transmission continues in the four endemic countries as well as in several other countries with outbreaks following importations. This has led once again to a shift of the anticipated timeline towards global certification, with interruption of wild poliovirus transmission globally now expected by the end of 2009 and global certification by the end of 2012 at the earliest. The challenge to the Western Pacific Region and its Member States continues to be to sustain high polio immunization coverage and quality AFP surveillance for the early detection of and response to both wild poliovirus importations and emergence of circulating vaccine-derived poliovirus (cVDPV).

In view of this multi-year time-frame until global certification the Regional Commission for the Certification of Poliomyelitis Eradication in the Western Pacific Region (RCC) during its 13th meeting in December 2007 suggested to the WHO/WPRO secretariat the development of a 'Regional Strategic Plan for the Maintenance of Polio-free Status'; to spell out technical requirements, clarify roles and responsibilities for certification bodies in the period between regional and global certification, and to be used for advocacy purposes and fund-raising. A draft of this strategic plan has in the meantime been prepared and was presented during the 17th TAG meeting.

Global polio eradication situation

A new type 1 polio outbreak in 2008 sweeping across northern states at the time of the meeting was increasing the risk of renewed international spread of polio from Nigeria. Upwards of 20% of children remained un-immunized in key high-risk areas. From 2003 to 2006, polio from northern Nigeria re-infected 20 countries, causing outbreaks as far away as Indonesia and Yemen. The risk of renewed spread was magnified during the rainy season and large-scale population movements expected for the Hajj in the second half of the year. In a very unusual step, and as a clear sign of growing international concern at the outbreak, the WHO World Health Assembly (WHA) in May 2008 specifically called on Nigeria to reduce the risk of international spread of polio by quickly stopping the outbreak.

New polio cases genetically linked to viruses from northern Nigeria were confirmed in Benin and the western part of Niger (close to the borders with Burkina Faso and Mali). It is from these areas that poliovirus originating in Nigeria spread further across West Africa in 2003-2004, re-infecting Côte d'Ivoire, Ghana, Guinea and Togo, among others. In response, a multi-country immunization campaign across West Africa was held in mid-June 2008, with further activities planned for July.

India reported the lowest incidence ever of type 1 polio for the first five months of any year. However, as long as type 1 transmission continues anywhere in the country, all areas are at risk. In western Uttar Pradesh, the first type 1 case was reported (from Badaun, onset of
paralysis on 4 May), genetically linked to type 1 in Bihar State. The core highest-risk areas of western Uttar Pradesh had not reported a type 1 polio case in 18 months (since November 2006).

In 2008, 14 cases have been reported in Pakistan (10 type 1 in Sindh Province; one type 1 and two type 3 from North West Frontier Province; and, one type 1 in Baluchistan); and eight cases have been reported in Afghanistan (four type 1 and four type 3). In Pakistan, in-charge Federal Minister for Health Sherry Rehman personally directed a review of activities in Sindh to ensure more effective implementation of the polio programme. Following an initial high-level of EPI Programme Managers and the state Minister of Health, an Emergency Technical Advisory consultation was convened in Karachi on 24-25 June. Targeted mop-ups – with appropriate monovalent oral poliovirus vaccine (mOPV) - are increasingly being implemented, in between large-scale campaigns, and in response to detected viruses (i.e., in Sindh and North West Frontier Province).

In Afghanistan, the new strategy of Short Interval Additional Dose (SIAD) has been introduced to deliver an extra dose to communities living in known transmission zones who are difficult to reach due to security conditions. While most cases in Afghanistan this year are in the Southern Region – where security continues to be a major concern to polio campaigns – two cases have been reported from the Eastern Region, and one case from the Western Region.

In terms of key milestones the situation was as follows at the time of the meeting: increasing immunity levels among 6-35 month old children in infected districts to higher levels than in children residing in polio-free districts was not achieved; nor was the 50% reduction in the number of polio-infected districts. Interrupting transmission in all countries re-infected during the previous year was not achieved. However, sufficient funding was pledged to finance all planned activities through the end of 2008.

**Maintaining polio-free status in the Western Pacific Region**

Since certification over 72 000 AFP have been investigated and the overall key quality indicators have remained stable; with a regional non-polio AFP rate consistently above 1 per 100 000 children under 15 years of age and the adequate stool sample collection rate almost reaching 90%.

As of 27 May 2008, a total of 6237 AFP cases with onset in 2007 have been reported resulting in a non-polio AFP rate of 1.62 per 100 000 under age 15. All cases except one had final classification. Countries that did not achieve a minimum rate of 1 in 2007 include Australia (0.68) the Republic of Korea (0.3; as conducting AFP study in greater Seoul area), the Lao People's Democratic Republic (0.7; with continued concerns about low performance) and New Zealand (0.5). Notable performance improvements occurred in Papua New Guinea where reporting reached minimum requirements after several years of struggling.

Poliovirus isolation and typing results in 2007 were available within 28 days of receipt for 96% of specimens with all national and provincial laboratories (except Tibet) achieving the target. The non-polio enterovirus (NPEV) isolation rate was 9%. Availability of intratypic differentiation (ITD) results within 14 days of receipt was 58% (94% within 28 days) and 52% within 60 days of paralysis onset; these decreased performance indicators were mainly due to new and very strict bio-safety requirements in China, affecting timely transportation of specimens and isolates.

It is planned to introduce the new test algorithm for poliovirus isolation and characterization recommended by the Global Polio Laboratory Network to further reducing reporting time in mid 2008 while national laboratories are still encouraged to perform neutralization test (NT) for polioviruses.
Standard ITD has been applied to poliovirus isolates from 241 AFP cases and 146 poliovirus isolates from non-AFP sources. Respectively, five and two isolates in the WPRO dataset had discordant ITD results and were sequenced, identifying four VDPVs in China in separate events. These VDPV episodes, as well as recent wild poliovirus importations into Singapore in 2006 and Australia in 2007, responded quickly and comprehensively and no further virus circulation occurred.

In 2008, as of 29 June, 2051 AFP cases with onset this year have been reported, resulting in an annualized non-polio AFP rate of 1.03. The adequate stool specimen collection rate is 85%. Laboratory results are in a similar range as last year; with ITD results available within 14 days of receipt improved to 68%.

Wild poliovirus infectious and potentially infectious materials are currently stored in laboratories in Australia, China, Japan and the Republic of Korea. It was expected that by the end of 2008, also China and Japan will have completed their surveys for wild poliovirus infectious materials stored in biomedical laboratories and submitted their quality assessment report to the RCC.

2.5 Achieving maternal and neonatal tetanus elimination (MNTE)

2.5.1 Status and plans for MNTE

Since 1999, when activities to achieve global elimination of maternal and neonatal tetanus (MNT) were once again accelerated, 12 of 58 countries with MNT have achieved validation of MNT elimination. Additionally, 15 States/UT of India have undergone the process. Since 1999, 81 million women at risk were protected in 45 countries through the conduct of high quality supplementary immunization activities (SIAs) with tetanus toxoid. It is currently anticipated that global MNTE will be achieved in 2012.

In the Western Pacific Region the past few years have been a very challenging for MNTE as the initiative received relatively low focus within EPI under competing priorities of measles elimination, hepatitis B control, and new vaccine introduction, mainly supported by GAVI. As global targets are repeatedly being missed, purpose and issues of these arbitrarily set time goals may have to be revisited and a stronger understanding developed that MNTE is about reaching women that are usually unreached and thus offering opportunities for comprehensive health service delivery.

The MNT situation in those Western Pacific Region countries that have not yet achieved elimination (Cambodia, China, the Lao People’s Democratic Republic, Philippines, Papua New Guinea) is extremely diverse and thus no uniform approach is possible. During the ‘TAG and EPI Managers’ Meeting’ in July 2007, it was discussed how tetanus prevention offers a tremendous opportunity for various public health programmes to collaborate in a broader context and make an impact far beyond health alone. In the ‘WHO and UNICEF Regional Child Survival Strategy’ the essential package of basic services includes tetanus toxoid (TT) immunization during antenatal care (ANC), and skilled assistance during delivery and care of the newborn child.

The meeting also brainstormed - how originally conceptualized as mainly a vertical initiative - MNTE offers not only opportunities to collaborate with other health services, but also to support expanding the traditional EPI focus from a limited time period within infancy (~ 6 weeks to 9 months) to the antenatal period (TT vaccination) and beyond infancy (Diphtheria-Pertussis-Tetanus/DPT, DT, and/or Td ++ booster doses) in the context of a larger life span approach. This is consistent with the Western Pacific Region twin goals of Regional measles elimination and hepatitis B control, which contribute to strengthening routine EPI by moving the focus from six weeks to the first day in life with the timely hepatitis B vaccine birth
dose and beyond infancy for the second MCV dose and school entry checks of immunization status.

In terms of MNTE approaches, diversity among countries is vast; while all have included DPT3 in their national immunization schedules, TT SIAs are currently or have been in the past conducted in Cambodia, the Philippines and Viet Nam. Pregnant women (PW) are given TT in all seven countries attending the meeting excluding China and Mongolia. Instead, childhood boosters are offered in China and Mongolia.

Emphasis is frequently being placed that one approach may not suit all situations. If ANC usage is low, not many pregnant women may be reached with TT and TT SIAs for child bearing age women (CBAW) may be required. If DPT3 has not been consistently high for many years, many children/girls will not be protected. If booster doses are being considered, countries must determine which approach is likely to provide the highest access/coverage and which is the best age to reach eligible children. Strategies involving school-based immunization should first determine school enrolment levels and drop-out rates. In some settings, other recommended interventions for MNTE may need to be given greater weight. For example, China has emphasized facility based, clean deliveries rather than TT immunization of adults, and the Philippines has not conducted TT SIAs because of particular controversies regarding TT in the past.

2.6 Routine Immunization

2.6.1 Major Activities to Strengthen EPI

In late 2005, WHO and UNICEF, together with GAVI partners, developed guidelines for developing a comprehensive Multi-Year Plan (cMYP) for immunization to support countries in improving their planning for immunization. This new approach was guided by the need to simplify and harmonize what had become a proliferation of various immunization planning activities at national level which lead to duplication of efforts, high transaction costs to national and partners with variable degrees of national ownership, and a lack of alignment with national systems.

Through the GIVS initiative and framework, the cMYP process marks current efforts to streamline immunization planning process at national level into a single comprehensive and costed plan. It is within this context that these new guidelines build on existing multi-year planning experience, while adding the critical elements of costing and financing by drawing heavily upon the methods developed for the immunization Financial Sustainability Plans (FSP). Current cMYP are in place in Cambodia, Kiribati, the Lao People's Democratic Republic, Mongolia, Papua New Guinea, the Philippines (though not GAVI eligible), the Solomon Islands, and Viet Nam.

Several countries in the Region (e.g. Cambodia, the Lao People's Democratic Republic, Philippines, Papua New Guinea), are implementing the 'Reaching Every District' (RED) strategy which is composed of five operational components. Re-establishing outreach vaccination services is relevant when a large proportion of the population only have access to immunization through outreach services. Outreach sessions, especially mobile immunization teams also present opportunities to provide other interventions such administering vitamin A and deworming tablets with immunization. Supportive supervision includes providing regular on-site training and assistance by supervisors to health workers in the district. It also offers the opportunity to integrate supervision of other health interventions, for example 'Integrated Management of Childhood Illness' (IMCI).

Immunization services need to be better integrated into community structures. This can be achieved by involving the community in the planning and delivery of health services, including immunization, such as identifying community volunteers and designating responsibilities such as
identifying newborns in the district and performing regular follow-up on mothers whose children are not fully immunized as well as organizing regular meetings with the community.

Monitoring of immunization activities and using the data for action is critical in strengthening the immunization system. Some simple monitoring tools such as wall charts of vaccination coverage can be used to track monthly progress. In addition, information on logistics, vaccine supply and surveillance which is collected every month should be analysed together with the coverage data to improve the immunization system.

A district micro plan is the key to the RED strategy. At each level, micro plans should contain details of the financial and human resources required to reach every district in a sustainable manner. Increased capacity has been established at all priority countries, particularly also through GAVI support in introduction and expansion of hepatitis B vaccine.

Introducing and altering/optimizing immunization schedules should always consider fundamental aspects of vaccination such as individual and social characteristics, the epidemiological profile of regional diseases and also the state of the available infrastructure.

From an epidemiological point of view, when planning a vaccination schedule, long intervals between successive vaccines should be avoided. Vaccination should begin as early as possible and take into account the immune response to products at different ages and the history of diseases in the population. In order to be acceptable, planning should assess local beliefs and customs that could represent obstacles to publicizing and executing the programme. With relation to operational issues, schedules should specify the minimum possible number of visits to any given individual and should optimize simultaneous administration of vaccines and the use of combined vaccines.

2.6.2 Strengthening routine EPI in Papua New Guinea: Role of microplanning, training, integration and data management

The team from Papua New Guinea presented on its current experiences with microplanning in the context of RED, capacity building through mid-level management (MLM) training, integration of the ongoing measles SIAs with other interventions and specific focus placed on identified priority district. Key approaches include the objective of reaching all infants four times per year, with a system of district mapping, session planning, budgeting and monitoring completed in all 89 districts in 2007-08.

The recent measles SIAs were the first in Papua New Guinea to be fully integrated with routine EPI. The foundation was integrated micro planning and a timeframe of one quarter (three months) to include an expanded measles age range (up to six years) targeting 1.2 million children. The future strategy has been defined as SIAs every two years, targeting children six to 35 months old.

Strategies to strengthen routine immunization also include developing a comprehensive data set at the national level with district focus, improving denominator estimates (key area of coverage error in Papua New Guinea), training of staff at the National Department of Health in mapping software and using data to drive the national focus on priority districts.

2.6.3 Pertussis and diphtheria surveillance in Cambodia

The team from Cambodia presented the use of pertussis and diphtheria surveillance findings to strengthen the routine immunization system. DPT3 coverage increased from 71% in 2001 to 82% in 2007; at the same time, surveillance for both diseases has been enhanced and laboratory confirmation has become the basis to detect pertussis outbreaks in Cambodia. Age distribution data suggests that the main outbreaks occur in pre-school age children. Disturbingly, 60-70% of cases occur in fully vaccinated (DPT3) children, which may suggest the failure of the
cold chain system in some areas in the last several years. The loop-mediated isothermal amplification (LAMP) methods seem to provide a sensitive molecular diagnostic framework and further support is required from the Regional laboratory network; assistance provided by the National Institute of Infectious Diseases (NIID), Tokyo, has been instrumental in pertussis surveillance in Cambodia.

Routine surveillance with laboratory confirmation has also confirmed that diphtheria occurs in Cambodia though substantial numbers of suspected cases and deaths may remain underreported. Exceptionally high antibody titres may indicate recent infection, and high antibody titres in asymptomatic adults may suggest subclinical circulation in the adult population. Continued support from the Regional laboratory network is required for diphtheria surveillance.

Pertussis may be more visible than diphtheria due to higher transmission rates (i.e., secondary attack rated), and may be an indirect indicator of DPT3 immunization coverage. Immunization history is now investigated by quick sampling of children under five years old in outbreak areas to identify the cause of the outbreak. The quality of vaccine management is included in the investigation, and data loggers are being considered for the future. New technology to monitor the freezing point for vaccines is urgently needed for DPT, Hepatitis B and Hib vaccines.

2.7 Immunization Safety

2.7.1 Overview of immunization safety and importance of the National Regulatory Authorities (NRAs) in the Western Pacific Region

Immunization Safety consists of three major components:

1. Assurance of vaccine quality through appropriate vaccine management (e.g., storage, logistics) and regulatory mechanisms (e.g., regulatory functions of the NRA)

2. Surveillance for Adverse Events Following Immunization (AEFI)

3. Injection Safety that addresses syringe use, safety boxes and disposal

The Western Pacific Region has made considerable advancements in immunization safety in recent years, particularly since the development of the regional strategy in 2001. Cambodia, The Lao People's Democratic Republic and Viet Nam in particular have made substantial progress in immunization safety, especially with the introduction of auto-disable (AD) syringes. All SIAs within the Region since 1999 have used AD syringes, and this has been a catalyst for their further introduction into the routine EPI. Also, many countries have established AEFI surveillance systems during this period.

But immunization safety within the Region is not ideal. More work is needed ensuring all programmes use AD syringes and safety boxes in their routine EPI, and allocate sufficient resources for their procurement. Another key challenge is disposal of used injection equipment in the setting of strict environmental pollution standards. Also, while many countries have established systems to properly report and handle AEFI’s, further work is needed in developing their systems.

In view of introduction of new vaccine, NRAs also need to play a more important role in the EPI. All countries are recommended to have functional NRAs to ensure the safety and efficacy of the vaccines which are used in their immunization services. Countries that procure vaccine through the UN system require an NRA that performs at least two regulatory functions: licensing and post marketing AEFI surveillance. Those that self-procure also require a system of
lot release and laboratory testing. Those countries that manufacture vaccine require in addition a system of regulatory inspections for good manufacturing practice (GMP) and authorization and monitoring of clinical trials.

2.7.2 Impact of AEFIs in Viet Nam

The impact of 12 severe AEFIs in Viet Nam from 2007 to 2008 was reviewed. Eleven of the 12 resulted in death. Investigations conducted by the Scientific Committee for Cause Assessment indicated that seven cases had anaphylactic shock, two had pneumonia, one had an acute myocardial infraction, and two remained unknown. The committee found no association with the vaccination programme. The Scientific Committee includes central and local experts and international staff from WHO and UNICEF and is chaired by the Vice-Minister of Health.

In spite of the Scientific Committee's findings, fully immunized coverage of children by 12 months decreased from 95.7% in 2006 to 81.2% in 2007. Parental trust of EPI deteriorated leading to hesitation to bring children for immunization and unwillingness to collaborate in AEFI investigations. Moreover, health workers became fearful of vaccinating children and focused on other responsibilities. Finally, a national shortage of vaccines occurred because of a temporary suspension of distribution and use of specific lots vaccine.

Recommendations included strengthening of AEFI surveillance in all aspects, particularly in communication strategies not only in response to AEFIs but proactively to emphasize immunization safety and benefits.

2.8 Introduction of New and Underutilized Vaccines

2.8.1 Current status and Strategic Plan

The last seven years (2000-2007) witnessed commercial licensing of many new vaccines that target important public health diseases (e.g. pneumococcal conjugate, rotavirus, Human papillomavirus, fully liquid pentavalent Hib conjugate vaccines, etc). Besides licensure of many new vaccines, these years were also characterized by unprecedented global commitment to bring benefits of immunization to the poorest countries. The most important example of this global commitment is establishment of GAVI Alliance in 2000, which was catalytic in substantial increase in use of Hepatitis B and Hib vaccines. These new vaccines will have substantial impact on childhood morbidity, mortality, disability (e.g. from Hib, pneumococcal meningitis) as well on premature adult morbidity and mortality (e.g. from cervical cancer). However, despite substantial public health benefits offered, use of these vaccines still remains limited.

High cost remains a major barrier in accelerating use of these newly licensed vaccines, with current market cost of vaccine per child ranging from $225 for pneumococcal conjugate vaccine and HPV vaccines. Many of these vaccines may be cost-effective even at the current price but are not affordable even by the middle or higher-middle income countries.

In 2008, the WHO Western Pacific Regional Office developed a regional strategy for increasing access to and utilization of new and underutilized vaccine for 2009 to 2015. It outlines seven strategic areas of work. Activities, indicators and targets are defined under each strategic area of work. These seven strategic areas of work include:

- Knowledge management and strategic dissemination of information and new developments;
- Surveillance for the diseases targeted by new vaccines with communication of data generated to relevant stakeholders;
- Development and use of standardized cost-effectiveness and other economic analysis;
- Mobilization of resources by regular advocacy with national/regional/global donors;
- Building capacity of the national regulatory authorities for licensing and post-marketing surveillance of new vaccines;
- Assisting countries with operational and managerial issues related to new vaccines; and
- Promoting research in the Region to encourage development and production of new and underutilized vaccines in the Region.

Funding needs have been estimated to carry out these activities during the plan period at different levels (at WPRO, WHO country office and within countries). However, certain difficult issues remain and were highlighted in the presentation for the guidance of the TAG. These included: issues of sustainability when a vaccine is introduced in a country with time-limited external funding (e.g. with GAVI support); issue of low coverage with the current vaccines while deciding to introduce new vaccine; decision on vaccines that contain only limited number of serotypes of a particular organism thus providing only partial protection against that disease and with the risk of serotype substitution (e.g. PCV-7 and HPV vaccines).

Finally, the presentation highlighted the need for introduction of new and underutilized vaccines within the overall context of other child and maternal survival measures, especially for reduction of neonatal, diarrhoea and pneumonia mortality. The Regional strategy will be posted on the WPRO website for wider sharing with the stakeholders.

2.8.2 Introduction of Rubella Containing Vaccine in China

Surveillance for rubella in China occurs through the National Notifiable Disease Reporting System (NNDRS), in which few cases are lab confirmed, and the Measles surveillance System, (MSS), in which suspected measles cases negative for anti-measles IgM are tested for anti-rubella IgM. These two systems are being merged.

The number of rubella cases reported from China increased from 24,051 in 2004 to 74,746 in 2007; 42.5% of rubella cases were 15-49 years old in 2007. Serologic surveys conducted in 2006 in Beijing and Chongqing revealed that among women 20-39 years old, 85% were IgG positive for rubella in Beijing and 79% in Chongqing. IgG positivity was defined as ≥ 20 IU/ml. Had ≥ 10 IU/ml been used to define seropositivity, 96% and 93% in Beijing and Chongqing, respectively, would have been seropositive for anti-rubella IgG. Seropositivity rates were higher among women 20-27 years old compared to older age groups.

National surveillance for congenital rubella syndrome (CRS) is not conducted in China. However, a retrospective search for CRS cases in Shandong in 2005 found a rate of 0.8 per 1000 infants as possible cases of CRS from 2000-2004 against a background rate of rubella of 27 per million population. However, this finding may over-report suspected CRS incidence as it includes cleft palate in the clinical case definition, and no cases were laboratory confirmed.

The government of China has introduced rubella vaccine into the routine EPI schedule as MR at eight months and MMR at 18-24 months. Policy guidelines instruct that as MMR is not yet widely available in China, , monovalent measles vaccine, measles and rubella vaccine, or measles and mumps vaccine may be used instead. The rationale for this policy decision included 1) rubella was increasingly recognized as a disease of public health importance; 2) Vaccine was domestically manufactured; and 3) Rubella containing vaccine (RCV) is already being widely used in the eastern provinces, leading to a potential shift in age-specific susceptibility.

Challenges to RCV introduction include establishing a national goal for rubella control, assuring adequate vaccine supply, strengthening rubella and CRS surveillance, monitoring
disease and susceptibility among CBA women, and developing a mix of universal and selective strategies to effectively reduce risk of CRS.

2.8.3 Considerations for introduction of rubella containing vaccine

The purpose of rubella immunization is the prevention of rubella infection in pregnant women, which is most dangerous during the first trimester, and can result in miscarriages, fetal deaths, and among those that survive, congenital rubella syndrome (CRS). CRS is typified by deafness, cataracts, heart defects, mental retardation, or other defects. Incidence of CRS is thought to be 0.6 to 2.2 per 1000 live births. However, incidence has been reported as high as 10 per 1000 live births during an outbreak from 1963-64 in the U.S.

Globally, the number of countries using rubella containing vaccine (RCV) in their NIPs grew from 65 in 1996 to 123 in 2006. Among WHO Regions, the American and European Regions have rubella elimination goals by 2010, and several individual countries in the Eastern Mediterranean Region also have elimination goals.

In the Western Pacific Region, 28 countries use RCV, including China, and two more, Mongolia and the Philippines, are planning to introduce RCV. Among countries using RCV, the Republic of Korea and 17 PICs reported rubella incidence <1 per million, while New Zealand, Macao (China) and Hong Kong (China) reported 1-9.9 cases per million population. Overall, the number of reported rubella cases was 85 200 in 2007 compared with 42 947 in 2006, 28 713 in 2005, 27 124 in 2004 and between 1000 and 8000 between 1993 and 2003. An analysis of a total of 17 800 rubella cases reported from Viet Nam from July 2004 to October 2007 revealed that approximately 50% of female cases are 15-40 years, or child-bearing age. Among 380 cases reported from Cambodia from January 2007 to May 2008, approximately 50% of females were child bearing age. In the Philippines, among 241 cases reported from January 2007 to May 2008, approximately 30% of female cases were child bearing age. These data suggest that in these unvaccinated populations, many pregnant women are at risk for rubella infection.

Vaccination strategies against rubella can selectively aim at CRS prevention only, providing direct protection to adolescent and child bearing age (CBA) women. However, rubella virus would continue to circulate. A second “universal” strategy would provide indirect protection to adolescents and CBA women by vaccinating children, but would probably take many years to have an effect. However, since virus could continue to circulate among older children and adults, a combined approach of both selective and universal strategies could be used to quickly and effectively reduce risk of congenital rubella infection. This can be accomplished most quickly and effectively by conducting large scale, wide age range SIAs with RCV.

Experience from other Regions demonstrates that most countries that started with a selective approach eventually added universal vaccination, as occurred in the United Kingdom, France and Romania. Conversely, countries that started with a universal approach for children eventually added strategies to protect CBA women (U.S. and other countries in the American Region). The combined approach is the most widely used approach to control and/or eliminate rubella. Experience in Greece suggested that persistently low coverage of 30-60% may eventually result in a paradoxical increase in CRS because as large numbers of children with neither natural protection nor vaccine-induced antibody enter their reproductive years, the number of CBA women susceptible to rubella is greater than would have occurred had no one been vaccinated. Finally, monitoring and surveillance have proven useful to guide programmatic decision making.

The UNICEF price for bundled 10-dose vials of measles, MR and MMR vaccine in 2008 is $2.22, $5.25 and $14.90, respectively. Thus, the cost to add rubella to measles vaccine as MR is approximately $0.30 per dose. The GAVI Board has agreed to consider funding for rubella and other new vaccines in June 2008. An investment case proposal is being developed.
Experience with other investment cases suggests that even if accepted, funding for RCV may not be available until 2010 or 2011.

An accelerated control strategy for rubella would be appropriate for the Western Pacific Region in the context of measles elimination activities. Accelerated control would require a combination of a universal strategy for children combined with a selective strategy for adults and/or adolescents or a very wide age range SIA with RCV. Measles SIAs are opportunities to provide high coverage with RCV on a large scale for a wide age range target population. Measles and rubella surveillance should be integrated, and CRS surveillance should be developed. Monitoring indicators should be established.

2.8.4 Lessons from pneumococcal conjugate vaccine introduction in New Zealand

New Zealand has developed a National Immunization Strategy for the years 2009 to 2013. The strategy emphasizes gaining public trust and confidence in immunization services and achievement of more than 95% immunization coverage of two-year olds with all the current recommended vaccines. The 7-valent conjugate pneumococcal vaccine (PCV-7) was introduced in national immunization from 1 January 2008 and is being provided free of cost to all infants. Four doses of PCV-7 are administered at the same time as other scheduled vaccines (e.g. with DPT). The decision to introduce the vaccine was guided by burden of disease and cost-effectiveness analysis. The risk of invasive pneumococcal disease is much higher in infants and among elderly people. In 2006, 151 cases of children under five years of age with invasive pneumococcal disease were notified, 83% of which were from vaccine preventable strains of pneumococcus. Vaccinating one birth cohort with PCV-7 is expected to avert about US$12.9 million in health care cost over ten years. Implementing the vaccine for under two-year olds is estimated to give a cost per quality adjusted life year (QALY) of US $42 000. New Zealand is monitoring the impact of PCV-7 vaccination, including antibiotic sensitivity for invasive pneumococcal disease serotypes and any trends in serotype replacement.

In addition to introduction of PCV-7 vaccine, New Zealand is also planning to introduce HPV vaccine from September 2008 with provision of free vaccine to girls aged 12-18 years at the time of introduction followed by routine immunization of 11-13 year old girls on ongoing basis. Though both GSK and Merc vaccines are licensed in New Zealand, the country chose tetravalent vaccine (Gardasil) offered by Merc. Three doses of the vaccine will be administered over a six month period. As with PCV-7, the decision to introduce HPV vaccine was guided by disease burden and cost-effectiveness analysis. Each year, 30 000 women have an abnormal smear result, 160 women are diagnosed with cervical cancer, and about 60 women die from cervical cancer in New Zealand. Maori and Pacific women have about twice the incidence and three to four times the mortality from cervical cancer compared to other population groups. The ongoing immunization programme for 12-year-old girls at the cost of US $12.1 million will save about 30 lives each year with significant savings in diagnosis and treatment costs from reduction in abnormal smear results. Vaccine uptake of both PCV-7 and HPV vaccines will be recorded in national immunization registers. An enhanced AEFI monitoring system will be put in place. Center for Adverse Reaction monitoring at Otago University records any reactions reported. The cervical screening programmes need to continue post-HPV vaccine introduction. It will take some years before the impact of HPV vaccination will be observed.

The presentation highlighted the challenges in bringing full benefits of these new vaccines. These included lack of awareness among parents, girls and health providers and countering the myths that HPV vaccine may encourage risky sexual behaviors.

2.8.5 Influenza vaccination policies and strategies

Influenza vaccination is recommended by WHO in countries where reduction of influenza and its complications is a public health priority. Ideally all individuals should have the opportunity to be vaccinated against influenza. Limited health budgets and vaccine supply may
lead health authorities to restrict influenza vaccine to groups at particular risk. Based on data from industrialized countries, and listed in order of priority, the following groups of individuals may be targeted for vaccination in order to reduce the incidence of severe illness and premature death:

1. Residents of institutions for elderly people and the disabled.
2. Elderly, non-institutionalized individuals with chronic heart or lung diseases, metabolic or renal disease, or immunodeficiencies.
3. All individuals >6 months of age with any of the conditions listed above.
4. Elderly individuals above a nationally defined age limit, irrespective of other risk factors.
5. Other groups defined on the basis of national data and capacities, such as contacts of high-risk people, pregnant women, health-care workers and others with key functions in society, as well as children 6–23 months of age.

At the 56th World Health Assembly (WHA) in 2003, the WHA urged Member States --

1. where national influenza policies exist, to increase vaccination coverage among high risk persons with a goal of 50% coverage among the elderly by 2006 and 75% by 2010;
2. where national policies do not exist, to assess disease burden and economic impact of influenza as a basis for determining influenza vaccination policy in the context of other national health priorities;
3. to prepare national plans for influenza pandemics that address the need for adequate supplies of vaccine, antiviral agents and other vital medicines;
4. to strengthen national surveillance and laboratory capacity; and
5. to support research and development of improved influenza vaccines and effective antiviral preparations.

WPRO’s approaches for promoting the development of national influenza policy consists primarily in strengthening influenza surveillance and supporting studies to understand the impact of influenza through publication of technical guidelines (A Practical Guide to Harmonize Virological and Epidemiological Influenza Surveillance; A Practical Guide for Designing and Conducting Influenza Disease Burden Studies) and providing financial and technical support for these purposes. Provide financial and technical support to National Influenza Centers (NICs).

The Global Pandemic Influenza Action Plan to Increase Vaccine Supply was prepared by WHO HQ in 2006. Its major approaches include developing an immunization policy to increase use of seasonal vaccines; to increase influenza vaccine production capacity; and to promote research and development for new influenza vaccines. Creation of a global stockpile of H5N1 influenza vaccine was recommended by the SAGE in April 2007, with a WHA resolution to the same effect that year (WHA 60.28).

Seasonal influenza vaccine production capacity for the 2007-08 season was estimated to be 565 million doses. This production capacity is expected to increase to 1 billion doses in 2010 if corresponding demand exists. Global pandemic vaccine production capacity is expected to increase to 4.5 billion doses in 2010.
2.11 Integration

2.11.1 Joint surveillance training in the Lao People's Democratic Republic

As financial resources become more limited and national health priorities become more varied, identifying opportunities for integrating activities with other programmes may be a way to not only increase efficiency of resource utilization, but also to create mutually beneficial synergies between programmes. The Lao People's Democratic Republic conducted integrated surveillance training for surveillance staff and pediatricians from the provincial and district levels that included avian influenza, dengue, measles, AFP and neonatal tetanus and severe diarrhea. Funding for the surveillance officers training was provided by both CSR and EPI, whereas funding for pediatricians was provided by EPI. Reasons for conducting integrated surveillance training included the existence of common surveillance approaches for different diseases, a need to pool limited resources for common interests, utilizing the time of participants more efficiently, utilizing the limited number of trainers efficiently, and urgency in time of implementation. Potential disadvantages to integrated training include lack of adequate focus on specific diseases, increased number of training days, need for more trainers with additional topics, and information overload for participants. Positive lessons learned from the integrated training include increased convenience for trainers and participants to conduct a single training for multiple diseases, and increased cost effectiveness in joint financing of activities. Problems included a loss of attention and retention because of too many topics, a need to include more participatory activities, a need to involve several trainers with expertise on different subjects, and a concern that surveillance needs for some of the different diseases are not uniform. For example, some diseases emphasized by CSR require outbreak reporting whereas the EPI diseases/syndromes of measles, AFP, and NT require case based reporting.

2.12 Joint TAG and Inter-Agency Coordination Committee

2.12.1 Current financing and future resource requirements

In recent years, donor support has provided the basis for successful programmes that enabled countries to continue programmes on their own such as Cambodia’s vaccine self-sufficiency project and the Pacific Island Countries cold chain equipment maintenance project.

Financial support from the Measles Initiative and other partners has been generous and has provided the funds necessary to make impressive progress towards the measles elimination and Hepatitis B control goals by 2012. Current planned activities to achieve these twin goals include follow-up measles SIAs in selected countries, strengthening case based surveillance for measles integrated with surveillance for other diseases, and conducting sero-surveys to validate hepatitis B control. Moreover, new vaccine introduction, including rubella containing vaccine, will also require additional financing for establishing and maintaining new surveillance systems, infrastructure, and bundled vaccines. Achieving the twin goals while further expanding EPI to protect more persons at more ages with additional vaccines will require funding increases by existing partners, expansion of the donor base, and new commitments by national governments to increase the level of self-financing.

2.12.2 Current and planned support from partners

Participating donor agencies fully supported the strategies to achieve the goals and acknowledged the need for additional funding, particularly for measles elimination. However, no commitments were made.

The regional office will continue to work with existing and potential new donors to fill the anticipated financial gap.
3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Strategic direction of immunization in the Western Pacific Region: 2008-2012

At its 16th meeting in June 2006, the TAG recommended that the conceptual framework of Global Immunization Vision and Strategy (GIVS) be operationalized in national multiyear plans. In its deliberations the TAG also suggested that GIVS be incorporated into the overall regional workplan of EPI. In this context the TAG welcomes the work in progress on developing the WHO document “Strategic Direction of Immunization in the Western Pacific Region: 2008-2012” and encourages the Regional office to continue its comprehensive review process that includes consultation with relevant EPI partners and Member States. The TAG agrees that recent developments on new and underutilized vaccine introduction and the progress towards measles elimination and hepatitis B control goals that were established in 2003 and targeted for 2012, warrant a summary review of the current situation and articulation of the Region’s strategic direction for immunization during the next five years.

3.1.2 Recommendations:

(1) The TAG recommends that the WHO Regional Office rapidly complete the work of finalizing the Strategic Direction document. The document should serve as a clear statement of, first, the Region’s progress and, second, the Region’s immunization goals, objectives, strategies and priorities. The document may also serve as a tool for advocacy and resource mobilization. For this reason, TAG recommends that the Regional Office consult with communications experts to ensure that key messages are clear and expressed in non-technical language.

(2) Comments and feedback to WPRO should be submitted by TAG members and partners by the end of July so the document can be finalized for availability to the Regional Committee in September 2008.

3.2 Measles elimination by 2012

Measles elimination and mortality reduction efforts have made great progress in the Region: from 2000 to 2007, the reported number of annual measles cases decreased by 97% if China's cases are not included in the analysis; estimated deaths from 2000 to 2006 (including China data) decreased by 80%. This was attributable to successful implementation of WHO-recommended strategies for achieving high population immunity through routine immunization with two doses of measles containing vaccine and large scale, wide age-range supplementary immunization activities (SIAs). Nevertheless, measles incidence in the Region is still too high largely because of the many cases reported from countries with large populations, such as China and Japan.

WHO’s draft Strategic Plan for Measles Elimination by 2012 in the Western Pacific Region, 2008-2012 has been shared with national counterparts and partners for comment. Estimated budget requirements for which donor support is needed, excluding China which has a separate plan and budget estimate, total approximately US$ 31.8 million for 2008-2012, of which approximately US$2.5 million is needed for 2009, including US$1.1 million for SIAs in nine PICs and US$1.1 million to strengthen surveillance throughout the Region.

3.2.1 Recommendations:

(1) The TAG agrees that the need for resource mobilization to fund future measles elimination activities is urgent and encourages WHO to share widely a finalized Strategic Plan and projected
budget with national governments and partners as soon as possible so that funding may be secured for activities that are needed in 2009.

(2) The TAG recommends that the current draft Strategic Plan be revised, then finalized as soon as possible, addressing the comments requested from national counterparts and partners with particular attention to the following points:

   a that each of the proposed surveillance performance indicators for achieving high quality measles surveillance be further reviewed in consultation with national counterparts and partners.

   b that countries should strive to achieve indicator targets in a phase-wise manner, recognizing that countries with extensive measles virus transmission should prioritize their current activities towards achieving population immunity.

   c that clarification be given regarding expected measles virus importations causing residual, self-limited transmission following “elimination”.

(3) The TAG encourages all countries to update or develop national strategic plans and annual workplans for measles elimination reflecting the current national and sub-national status of measles elimination and based in principle on the Regional Strategic Plan. These plans should be integrated into overall national EPI and child health plans.

(4) The TAG endorses recommendations regarding case-based measles surveillance contained in the report of the VPD Surveillance Workshop held as part of this TAG meeting.

(5) In determining optimal MCV1 and MCV2 schedules, countries and areas should refer to the recommendations given by the Strategic Advisory Group of Experts (SAGE). Providing MCV2 at 15-24 months of age in conjunction with school entry requirements for immunization would likely provide maximum population immunity and protection among children.

3.3 Hepatitis B Control by 2012

Since the last TAG meeting in 2006, a revised Regional Plan for Hepatitis B Control and certification guidelines were developed based on recommendations of the 3rd Hepatitis B Expert Consultation held in Tokyo in March 2007. These documents have been widely disseminated to national EPI managers and other stakeholders and are available on the WPRO EPI website. The WPRO Regional Director also sent the certification guidelines to those countries and areas that are believed to have achieved the goal of HBsAg prevalence of <2% among five-year old children with the suggestion to submit their data and documents for certification. The Republic of Korea became the first country in the Region to be certified for achieving the final regional goal of <1%, and Macao (China) is in an advanced stage of review and is also expected to achieve the <1% goal. Many more countries are in the process of submitting their certification applications.

With these developments, the TAG concludes that substantial progress has occurred since its last meeting. However, the TAG is concerned by the pace of progress towards achievement of the 2012 goal. At current levels of activity, there is concern by the TAG that the 2012 goal may not be achieved, particularly in countries such as the Lao People’s Democratic Republic and Papua New Guinea that have not yet met Regional hepatitis B birth dose and routine coverage targets.

3.3.1 Recommendations:

(1) The TAG believes that intensification and acceleration of Hepatitis B control activities and support by WHO and partners are needed to achieve the 2012 goal. Such support may include:
a additional Hepatitis B expert staff in the Regional Office to focus on implementation of the Regional plan and provide extensive technical support to countries;

b identification and use of technical consultants (including the expert resource panel) to
   i participate in country assessments
   ii assist in developing country action plans to improve HepB3 and birth dose timeliness and coverage
   iii support countries in development and implementation of certification procedures

c involving expert resource panel members early in discussions regarding certification with countries and areas

d ensuring distribution to countries of a standardized application format and package for certification as was done for polio free certification

e regional and national commitments to mobilize new resources and to more efficiently utilize existing financial resources to achieve Hepatitis B control

(2) Countries with the <80% birth dose coverage, such as Lao People's Democratic Republic, the Philippines, and Papua New Guinea, should scale-up their efforts with increased WHO and key partner support as soon as possible to ensure birth dose delivery in all health facilities. For babies delivered at home, HepB vaccine with vaccine vial monitors (VVMs) should be used in out of cold chain strategies in accordance with WHO guidelines. Efforts to increase birth dose coverage should involve collaboration with mother and child health (MCH) programmes and staff, and could include –

   a additional training for hospital staff, midwives, and local health staff;
   b advocacy, social mobilization and communication directed towards providers and pregnant women to increase birth dose coverage for both hospital and home births

(3) Special efforts should be made urgently to increase routine immunization coverage of HepB3, with particular focus in the few countries (e.g., the Lao People's Democratic Republic, Papua New Guinea) that still report less than 60% HepB3 coverage. Specifically, countries and areas should –

   a identify constraints to implementing recommended strategies as described in GIVS and try to address them in a sustainable manner;
   b monitor standard indicators of programme performance including district-wise HepB3 coverage, drop out rates, stock outs of vaccine or injection equipment, AEFI rates, etc.

(4) Programme evaluations in countries with low routine HepB3 and/or birth dose coverage should be conducted as national or international reviews within the next 12 months to assess the current status of hepatitis B control, identify constraints, and provide guidance for future planning.

(5) All countries should develop and implement policies to vaccinate health care providers who are engaged in direct patient care.

(6) At least one serosurvey with validated laboratory assays should be conducted in countries that have introduced HepB vaccine more than 15 years ago, even when the vaccine coverage levels are low, to galvanize action to improve their hepatitis B control programme.
(7) Serosurveys (with validated assays) planned for certification must include populations from disadvantaged geographical areas and should consider over-sampling of populations from these areas, as this will facilitate assessment and programme improvements in these areas.

(8) The Hepatitis B Expert Consultation group should be reconvened to consider establishment of a target date for reaching <1% prevalence.

3.4 Current status in maintaining the Region poliomyelitis-free and the Regional strategic plan for 2008-2012

The TAG shares the concerns expressed by the Regional Certification Commission (RCC) during its last meeting in December 2007 that despite the encouraging global progress in suppressing wild poliovirus type 1, wild poliovirus transmission continues in the four endemic countries and in several countries with outbreaks following importations, demonstrating the global interdependence of the polio eradication effort. The TAG noted that the Region has maintained its poliomyelitis-free status despite the persisting risk of wild poliovirus importation from endemic areas and despite the existence of areas in the Region with inadequate immunity levels. The TAG recognizes that interruption of wild poliovirus transmission globally will not occur until at least the end of 2009, and that global certification will not occur until the end of 2012 at the earliest.

3.4.1 Recommendations:

(1) To maintain the Region poliomyelitis-free, countries and areas should –

a  sustain high poliomyelitis immunization coverage through adequate routine and supplementary immunization activities;

b  conduct high-quality AFP surveillance that satisfies recommended performance indicators (including laboratory performance indicators) at the national and sub-national levels; and

c  maintain a national inventory of wild poliovirus infectious and potentially infectious materials and an up-to-date list of biomedical laboratories in anticipation of requirements for the next phase of poliovirus laboratory containment.

(2) The TAG has reviewed the draft “Regional Strategic Plan for the Maintenance of Poliomyelitis-free Status: 2008-2012” and endorses its general principles and key areas for action. The Plan summarizes technical requirements, estimates resource requirements and serves as a tool for advocacy and fund raising for countries and partners. Before finalization, the WHO EPI Secretariat should ensure that National Immunization Programmes (NIPs) and key partners have the opportunity to review and provide their comments for consideration.

3.5 Achieving Maternal and Neonatal Tetanus (MNT) Elimination

The TAG noted that since 1999, 12 of 58 countries and 15 States of India achieved MNT elimination. In the Western Pacific Region, Viet Nam validated MNT elimination in 2005; Cambodia is targeting validation in 2009. China has committed to eliminating MNT by 2010 by increasing the percentage of clean and institutional deliveries. The Lao People's Democratic Republic, Papua New Guinea and the Philippines have implemented various strategies in the past and have some ongoing activities but have no current action plans towards MNT elimination. Validation of elimination would require achieving a district level indicator of less than one case of neonatal tetanus per 1000 live births.
3.5.1 Recommendations:

(1) Countries that have not yet achieved MNT elimination should review their MNT risk indicators by district level, implement a mix of relevant strategies to achieve MNT elimination and keep their national plans of action updated. Such strategies may include

   a. strengthening routine immunization coverage with tetanus toxoid containing vaccine (e.g., TT, Td, Tdap);
   b. collaborating with antenatal care (ANC), neonatal care and safe motherhood initiatives;
   c. conducting SIAs using tetanus toxoid containing vaccines in targeted high-risk regions or areas and as special approaches (e.g. in factories)

(2) Where applicable, countries should regularly review their plans to maintain elimination status, including optimizing immunization schedules (e.g. shift from TT vaccination of pregnant women to providing Td booster childhood doses).

(3) TAG endorses the recommendations regarding MNT elimination contained in the report of the VPD Surveillance Workshop held as part of this TAG Meeting.

3.6 Routine Immunization

The TAG noted the strong focus the Region is placing on strengthening routine immunization through the individual disease eradication, elimination and control initiatives and through promoting use of GIVS strategies including Reaching Every District (RED), capacity building, optimizing immunizations schedules, and encouraging immunization beyond infancy. The TAG welcomed the Western Pacific Region’s participation through its Member State, Malaysia, in efforts made by WHO to review and document national school-based immunization programmes.

3.6.1 Recommendations:

(1) The TAG recommends that countries and areas strengthen routine immunization monitoring systems in a manner consistent with the Global Framework on Immunization Monitoring and Surveillance (GFIMS) framework.

(2) WHO, together with Member States and partners, should continue to identify and share lessons learned and best practices in strengthening routine immunization to reach all children and women with quality vaccines.

3.7 Vaccine Quality & Immunization Safety

Ensuring vaccine quality is necessary to protect children from vaccine preventable disease. Immunization safety, which addresses injection safety, AEFI surveillance, and safe waste disposal, is important to reduce programmatic error and address community concerns regarding vaccines. National Regulatory Authority (NRA) oversight, is a critical component of ensuring both vaccine quality and immunization safety.

3.7.1 Recommendations:

(1) All member countries and areas should ensure functionality of their NRA in accordance with WHO guidelines so it can play a leading role in ensuring vaccine quality and immunization safety. For countries introducing new and underutilized vaccines, NRAs should have capacity in licensing and post marketing surveillance, including AEFI surveillance, and establish clear vaccine introduction guidelines.
(2) Countries introducing new or underutilized vaccines should ensure there is adequate cold chain storage capacity to properly accommodate these vaccines and ensure vaccine quality. Renewed emphasis should be given on maintaining all vaccines under proper conditions to avoid damage from freezing and heat exposure.

(3) All countries should ensure single use of syringes for SIAs and routine immunization. The TAG recommends use of AD syringes in accordance with WHO/UNICEF/UNFPA policy.

(4) AEFI reporting and investigation, including checking for programme error, should be strengthened, especially for measles SIAs.

(5) Countries and areas should pay special attention to safe waste disposal policies and employ short and medium-term solutions such as incinerators that meet WHO health care waste management guidelines until more environmentally-friendly waste disposal methods are developed for the long term.

3.8 Introduction of new and underutilized vaccines

Vaccines against S. pneumoniae, Hib, Japanese encephalitis virus, and Rotavirus have the potential to substantially reduce morbidity, disability and mortality among children from meningitis, pneumonia and diarrhea. Use of a new vaccine against HPV in adolescents or children is likely to substantially reduce cervical cancer incidence among adult women in the long term. In this regard, HPV vaccine is similar to HepB vaccine in that the objective is to reduce long term morbidity and mortality.

3.8.1 Recommendations:

(1) TAG endorses the seven key strategic areas outlined by WHO in the proposed Strategic Plan for New and Underutilized Vaccines for 2009-2015. These strategic areas include –

a knowledge management and strategic dissemination of information
b surveillance for diseases targeted by new and underutilized vaccines
c economic analyses
d advocacy with national, regional and global stakeholders to mobilize both national and external resources;
e providing support on different programmatic areas related to new vaccine introduction;
f ensuring immunization safety
g promoting vaccine research.

(2) TAG endorses the recommendations regarding surveillance and monitoring related to new and underutilized vaccines contained in the report of the VPD Surveillance Workshop held as part of this TAG Meeting.

(3) TAG urges GAVI-eligible countries to avail opportunities provided by GAVI for new vaccine introduction at the earliest. Efforts should be intensified to generate disease burden data and economic analyses, if needed, to facilitate country-specific decisions.

(4) National EPI staff and national and regional partners should work proactively to mobilize both internal and external resources to support new and underutilized vaccine introduction, especially in lower-middle income countries that are not currently eligible to receive assistance from GAVI.
3.9 **Rubella**

Rubella incidence is high in the Region, with 85,200 reported cases in 2007 in spite of substantial under-reporting. Available data suggest that in countries that have not yet introduced rubella-containing vaccine (RCV), males and females are equally affected, and child bearing age women account for 15-25% of all cases. The incidence of CRS both in developing and developed countries in the pre-vaccine era was between 1-4 per 1000 live births during epidemic periods and 0.1-0.2 during endemic periods, suggesting the risk of CRS in many countries of the Region is high. Among eight countries that do not yet provide RCV, two (Mongolia and Philippines) are planning to do so in the near future. In June 2008, the GAVI Board agreed to consider rubella vaccine as one of the seven priority new or underutilized vaccines for GAVI support, and an investment case for RCV is now being developed. GAVI funding may therefore become available to support RCV introduction and/or SIAs. Measles elimination activities present an opportunity to combine administration of rubella vaccine.

3.9.1 **Recommendations:**

1. TAG recommends that WPRO, in consultation with Member States and partners, prepare a Draft Strategic Plan for Accelerated Control of Rubella and CRS that includes guidelines for rubella vaccine introduction. The plan should elaborate a combination of selective and universal vaccination strategies to quickly and effectively reduce incidence of rubella and CRS, and include process indicators and targets to monitor performance and progress. WPRO is encouraged to provide additional data to the TAG to form the basis for establishing specific Accelerated Rubella Control targets at the next TAG Meeting.

2. TAG recommends that Cambodia, Mongolia, Viet Nam, and the Philippines develop plans to introduce RCV into their programmes, and that all countries that have introduced or will introduce RCV in their routine programmes consider including RCV when conducting future SIAs (i.e., using MR instead of monovalent measles vaccine).

3. TAG endorses recommendations regarding rubella and CRS surveillance contained in the report of the VPD Surveillance Workshop held as part of this TAG Meeting.

3.10 **VPD Surveillance**

The TAG reaffirms the critical importance of epidemiologic and laboratory-supported disease surveillance for effective immunization and disease control programmes. The TAG notes that these represent a small fraction of the total costs of the immunization programmes.

3.10.1 **Recommendations**

1. The TAG urges national programmes, WHO and partners to provide appropriate financial and technical support to develop and/or maintain high quality surveillance for all VPDs.

2. TAG endorses the GFIMS and recommends that Member States strengthen programme monitoring and VPD surveillance in accordance with this framework.

3. TAG strongly urges frequent communication among EPI Managers, Surveillance Managers, and Laboratory Officials to compare epidemiologic and laboratory data and reconcile discrepancies. Unique Epidemiologic Identification (EPID) numbers should be used for each suspected case to facilitate comparison of data and prevent data errors.

4. The TAG endorses the recommendations contained in the report of the VPD Surveillance Workshop held as part of this TAG Meeting.

3.11 **Laboratory Network meeting**
Laboratories play a critical role in identifying the true cause of disease in individual cases, in monitoring duration of chains of transmission and identifying potential geographic movements of specific virus and bacterial strains. As such, close and regular collaboration between national immunization programme officials, national epidemiologic surveillance officials and laboratory officials is critical to ensure timely appropriate decision making.

3.11.1 Recommendations:

(1) Increasing numbers of specimens and activities for the polio and measles laboratory networks and introduction of new vaccines in the Region has greatly increased the workload for regional laboratory coordination. To meet these rapidly growing demands, two additional Regional laboratory network coordinators are needed: one with expertise in virology and one with expertise in bacteriology.

(2) TAG endorses the list of specific recommendations for the polio, measles and Japanese encephalitis laboratory networks as enumerated in the Laboratory Network Meeting held as part of this TAG Meeting.

3.12 Inter-dependence and Partner’s Meeting

The Region experienced substantial reductions in partner financial support in 2008, and further reductions are anticipated in 2009 and 2010. A particularly substantial shortfall exists to implement planned measles elimination activities: US$1.2 million for 2009 and US$22.5 million through 2012.

3.12.1 Recommendations:

(1) National governments should develop financing plans together with strategic plans and annual work plans to ensure adequate financing of proposed budgets; line items should be included in budgets specifically addressing EPI and EPI priorities.

(2) Partners are encouraged to recognize that disease eradication, elimination and control are public goods; achievements in one country or area benefit all Member States.

(3) The WHO Regional Office should strengthen its advocacy role with existing and future partners, taking a more pro-active role in effectively communicating and marketing the distinct benefits EPI provides to the Region and the resources needed to achieve them.
SUMMARY

The Seventeenth Meeting of the Technical Advisory Group (TAG) on Immunization and vaccine Preventable Diseases (VPDs) in the Western Pacific Region was held from 7 to 11 July 2008 in Manila, Philippines. The 17th meeting was divided into three sessions: the first two sessions, the Laboratory Network Meeting and the Vaccine Preventable Diseases (VPDs) Surveillance Workshop, were held concurrently from 7 to 9 July; the advisory session was held from 10 to 11 July and addressed technical issues related to various aspects of expanded programme on immunization (EPI) in the Western Pacific Region. The meeting of the Regional Interagency Coordinating Committee (ICC) was organized along with the TAG meeting as in previous years.

The key objectives of the meeting were to review surveillance needs for disease eradication, elimination and control; review performance of regional reference and network laboratories and discuss algorithms for poliomyelitis, measles and Japanese Encephalitis (JE); update recommendations on measles elimination, hepatitis B control, and maintaining poliomyelitis-free status; review technical and programmatic aspects of new and underutilized vaccine introduction; and to update recommendations on strengthening routine immunization services in the context of the Global Immunization Vision and Strategy (GIVS).

The TAG endorsed the recommendations and action points proceeding from the VPD surveillance and laboratory network workshops. Moreover, the TAG endorsed the Global Framework for Immunization Monitoring & Surveillance (GFIMS) and recommended that Member States strengthen both programme monitoring and surveillance according to this framework. Also, the TAG encouraged greater communication and collaboration between EPI, Surveillance and Laboratory staff to update epidemiologic and lab data and reconcile discrepancies and to use unique epidemiologic identification (EPID) numbers to reliably track case patients.

The TAG recommended that the Strategic Plan for Measles Elimination by 2012 be revised based on recommendations during the meeting and distributed to partners, that national governments in turn update national and sub-national plans, and that these plans be used to mobilize needed resources. The TAG emphasized the benefits of providing a second dose of measles containing vaccine (MCV) in the second year of life combined with a mandatory school entry check of immunization status.

The TAG recommended intensification of Hepatitis B control activities at the regional and country levels, particularly in the five countries with <80% Hepatitis B vaccine (HepB) birth dose (BD) coverage and/or <60% HepB3 coverage. Countries may use HepB vaccine out of the cold chain provided vaccine vial monitors are used, and collaboration with maternal and child health programme staff was encouraged. Programme performance should be monitored using standard indicators, and evaluations conducted within 12 months for the five low-performing countries. Universal policies of HepB vaccination of healthcare workers should be adopted. Validated laboratory assays were recommended for all countries conducting serosurveys, and sampling should include disadvantaged populations when serosurveys are done for certification purposes.

The TAG endorsed the Regional Strategic Plan for Maintaining Poliomyelitis-Free Status: 2008-2012, and suggested it be shared with national immunization programmes and partner representatives for comments before finalization. Countries and areas were reminded to maintain high polio immunization coverage, conduct high quality AFP surveillance, and maintain national inventories of materials potentially infected with wild poliovirus.

Countries that have not achieved elimination of maternal and neonatal tetanus should review risk indicators by district and implement a mix of strategies to achieve elimination. Child, adolescent and adult immunization with Td should be considered where applicable.

The TAG endorsed the seven key strategic areas outlined in the Regional Strategic Plan for New and Underutilized Vaccines: 2009-2015. The TAG further encouraged GAVI-eligible
countries to avail themselves of opportunities for new vaccine introduction, and for non-GAVI eligible countries, to identify internal and external resources to support new vaccine introduction. Disease burden and cost effectiveness analyses may be useful to guide country decision making in this regard.

The TAG recommended development of a Regional Strategic Plan for Accelerated Control of Rubella and Congenital Rubella Syndrome (CRS), and that those countries with good immunization systems introduce rubella containing vaccine (RCV) in combination with MCV. Countries and areas were also encouraged to develop surveillance systems for CRS.

The TAG recommended ensuring vaccine quality and immunization safety by ensuring functionality of National Regulatory Authorities, especially licensing and adverse events following immunization (AEFI) surveillance for countries that procure vaccines through UNICEF. Cold chain storage capacity should be assessed carefully prior to new vaccine introduction, and single use syringes only should be used by national immunization programmes.

Recommendations for the Inter-Agency Coordinating Committee meeting included development of financing plans jointly with strategic and annual work plans by national governments, and to include EPI priorities as line items in national budgets. Partners were also encouraged to invest in VPD eradication, elimination and control as public goods benefiting the entire international community.
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday, 07 July</th>
<th>Time</th>
<th>Tuesday, 08 July</th>
<th>Time</th>
<th>Wednesday, 09 July</th>
</tr>
</thead>
<tbody>
<tr>
<td>0730-0800</td>
<td>REGISTRATION</td>
<td>9 (a) Surveillance and problem-solving exercise</td>
<td>0800-0830</td>
<td>9 (b) Surveillance &amp; problem solving exercise</td>
<td></td>
</tr>
<tr>
<td>0800-0830</td>
<td>1 Joint (surveillance and laboratory network workshops) opening ceremony</td>
<td></td>
<td>(b) Opening remarks, self introduction, photo</td>
<td>0830-0900</td>
<td>14. Round-table discussion</td>
</tr>
<tr>
<td></td>
<td>• Opening remarks, self introduction, photo</td>
<td></td>
<td></td>
<td></td>
<td>(a) How to strengthen case-based AFP and measles surveillance?</td>
</tr>
<tr>
<td>0920-0940</td>
<td>(a) Poliomyelitis eradication</td>
<td></td>
<td></td>
<td></td>
<td>(b) How to transform VPD surveillance into a public health surveillance model?</td>
</tr>
<tr>
<td>0940-1000</td>
<td>(b) Measles initiatives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1030-1045</td>
<td>3. Progress and challenges:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1045-1115</td>
<td>(a) Global polio laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1115-1145</td>
<td>4. Workshop overview: importance of surveillance and monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1145-1230</td>
<td>5. Surveillance questions and answers (Q&amp;A) game</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1230-1330</td>
<td>Lunch break</td>
<td>1000-1030 Coffee break</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330-1400</td>
<td>6. Traditional EPI disease surveillance status, challenges and solutions</td>
<td>1030-1200 Case study on Integrated VPD surveillance – parts 3 and 4</td>
<td>1230-1330 Lunch break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1330-1400</td>
<td>(b) Measles and rubella</td>
<td></td>
<td></td>
<td></td>
<td>(a) Country presentations: status, challenges and plans (with budgets) to optimize VPD surveillance</td>
</tr>
<tr>
<td>1430-1500</td>
<td>7. New vaccine preventable diseases (VPDs): meningitis, encephalitis, and pneumonia</td>
<td>13. (a) Approach to programme management</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530-1600</td>
<td>(a) Epidemiology and vaccination against - S. pneumonia, Haemophilus influenzae type b (Hib), and Meningococcus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600-1630</td>
<td>(b) Surveillance for meningitis, encephalitis and pneumonia</td>
<td>16. Summary reports of laboratory network workshop and VPD surveillance workshop</td>
<td>1500-1530</td>
<td>Coffee break</td>
<td></td>
</tr>
<tr>
<td>1630-1730</td>
<td>9. VPD: rotavirus</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1730-1800</td>
<td>Questions &amp; answer session</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

N.B.: Countries for surveillance workshop include CAM, CHN, LAO, MAA, MOG, PHL, PNG, VTN and WHO-EPI focal points
<table>
<thead>
<tr>
<th>Time</th>
<th>Monday, 7 July 2008</th>
<th>Time</th>
<th>Tuesday, 8 July 2008</th>
<th>Time</th>
<th>Wednesday, 9 July 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>0800-0830</td>
<td>1 Joint (surveillance and laboratory network workshops) opening ceremony</td>
<td>0810-0830</td>
<td>Election of Chairperson, Vice-Chairperson and Rapporteur</td>
<td>0810-0830</td>
<td>Election of Chairperson, Vice-Chairperson and Rapporteur</td>
</tr>
<tr>
<td></td>
<td>• Opening remarks</td>
<td>0830-0850</td>
<td>(a) New requirement for global measles laboratory network and WHO database</td>
<td>0830-0850</td>
<td>(a) Status of Japanese encephalitis control in Western Pacific Regional Office</td>
</tr>
<tr>
<td></td>
<td>• Self-introduction</td>
<td>0850-0910</td>
<td>(b) Measles PT updates</td>
<td>0850-0910</td>
<td>(b) Japanese encephalitis surveillance: progress, issues and challenges</td>
</tr>
<tr>
<td>0830-0845</td>
<td>2. Overview of global and regional progress</td>
<td>0910-0930</td>
<td>(c) An update on alternative sampling techniques and new developments</td>
<td>0910-0930</td>
<td>(c) Role of the laboratory for Japanese encephalitis surveillance</td>
</tr>
<tr>
<td>0845-0900</td>
<td>(a) Poliomyelitis eradication</td>
<td>0945-1000</td>
<td>Regional Office measles /rubella laboratory network</td>
<td></td>
<td>(d) Development of Western Pacific Regional Office Japanese encephalitis laboratory network</td>
</tr>
<tr>
<td></td>
<td>(b) Measles initiatives</td>
<td></td>
<td>(f) Discussions on new reporting format and data management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0900-0920</td>
<td>3. Progress and challenges of global/regional laboratory</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0920-0940</td>
<td>(a) Global polio laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0940-1000</td>
<td>(b) Global measles/rubella laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000-1030</td>
<td>(c) Regional polio and measles/rubella laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1030-1230</td>
<td>4. New developments of polio laboratory network</td>
<td>1030-1230</td>
<td>(g) Country reports (1) - Macao (China), Mongolia, Cambodia, Lao People's Democratic Republic, Philippines, Papua New Guinea, Pacific island countries and areas (Fiji), and Viet Nam</td>
<td>1000-1230</td>
<td>(e) Country reports on Japanese encephalitis situations and laboratory activities - China, Cambodia, Japan, Lao People's Democratic Republic, Malaysia, Philippines, Papua New Guinea, Republic of Korea and Viet Nam</td>
</tr>
<tr>
<td></td>
<td>Election of Chairperson, Vice-Chairperson and Rapporteur</td>
<td>1230-1330</td>
<td>(h) Global Regional: Australia, China and Japan - National: Hong Kong (China), New Zealand and Singapore</td>
<td>1230-1330</td>
<td>7. Laboratory integration and other issues</td>
</tr>
<tr>
<td></td>
<td>(a) Description and justification for use of a new test algorithm for more rapid poliovirus confirmation for the global polio lab network</td>
<td>1330-1500</td>
<td>(g) Country reports (2) - Malaysia, Republic of Korea, Singapore and New Zealand - Global/Regional: Japan, Australia, Hong Kong (China) and China (After the closing ceremony on 9 July: Distribution of measles proficiency PT panels)</td>
<td>1330-1350</td>
<td>(a) Integrated laboratory services for surveillance of vaccine preventable diseases</td>
</tr>
<tr>
<td></td>
<td>(b) Mechanism used and status of implementation of the new test algorithm in polio endemic regions</td>
<td>1330-1545</td>
<td>- Global/Regional: Japan, Australia, Hong Kong (China) and China</td>
<td>1350-1410</td>
<td>(b) Shipping requirements of infectious materials</td>
</tr>
<tr>
<td></td>
<td>(c) Experiences of new algorithm in Pan-American Health Organization and development of new molecular polio PT</td>
<td></td>
<td>- Global/Regional: Japan, Australia, Hong Kong (China) and China</td>
<td>1410-1430</td>
<td>(c) Report of Joint WHO-US CDC international conference on Health Laboratory Quality systems</td>
</tr>
<tr>
<td></td>
<td>(d) Some experience of new algorithm and molecular detection method in VDRL, Melbourne</td>
<td></td>
<td></td>
<td>1440-1500</td>
<td>(d) Future plans (framework) for Western Pacific Regional Office vaccine preventable diseases laboratory network</td>
</tr>
<tr>
<td></td>
<td>(e) New development and requirement of Western Pacific Regional Office polio laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1230-1330</td>
<td>LUNCH BREAK</td>
<td>1230-1330</td>
<td>LUNCH BREAK</td>
<td>1230-1330</td>
<td>LUNCH BREAK</td>
</tr>
<tr>
<td>1330-1500</td>
<td>7. Laboratory integration and other issues</td>
<td>1330-1545</td>
<td>(g) Country reports (2) - Malaysia, Republic of Korea, Singapore and New Zealand - Global/Regional: Japan, Australia, Hong Kong (China) and China (After the closing ceremony on 9 July: Distribution of measles proficiency PT panels)</td>
<td>1330-1350</td>
<td>(a) Integrated laboratory services for surveillance of vaccine preventable diseases</td>
</tr>
<tr>
<td></td>
<td>(a) Integrated laboratory services for surveillance of vaccine preventable diseases</td>
<td></td>
<td></td>
<td>1350-1410</td>
<td>(b) Shipping requirements of infectious materials</td>
</tr>
<tr>
<td></td>
<td>(b) Shipping requirements of infectious materials</td>
<td></td>
<td></td>
<td>1410-1430</td>
<td>(c) Report of Joint WHO-US CDC international conference on Health Laboratory Quality systems</td>
</tr>
<tr>
<td></td>
<td>(c) Report of Joint WHO-US CDC international conference on Health Laboratory Quality systems</td>
<td></td>
<td></td>
<td>1440-1500</td>
<td>(d) Future plans (framework) for Western Pacific Regional Office vaccine preventable diseases laboratory network</td>
</tr>
<tr>
<td></td>
<td>(d) Future plans (framework) for Western Pacific Regional Office vaccine preventable diseases laboratory network</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500-1530</td>
<td>8. Summary reports of lab network workshop and VPD surveillance workshop</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530-1700</td>
<td>9. Joint (surveillance and laboratory network) closing ceremony</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1615-1700</td>
<td>Conclusions and recommendations of Day 3</td>
<td></td>
<td></td>
<td>1530-1600</td>
<td>Conclusions and recommendations of Day 3</td>
</tr>
<tr>
<td>1600-1630</td>
<td>Open discussion on improving coordination of national laboratories, epidemiology units, and programme units</td>
<td></td>
<td></td>
<td>1630-1645</td>
<td></td>
</tr>
<tr>
<td>1700-1730</td>
<td>Conclusions and recommendations of Day 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1740-1800</td>
<td>Informal get-together (Multi-function Room, WHO)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>Thursday, 10 July 2008</td>
<td>Time</td>
<td>Friday, 11 July 2008</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------------------------------------------------</td>
<td>----------</td>
<td>-----------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0800–0830</td>
<td><strong>REGISTRATION</strong></td>
<td>0800–0830</td>
<td><strong>9 Introduction of new and underutilized vaccines</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0830–0930</td>
<td>1 Opening ceremony</td>
<td>0830–0845</td>
<td>(a) Current status and strategic plan for new and underutilized vaccine introduction in the Western Pacific Region</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Opening speech</td>
<td>0845–0915</td>
<td>(b) Introduction of rubella containing vaccine in China</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Self-introduction</td>
<td></td>
<td>(c) Considerations for rubella vaccine introduction and options for a regional goal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Election of officers: Chairperson, Vice-Chairperson and Rapporteur</td>
<td></td>
<td>(d) Lessons from pneumococcal conjugate vaccine introduction in New Zealand</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Administrative announcement</td>
<td></td>
<td>(e) Influenza vaccination policies and strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Group photograph</td>
<td></td>
<td>(f) Open discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0930–1000</td>
<td><strong>COFFEE BREAK</strong></td>
<td>1000–1030</td>
<td><strong>COFFEE BREAK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000–1015</td>
<td>2 Overview of issues</td>
<td>1030–1045</td>
<td><strong>10 Vaccine-preventable disease (VPD) surveillance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Status of the Western Pacific Region Expanded Programme on Immunization (EPI)</td>
<td></td>
<td>(a) Report from the VPD surveillance workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Strategic Advisory Group Experts (SAGE) conclusions and recommendations (April 2008)</td>
<td></td>
<td>(a) Report from laboratory network meeting on polio, measles and Japanese encephalitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1015–1030</td>
<td>3 Achieving measles elimination by 2012</td>
<td>1045–1115</td>
<td><strong>11 Strengthening laboratory networks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Progress towards measles elimination and overview of Strategic Plan 2008–2012</td>
<td></td>
<td>(a) Joint influenza, measles and AFP surveillance training in Lao People's Democratic Republic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b) Optimal routine immunization schedules for MCV1 and MCV2</td>
<td></td>
<td>(b) Open discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1030–1045</td>
<td>4 Controlling hepatitis B by 2012</td>
<td>1115–1130</td>
<td>- Opportunities for EPI integration with other programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Operationalizing the Hepatitis B Control Plan of Action and certification process in the Western Pacific Region</td>
<td></td>
<td>- Addressing impact of competing donors and programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1045–1100</td>
<td>5 Maintaining poliomyelitis eradication by 2012</td>
<td></td>
<td><strong>12 Integration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Current status and overview of strategic plan to maintain polio eradication from 2008 to 2012</td>
<td></td>
<td>(a) Joint influenza, measles and AFP surveillance training in Lao People's Democratic Republic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1100–1115</td>
<td>6 Achieving maternal and neonatal tetanus elimination (MNTE)</td>
<td></td>
<td>(b) Open discussion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1115–1130</td>
<td>7 Routine immunization</td>
<td>1145–1200</td>
<td>- Opportunities for EPI integration with other programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Status and plans for MNTE</td>
<td></td>
<td>- Addressing impact of competing donors and programmes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1130–1145</td>
<td>8 Immunization safety</td>
<td></td>
<td><strong>13 Joint TAG-Regional Interagency Coordinating Committee (ICC)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Overview of Immunization safety in the Western Pacific Region</td>
<td></td>
<td>(a) Current financing and future resource requirements for achieving regional strategic goals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1145–1200</td>
<td>9 Conclusion and recommendations from TAGi</td>
<td></td>
<td>(b) Statements from partners: current and planned support (4 min each)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200–1300</td>
<td><strong>LUNCH BREAK (RWG side meeting)</strong></td>
<td>1300–1345</td>
<td>- ADB - KOICA - PATH - AusAID - Japan RI 2650 - UN Foundation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Questions and answers</strong></td>
<td>1345–1415</td>
<td>- CDC - Japan MOFA - UNICEF - JICA - GAVI - WHO</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>14 Conclusions and recommendations from TAGi</strong></td>
<td>1415–1500</td>
<td>- KCDC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>15 Closing ceremony</strong></td>
<td>1500–1515</td>
<td><strong>15 Closing ceremony</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>16 Questions and answers</strong></td>
<td>1515–1545</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1300–1400</td>
<td><strong>COFFEE BREAK</strong></td>
<td>1545–1645</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1400–1420</td>
<td><strong>8 Immunization safety</strong></td>
<td>1545–1645</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1420–1440</td>
<td><strong>1600–1615</strong></td>
<td>1645–1700</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1440–1500</td>
<td><strong>1615–1630</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1500–1530</td>
<td><strong>COFFEE BREAK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1530–1545</td>
<td><strong>1630–1645</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1545–1600</td>
<td><strong>1645–1700</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1600–1615</td>
<td><strong>17 Questions and answers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
LIST OF TAG MEMBERS, EPI NATIONAL MANAGERS/SURVEILLANCE OFFICERS, MINISTRY/DEPARTMENT OF HEALTH STAFF, TEMPORARY ADVISERS, OBSERVERS/REPRESENTATIVES AND SECRETARIAT

1. TECHNICAL ADVISORY GROUP MEMBERS

**Dr Robert Hall**, Department of Epidemiology and Preventive Medicine, School of Epidemiology and Preventive Medicine, Monash University, Alfred Hospital Commercial Road, Melbourne, Victoria 3004, Australia, Telephone: +61 3 9903-0555, Mobile: +61 4 0507-3061, Facsimile: +61 3 9903 0556, E-mail: robert.hall@med.monash.edu.au

**Dr Stephen Cochi**, Senior Advisor, Global Immunization Division, National Immunization Program, Centers for Disease Control and Prevention, 1600 Clifton Road, NE – Mailstop E-05, Atlanta, Georgia 30333, U.S.A., Telephone: +1-404-639-8723, Facsimile: +1-404-639-8573, E-mail: scochi@cdc.gov or scl1@cdc.gov

**Dr Satoru Miyake**, Director, Tuberculosis and Infectious Disease Control, Health Service Bureau Ministry of Health, Labour and Welfare, 1-2-2 Kasumigaseki, Chiyodaku, Tokyo 100-8916, Japan, Telephone: 81-3-3595-2257, Facsimile: 81-3-3581-6251, E-mail: miyake-satoru@mhlw.go.jp

**Dr Tatsuo Miyamura**, Director-General, National Institute of Infectious Diseases, Toyama 1-23-1, Shinjuku-ku, Tokyo 162-8640, Japan, Telephone: +81-3-5285-1111, Facsimile: +81-3-5285-1356, E-mail: tmiyam@nih.go.jp

**Dr Jong-Koo Lee**, Director, Deputy Minister, Korea Centers for Disease Control and Prevention Ministry for Health, Welfare and Family Affairs, 194 Tongilo, eunpyng-Gu, Seoul, Republic of Korea, P.O. Box 122-701, Telephone: 82-2-380-2600, Facsimile: 82-2 388 4601, E-mail: docmohw@mohw.go.kr

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

---

¹ Dr Cui Gang will represent Dr Yu Jingjin, Deputy Director-General, Department of Diseases Control, Ministry of Health, China, TAG member, who is unable to attend the meeting this year
2. TEMPORARY ADVISERS

**Dr Olen Kew**, Molecular Virology Section MS-G-10, Respiratory and Enterovirus Branch, National Centre for Infectious Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Atlanta, GA 30333, United States of America, Telephone: 1 404 639 1341, Facsimile : 1 404 639 2648, E-mail: omk1@cdc.gov

**Dr Paul Rota**, Measles Virus section, MS-C-22, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Atlanta, GA 30333, United States of America, Telephone: 1 404 639 4181, Facsimile : 1 404 639 4187, Email: prota@cdc.gov

**Dr Mary Ann D. Lansang**, (SAGE Member), Professor and Consultant, Department of Clinical Epidemiology and Section of Infectious Diseases, Department of Medicine, University of the Philippines, Manila, College of Medicine, Room 6, Dr Paz Mendoza Bldg., 547 Pedro Gil Street, Ermita, Manila 1000, Philippines, Telephone: (632) 525 4098, E-mail: mlansang@philmed.org; mlansang@gmail.com

3 PARTICIPANTS

**AUSTRALIA**  
**Dr Bruce Thorley**, Senior Medical Scientist, Regional Polio Reference Laboratory, Epidemiology and Public Health Division, Victorian Infectious Diseases Reference Laboratory, 10 Wreckyn Street, North Melbourne, Victoria 3052, Telephone: 61-3 9342 2607, Facsimile : 61-3 9342 2665, E-mail: Bruce.Thorley@mh.org.au

**Ms Jennifer Ann Leydon**, Senior Scientist – ID Serology, Regional Measles Reference Laboratory, Victorian Infectious Diseases Reference Laboratory, 10 Wreckyn Street, North Melbourne, Victoria 3051, Telephone: 61-3 9342 2647, Facsimile : 61-3 9342 2676, E-mail: Jennie.Leydon@mh.org.au

**Dr Jeffrey Hanna**, Medical Director, Communicable Disease Control, Tropical Population Health Unit, Queensland Health, P. O. Box 1103, Cairns, Queensland 4870, Telephone: 61-7 40503604, Facsimile : 61-7 40311440, E-mail: Jeffrey_hanna@health.qld.gov.au

**BRUNEI DARUSSALAM**  
**Dr Hajah Roslin Hj Sharbawi**, Senior Medical Officer and Head, Maternal and Child Health Division, Department of Health Services, Ministry of Health, Commonwealth Drive, BSB BB3910, Brunei Darussalam, Telephone: 2381640 Ext. 7712/13, Facsimile : 2381887, E-mail: zullin94@yahoo.com

**CAMBODIA**  
**Professor Sann Chan Soeung**, Manager, National Immunization Programme, Ministry of Health, Kingdom of Cambodia, 151-153 Kampuchea Krom Street, Phnom Penh, Telephone: (855) 12933344, Facsimile : (855) 23426167, E-mail: sans@nip.everyday.com.kh

**Dr Svay Sarath**, Deputy Manager, National Immunization Programme, Ministry of Health, Kingdom of Cambodia, 151-153 Kampuchea Krom Street, Phnom Penh, Telephone: (855) 12933344, Facsimile : (855) 23426167, E-mail: sv_sarath@yahoo.com
Mr Ork Vichit, Immunization Officer, Ministry of Health, 151-153 Kampuchea krom Street, Pnom Penh, Telephone: (855) 12 830 548, Facsimile: (855) 23 42657, E-mail: orkv@nip.everyday.com.kh

Dr Liang Xiaofeng, Director, National Immunization Program Centre, Chinese Center for Disease Control and Prevention, 27 Nanwei Lu, Beijing 100050, Telephone: 8610-6317 6737, Facsimile: 8610-63171724 E-mail: liangxf@hotmail.com

Dr Zhang Yong, Research Assistant, China National Polio Laboratory, Chinese Center for Disease Control and Prevention, 27 Nan Wei Road, Xuan Wu District, Beijing 100050, Telephone: 8610-83163681, Facsimile: 8610-83163681, E-mail: yongzhang75@sina.com

Dr Liu Dawei, Associate Researcher, Chinese Center for Disease Control and Prevention, 27 Nanwei Lu Road, Xuan Wu District, Beijing 100050, Telephone: 8610-63189994, Facsimile: 8610-63184449, E-mail: liudw929@126.com

Dr Wilina Lim, Consultant, Medical Microbiologist, Public Health Laboratory Centre, 9/F, 382 Nam Cheong Street, Shek Kip Mei, Kowloon, Hong Kong, Telephone: (852) 23198252, Facsimile: (852) 23195989, E-mail: wllim@pacific.net.hk

Dr Chow Chun-bong, Chairman of the Scientific Committee on, Vaccine Preventable Diseases, Centre for Health Protection, Department of Health, Department of Paediatrics and Adolescent Medicine, Princess Margaret Hospital, Kowloon, Telephone: 852 29903311, Facsimile: 852 29903483, E-mail: chowcb@ha.org.hk

Dr Lam Chong, Coordinator, Control of Communicable Diseases, CDC-NDIV, Health Bureau, 7th Floor Building "Hot Line", No. 335-341 Alameda Dr Carlos d'Assumpcao, Macao, Telephone: +853 28533525, Facsimile: +853 28533524, E-mail: ndiv@ssm.gov.mo

Dr Masato Tashiro, Director, Department of Virology III, National Institute of Infectious Diseases, 4-7-1 Gakuen, Musashi-Murayama, Tokyo 208-0011, Telephone: +81 42 565 2498, Facsimile: +81 42 565 2498, E-mail: mtashiro@nih.go.jp

Dr Hirouki Shimizu, Chief, Laboratory of Enterovirus, Department of Virology II, National Institute of Infectious Diseases, Gakuen 4-7-1, Musashimurayama, Tokyo 208-0011, Telephone: +81 42 561 0771, Facsimile: +81 42 561 4729, E-mail: hshimizu@nih.go.jp

Dr Nobuhiko Okabe, Director, Infectious Disease Surveillance, National Institute of Infectious Diseases, 1-23-1 Toyama Shinjuku-ku, Tokyo 162 8640, Telephone: 81 3 5486 6401, Facsimile: 81 3 5486 6401, E-mail: okabenob@nih.go.jp
Mr Kazushi Kobayashi, Chief, Tuberculosis and Infectious Diseases Control Division, Health Service Bureau, Ministry of Health, Labour and Welfare, 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100 8916, Telephone: +81 3 3595 2257, Facsimile : +81 3 3581 6251, E-mail: kobayashi-kazushikk@mhlw.go.jp

Dr Yuki Tada, Chief, Surveillance and Information Division, Infectious Disease Surveillance Center, National Institute of Infectious Diseases, 1-23-1 Toyama Shinjuku-ku, Tokyo 162 8640, Telephone: 81 3 5445 2383, Facsimile : 81 3 5445 2382, E-mail: yukit@nih.go.jp

Dr Toru Chosa, Medical Officer, Infectious Disease Control, Bureau of International Cooperation, International Medical Center of Japan, Toyama 1-21-1, Tokyo 162-8655, Telephone: +81 3 3202 7183 Ext 2744, Facsimile : +81 3 3205 7860, E-mail: t-chosa@it.imcj.go.jp

Dr Phengta Vongphrachanh, Deputy Director, National Center for Laboratory and Epidemiology, Ministry of Health, Km 3, Thadeua Road Vientiane, Telephone: +856 21-312351, Facsimile : +856-21 350209, E-mail: Phengta@hotmail.com

Dr Anonh Xeuatvongsa, National EPI Manager, Department of Hygiene and Prevention, Ministry of Health, Km3, Thadeua Road, Vientiane, Telephone: 856-21-312352, Facsimile : 856-21-312120, E-mail: anonhxeuat@yahoo.com

Dr Chansay Pathammavong, Head, National Immunization Programme, Maternal and Child Health Centre, Ministry of Public Health, Nongbon Road, Xaysetha District, Vientiane, Telephone: +856 21 452519, Facsimile : +856 20 5606480, chansay_epi@yahoo.com

Dr Rohani Jahis, Principal Assistant Director, Disease Control Division, Ministry of Health Malaysia, Level 3, Block E10, Complex E, Federal Government Administrative Center, 62590 Putrajaya, Telephone: 603-8883 5510, Facsimile : 603-8888 6270, E-mail: rohbj@moh.gov.my

Dr Dorj Narangerel, Senior Officer, Communicable Diseases Control, Ministry of Health, Government Building VIII, Olympic Street-2, Sukhbaatar District, Ulaanbaatar-51, Telephone: 976 1 99113549, Facsimile : 976 1 1263631, E-mail: naraa61us@yahoo.com

Dr Budbazar Enkhtuya, Head, Immunization Department, National Center for Communicable Diseases, Namyangju Street, Bayanzurkh District, Ulaanbaatar 210648, Telephone: 976 11 451798, Facsimile : 976 11 458699, E-mail: enkhtuya37@yahoo.com

Mr Graeme Gillespie, Group Manager, Population health Protection, Ministry of Health. No. 1 The Terrace, Wellington, Telephone: 0064 4 8164370, E-mail: Graeme_Gillespie@moh.govt.nz
THE PHILIPPINES

Dr Marlow Ninal, Medical Officer VII and, Chief, Public Health Surveillance and Informatics Division, National Epidemiology Center, Department of Health, San Lazaro Compound, Rizal Avenue, Sta Cruz, Manila, Telephone: (632) 741-70-48, Facsimile: (632) 741-70-48
E-mail: marlow_ninal@yahoo.com

Dr Maria Joyce Ducusin, Medical Specialist IV, and EPI Programme Manager, National Center for Disease Prevention and Control, Department of Health, San Lazaro Compound, Sta Cruz, Manila
Telephone: (632) 732 9956, Facsimile: (632) 711 6130
E-mail: juducusin@yahoo.com

PAPUA NEW GUINEA

Dr Steven Toikilik, Manager, National Expanded Programme on Immunization, National Department of Health, P.O. Box 807, Waigani, N.C.D., Telephone: (675) 301 3752, Facsimile: (675) 323 0177, E-mail: stoikilik@cbsc.org.pg

Mr Barry Ropa, National Surveillance Officer, National Department of Health, P.O. Box 807, Waigani, N.C.D., Telephone: (675) 301 3730, Facsimile: (675) 323 0177, E-mail: berry_ropa@health.gov.pg

Dr William Lagani, Senior Specialist Medical Officer, National Department of Health, P.O. Box 807, Waigani, N.C.D., Telephone: (675) 301 3841, Facsimile: (675) 323 0177, E-mail: William_lagani@health.gov.pg

Dr Oka Nungu, National Coordinator, Supplementary Immunization Activities, National Department of Health, P.O. Box 807, Waigani, N.C.D. Telephone: (675) 301 3718, Facsimile: (675) 323 0177, E-mail: onungu@cbsc.org.pg

REPUBLIC OF KOREA

Dr Hoon Sang Lee, Senior Researcher, Korea Centers for Disease Control and Prevention, 5 Nokbeon-dong, Eunpyung-Gu, Seoul 122-701
Telephone: 82-2380-2921, Facsimile: 82-352-8235
E-mail: hs1810@cdc.go.kr

SINGAPORE

Mr Yuske Kita, Public Health Officer (Policy), Communicable Diseases Division, Ministry of Health, 16 College Road, College of Medicine Building, Singapore 169854, Telephone: (+65) 6325 9220, Facsimile: (+65) 63251168, E-mail: yuske_kita@moh.gov.sg

VIET NAM

Professor Do Shi Hien, Member, National EPI Management Board, National Institute of Hygiene and Epidemiology, No. 1 Yersin Street, Ha Noi, Telephone: 84 4 8214680, Facsimile: 84 4 8213782, E-mail: dshien@fpt.vn

Dr Nguyen Van Cuong, Deputy Manager, National Expanded Programme on Immunization, National Institute of Hygiene and Epidemiology, No. 1 Yersin Street, Ha Noi, Telephone: 84 4 9719891
Facsimile: 84 4 8213782, E-mail: vancuong@fpt.vn

Professor Nguyen Tran Hien, Director, National Institute of Hygiene and Epidemiology, No. 1 Yersin Street, Ha Noi, Telephone: 84 4 8210853, E-mail: ngtrhien@yahoo.com
4. REPRESENTATIVE

ADB
Dr Najibullah Habib, Asian Development Bank, 6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines

PATH
Dr Susan Hills, Programme Officer, Japanese Encephalitis Project, Programme for Appropriate Technology in Health, Children's Vaccine Programme, 1455 NW Leary Way, Seattle, Washington 98107-5136, United States of America, Telephone: +1 206 788 2487, Facsimile: +1 296 285 6619, E-mail: shills@path.org

Dr Asheena Khalakdina, Programme Officer, Immunization Solutions Global Program, Programme for Appropriate Technology in Health, Children's Vaccine Programme, 1455 NW Leary Way, Seattle, Washington 98107-5136, United States of America, Telephone: +66 (0) 2653 7563 Ext 108, Facsimile: +1 296 285 6619 E-mail: akhalakdina@path.org

GAVI
Dr Craig Burgess, Senior Programme Officer | Health Systems, Strengthening, GAVI Alliance, GAVI Alliance Secretariat, c/o UNICEF Palais des Nations, CH-1211 Geneva 10 Switzerland, Telephone: +41 22 909 6513, Facsimile: +41 22 909 6550 E-mail: cburgess@gavialliance.org

HONG KONG DEPARTMENT OF HEALTH
Dr Terence Cheung Yung-yan, Senior Medical Officer (Surveillance Section), Surveillance and Epidemiology Branch, Centre for Health Protection, Department of Health, 4/F, 147C Argyle Street, Kowloon, Hong Kong, Telephone: 852 2125 2230, Facsimile: 852 2711 0927, E-mail: terence_cheung@dh.gov.hk

JAPAN EMBASSY
Dr Norito Araki, Embassy of Japan, First Secretary (Health Attaché), Embassy of Japan, 2627 Roxas Boulevard, Pasay City 1300, Metro Manila Philippines, E-mail: keiza14@japanembassy.ph

JAPAN JICA
Ms Harumi Kitabayashi, Deputy Resident Representative, JICA Philippines Office, 40th Floor, Yuchengco Tower, RCBC Plaza, Ayala Avenue, Makati City, Philippines, Telephone: (632) 889 7119 Ext. 201, Facsimile: (^32) 889 6850, E-mail: Kitabayashi.Harumi@jica.go.jp

Dr Masahiko Hachiya, Chief Advisor, JICA Vaccine Preventable Diseases Control, and Surveillance Project in China, JICA China Office Room No. 400, Beijing Fortune Building, 5 Dong San Huan Bei-Lu, Chao Yang District, Beijing 100004, People's Republic of China, Telephone: (86) 10 65909250, Facsimile: (86) 10 65909255, E-mail: m-hachiya@it.imcj.go.jp

JAPAN RI-2650
Mr Chouhei Hashimoto, 2007-2008 Governor Rotary International District 2650, ABSL Building 301 Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Dr Goro Okamura, Past Governor and Special Adviser, World Community Service Committee, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Ms Akiko Okamura, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan
Ms Mitsuko Hirosaki, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Kiyoshige Konishi, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Syouichiro Maeda, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Kazuhiro Mavaribuchi, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Kousuke Hirata, Chairperson, World Community Service Committee, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Akira Ida, Rotary International District 2650, ABSL Building 301 Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Hideo Kishi, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Mr Kunikatsu Kumamoto, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

Dr Rokuro Matsubara, Rotary International District 2650, ABSL Building 301, Anekojidori Kawaramachi-Higashi, Nakakyo-ku, Kyoto 604-8005, Japan

KOICA

Mr Francis Afable, Program Officer, Korea International Cooperative Agency, c/o Korean Embassy, 18th Floor Pacific Star Building, Makati Avenue, Makati City 1226, Philippines, Telephone: +632 811 8268, Facsimile: +632 811 8284, E-mail: francis_afable@yahoo.com

UNICEF HQ/GENEVA

Dr Francois Gasse, Senior Health Specialist/Immunization, UNICEF HQ /Geneva, 5-7 Avenue de la Paix, 1202 Geneva, Switzerland, Telephone: +41 (0) 79 756 77 03, E-mail fgasse@unicef.org

UNICEF THAILAND

Dr Diana Chang Blanc, Regional Immunization Specialist, UNICEF EAPRO, 19 Phra Atit, Chanasongkram, Phranakorn 10200 Bangkok, Thailand, Telephone: +66 (0) 2 356 9499, Facsimile: +66 (0) 2 280 3563, E-mail: dchangblanc@unicef.org
UNICEF CAMBODIA  Mr Chum Aun, Immunization Officer, Assistant Project Officer-EPI, UNICEF, Cambodia, No. 11, 75th Street, Sangkat Srashak, Phnom Penh, Telephone: 855-23-426-214-5; 855-12-865-755, Facsimile : 855-23-426-284, E-mail: achum@unicef.org

UNICEF CHINA  Dr Xu Zhu, Health Specialist, Health, Nutrition and WES Section, NICEF China, 12 Sanlitun Lu, Beijing, China 100600, Tel: +86 10 65323131 x1605, Fax: +86 10 65323107, Email: xzhu@unicef.org

UNICEF MONGOLIA  Sureenchimeg Vanchinkhuu, Health and Nutrition Specialist, UNICEF, Mongolia, UN Bldg 2, UN Street 12, Sukhbaatar District, Ulaanbaatar 210646, Mongolia, Tel: (976-11) 312 183, 312 185, ext 107, Fax: (976-11) 327313, E-mail: svanchinkhuu@unicef.org

UNICEF PAPUA NEW GUINEA  Dr Anatoly Abramov, Chief, Health, Nutrition and WES Section, UNICEF, Papua New Guinea, Port Moresby, NCD, P.O. Box 472, Deloitte Tower, Level - 14, Douglas Street, Phone: (675) 321-3000 (ext. 370), Phone direct: (675) 308 7370, Fax: (675) 321-1372 E-mail: aabramov@unicef.org

UNICEF PHILIPPINES  Dr Ma. Marisa M. Ricardo, Project Officer, Immunization, UNICEF, Philippines, 31st Floor Yuchengco Tower, RCBC Plaza,, 6819 Ayala Avenue, 1200 Makati City, Telephone: (632) 901 0151, Facsimile : (632) 729 4525, E-mail: mricardo@unicef.org

US CDC  Dr Brenton Burkholder, Director, Global Immunization Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road MS E-05 Atlanta, GA 30333, Telephone: 404 639-8252, Facsimile: 404 639 8573

Dr Omer G. Pasi, Global Immunization Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road MS E-05, Atlanta, GA 30333, Telephone: (404)639-8751, Facsimile : (404)639-8676, E-mail: obp3@cdc.gov

Ms Margaret Thorley, Global Immunization Division, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road MS E-05, Atlanta, GA 30333, Facsimile : 404-639-8573, E-mail: mmt3@cdc.gov

Dr Joseph P. Icenogle, Division of Viral Diseases, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., MS C-22, Atlanta, GA 30333, Telephone: 404-639-4557, Facsimile : 404-639-4187, E-mail: jc1@cdc.gov

Mr Gabriel Anaya, Program Consultant/Project Officer GS-13, United States Department of Health and Human Services, Centers for Disease Control and Prevention, National Immunization Program, 1600 Clifton Rd. NE MS E-52, Atlanta, GA 30033, E-mail: gdal@cdc.gov
5. SECRETARIAT

WHO/WPRO

**Dr Takeshi Kasai**, A/Director, Combating Communicable Diseases, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632 528-8001, Facsimile: +632 521-1036, E-mail: Teeahsian@wpro.who.int

**Dr Yang Baoping**, Regional Adviser in Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632 528-8001, Facsimile: +632 521-1036, E-mail: yangb@wpro.who.int

**Dr Yoshikuni Sato**, Scientist, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632 528-8001, Facsimile: +632 521-1036, E-mail: satoy@wpro.who.int

**Dr Sigrun Roesel**, Medical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632-528-9741, Facsimile: +632-521-1036, E-mail: roesels@wpro.who.int

**Dr Youngmee Jee**, Scientist (Laboratory Virologist), World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632-528-8001, Facsimile: +632-521-1036, E-mail: jeey@wpro.who.int

**Dr David Sniadack**, Medical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632-528-8001, Facsimile: +632-521-1036, E-mail: sniadackd@wpro.who.int

**Dr Ernest Smith**, Medical Officer, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632-528-9746, Facsimile: +632-521-1036, E-mail: smithe@wpro.who.int

**Dr Manju Rani**, Scientist, Expanded Programme on Immunization, World Health Organization, Regional Office for the Western Pacific, United Nations Avenue, 1000 Manila, Telephone: +632-528-8001, Facsimile: +632-521-1036, E-mail: ranim@wpro.who.int

**Dr Jorge Mendoza-Aldana**, Short-term Professional (Data Management), Expanded Programme on Immunization, World Health Organization Regional Office for the Western Pacific, United Nations Avenue 1000 Manila, Telephone: +632-528-8001, Facsimile: +632-521-1036, E-mail: MendozaAldanaj@wpro.who.int
Dr Kohei Toda, Medical Officer, Expanded Programme on Immunization WHO Representative Office in Cambodia, No. 177-179 corner Streets Pasteur (51) and 254, P.O. Box 1217, Sangkat Chak Tomouk, Khan Daun Penh, Phnom Penh, Telephone: +855-23 216610, Facsimile : +855-23 216211, E-mail: todak@cam.wpro.who.int

Dr Stephen Hadler, Medical Officer, Expanded Programme on Immunization, WHO Representative Office in China, 401, Dongwai Diplomatic Office Building, Chaoyang District, Beijing 100600, Telephone: +8610 6532 7189 to 92, Facsimile : +8610 6532-2359, E-mail: hadlers@chn.wpro.who.int

Dr Yoshihiro Takashima, Medical Officer, Expanded Programme on Immunization, WHO Representative Office in China, 401, Dongwai Diplomatic Office Building, Chaoyang District, Beijing 100600, Telephone: +8610 6532 7189 to 92, Facsimile : +8610 6532-2359, E-mail: takashimay@chn.wpro.who.int

Dr Lisa Cairns, Medical Officer, Expanded Programme on Immunization WHO Representative Office in China, 401, Dongwai Diplomatic Office Building, Chaoyang District, Beijing 100600, Telephone: +8610 6532 7189 to 92, Facsimile : +8610 6532-2359 E-mail: cairnsl@chn.wpro.who.int

Mr Keith Feldon, Technical Officer, Expanded Programme on Immunization, WHO Representative Office in Laos, Ban Phonxay, That Luang Road, Vientiane, Telephone: (856) 21 413-431, Facsimile : (856) 21 413-432, E-mail: feldonk@lao.wpro.who.int

Dr Jamsran Mendsaikhan, National Programme Officer, WHO Representative Office in Mongolia, Ministry of Public Health, Government Building No. 8, Ulaanbaatar, Telephone: +976-11-320183, Facsimile : +976-11-324683, E-mail: mendsaihan@mog.wpro.who.int

Mr Richard Duncan, Scientist, Expanded Programme on Immunization, WHO Representative Office in Papua New Guinea, 4th Floor, AOPI Centre, Waigani Drive, Port Moresby, Telephone: (675) 325-7827, Facsimile : (675) 325-0568, E-mail: duncanr@png.wpro.who.int

Dr Howard Sobel, Medical Officer, Expanded Programme on Immunization, WHO Representative Office in the Philippines, c/o Department of Health, San Lazaro Compound, Rizal Avenue, Sta. Cruz, Manila, Telephone: +632-338-7479, Facsimile : +632-731-3914 E-mail: sobelh@phl.wpro.who.int

Dr Wang Xiaojun, Technical Officer, Expanded Programme on Immunization, WHO Representative Office in the South Pacific, Level 4 Provident Plaza One, Downtown Boulevard, 33 Ellery Street Suva, Fiji, Telephone: +679 3-304600, Facsimile : +679 3-304631, E-mail: wangx@sp.wpro.who.int
Dr Rudi Eggers, Group Leader, Immunization Systems Strengthening, Immunization Vaccines and Biologicals, Family and Community Health, World Health Organization, Avenue Appia 20, CH-1211 Geneve 27, Switzerland, Telephone: (41 22) 791 5051, E-mail: eggersr@who.int

Dr Cristiana Toscano, Vaccine Assessment and Monitoring, Immunization, Vaccines and Biologicals, Family and Community Health, World Health Organization, Avenue Appia 20, CH-1211 Geneve 27, Switzerland, Telephone: (41 22) 791 21 11, Facsimile: (41 22) 791 31 11, E-mail: toscanoc@who.int

Mr David Featherstone, Scientist and Project Leader, Global Measles Laboratory Network, Immunization Systems Strengthening, Immunization, Vaccines and Biologicals, Family and Community Health, World Health Organization, Avenue Appia 20, CH-1211 Geneve 27, Switzerland, Telephone: (41 22) 791 4405, Facsimile: (41 22) 791 4227, E-mail: featherstoned@who.int

Dr Esther de Gourville, Scientist and Project Leader, Global Polio Laboratory Network, Strategy Implementation Oversight and Monitoring, Polio Eradication Initiative, Representative of the Director-General Office, World Health Organization, Avenue Appia 20, CH-1211 Geneve 27, Switzerland, Telephone: (41 22) 791 2654/4372, Facsimile: (41 22) 791 5171, E-mail: degourvillee@who.int

Dr Fem Paladin, Virologist Immunologist, Global Polio Laboratory Network, Strategy Implementation Oversight and Monitoring, Polio Eradication Initiative, Representative of the Director-General Office World Health Organization, Avenue Appia 20, CH-1211 Geneve 27, Switzerland, Telephone: (41 22) 791 1347, Facsimile: (41 22) 791 5171, E-mail: paladinf@who.int
Measles & Rubella

High quality surveillance that is confirmed by satisfying standard performance indicators is critical to monitor effectiveness of measles elimination activities, identify residual chains of measles virus transmission and determine whether chains of transmission are due to endemic or imported measles virus. Surveillance for rubella may be conducted as part of measles surveillance.

1. Countries and areas are encouraged to use standard indicators and targets related to incidence, surveillance performance and population immunity for monitoring progress towards measles elimination and surveillance. Ten indicators recommended by WPRO for national and regional use are attached (Table). Feedback on the usefulness of these indicators should be provided within one year to the Regional Office for discussion at the next TAG Meeting.

2. Member States that remain with highly endemic measles virus transmission, or very large countries with highly endemic provinces, may intensify case based surveillance and monitor surveillance performance indicators gradually until measles incidence reaches a level in which achieving some indicators (e.g., adequate investigation and specimen collection from at least 80% of reported cases and collection of specimens for virus isolation and genotyping from 80% of transmission chains) is feasible.

3. Countries and areas without highly endemic measles virus transmission are encouraged to collect the core variable data needed to calculate indicators for monitoring case-based measles surveillance performance sub-nationally and nationally, and to share these data monthly with the Regional Office. This may require revision of existing case investigation forms and updating databases. Very large countries also should share data from the 2nd administrative level (i.e., province) when these sub-national levels have achieved relatively low levels of measles virus transmission.

4. To ensure sensitive reporting of suspected measles cases, reporting units should extend to the local health facility level.

5. Frequent communication among EPI Managers, Surveillance Managers, and Laboratory Officials to compare data and reconcile discrepancies. Unique Epidemiologic Identification (EPID) numbers should be used for each suspected case to facilitate comparison of data and prevent data errors.

6. All countries should ensure that rubella serology testing is conducted for all suspected measles cases that are IgM negative for measles.
7. Surveillance for congenital rubella syndrome should be developed and or strengthened to establish current levels of disability resulting from rubella infection and to monitor impact of rubella vaccine introduction and/or use.

**Poliomyelitis and AFP Surveillance**

1. Countries should strive to maintain or re-establish high-quality acute flaccid paralysis (AFP) surveillance that satisfies recommended performance indicators (including laboratory performance indicators) at the national and sub-national levels.

**Maternal and Neonatal Tetanus Elimination and Neonatal Tetanus Surveillance**

1. Countries should strengthen surveillance for neonatal tetanus at district level and establish case investigation and response systems to identify patterns of risk and inform elimination strategies.

**Diphtheria and Pertussis**

1. Countries consider conducting case based surveillance for diphtheria and pertussis, particularly, when DTP3 coverage reaches 90% or higher or if incidence of these diseases is believed to be low. Outbreaks of these diseases should be investigated with collection and analysis of case based data from suspected cases regardless of overall estimated disease incidence or DTP3 coverage.

**Surveillance for Diseases Targeted by New and Underutilized Vaccines**

1. All countries should establish or strengthen one or more high quality sentinel hospital surveillance sites to appropriately monitor disease burden and monitor impact of vaccine introduction on disease epidemiology. At least one national lab should be designated to test for pathogens targeted by priority new vaccines. As of 2008, these pathogens would include *S. pneumoniae*, *Hib*, *Japanese encephalitis virus* and *Rotavirus*.

2. A Regional sentinel surveillance network should be established incorporating the national sentinel surveillance sites and labs mentioned in recommendation no. 2. Data collected through these sites should be reported on a monthly basis to WPRO so that they may be shared with all Member States.

3. To estimate actual burden of disease and monitor impact of vaccine introduction on disease epidemiology, countries should identify national hospital morbidity and mortality data sources and, if available, monitor hospital data collected nationwide on admissions for meningitis/encephalitis and acute watery diarrhoea and make efforts to ensure completeness and accuracy of these data. These data should be reported by age group including <12 months, 1-4 years, 5-9 years and 10-14 years.

4. New vaccine surveillance systems should be incorporated into existing public health VPD surveillance systems in accordance with GFIMS recommendations.
### Table: Indicators and Targets Consistent with Measles Elimination, WPR

<table>
<thead>
<tr>
<th>Category</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incidence</strong></td>
<td></td>
</tr>
<tr>
<td>1. Absence of endemic measles virus</td>
<td>No endemic virus</td>
</tr>
<tr>
<td>2. Confirmed measles cases (by lab, epidemiologic linkage or clinically) †</td>
<td>&lt; 1.0 per 1 000 000</td>
</tr>
<tr>
<td><strong>High Quality Surveillance</strong></td>
<td></td>
</tr>
<tr>
<td>3. National reporting of discarded measles cases ‡</td>
<td>≥ 2 per 100 000</td>
</tr>
<tr>
<td>4. % of “districts” reporting ≥ 1/100 000 discarded measles cases ‡</td>
<td>&gt; 80%</td>
</tr>
<tr>
<td>5. % of suspected cases with adequate investigation within 48 hours of notification §</td>
<td>≥ 80%</td>
</tr>
<tr>
<td>6. % of suspected cases with adequate specimens §</td>
<td>≥ 80%</td>
</tr>
<tr>
<td>7. % of specimens with lab results ≤ 7 days after arrival to lab</td>
<td>≥ 80%</td>
</tr>
<tr>
<td>8. % of transmission chains with sufficient samples for virus detection #</td>
<td>&gt; 80%</td>
</tr>
<tr>
<td><strong>High Population Immunity</strong></td>
<td></td>
</tr>
<tr>
<td>9. MCV1 and MCV2 coverage ¶</td>
<td>≥ 95%</td>
</tr>
<tr>
<td>10. % of transmission foci or “outbreaks” with &lt;10 cases</td>
<td>≥ 80%</td>
</tr>
</tbody>
</table>

† Excludes imported cases, but includes import-related cases
‡ Discarded measles case: a suspected measles case (i.e., satisfies the suspected measles case definition) but is IgM negative, confirmed as a case of a different disease, or is epidemiologically linked to a confirmed case of a different communicable disease; “district” or administrative unit with >100,000 average population
§ Adequate investigation: collection of essential data elements (date of rash onset, date of specimen collection, vaccination status, date of last vaccination, date of birth or age, sex, district) and search for epidemiologically-linked cases
¶ Adequate specimen: sufficient volume of blood (0.5 ml sera, filled DBS card) or oral fluid collected within 28 days after rash onset. Excludes from the denominator cases that are epidemiologically linked to confirmed measles or to other confirmed communicable diseases (e.g. rubella)
# Transmission chain: ≥2 or more cases in which rash onset in one is 7–21 days after the other

Sufficient samples: oral fluid, naso-pharyngeal or throat swabs, urine, or dried blood/whole blood with anticoagulant for isolation of peripheral blood lymphocytes collected within 5 days after rash onset for virus isolation or within 3 weeks of rash onset for RT-PCR from at least five suspected cases for transmission chains with ≥ 10 cases, and from at least 2 cases for transmission chains <10 cases, early in any “outbreak” and every 2–3 months if transmission continues

¶ MCV1 and MCV2 coverage ≥ 95% is required nationally and in every district to prevent pockets of measles virus transmission
ANNEX 4

Recommendations from Laboratory Network Meeting
Manila, July 7-9, 2008

Increasing numbers of specimens and activities for the polio and measles laboratory networks and introduction of new vaccines in the Region has greatly increased the workload for regional laboratory coordination. To meet these rapidly growing demands, two additional Regional laboratory network coordinators are needed: one with expertise in virology and one with expertise in bacteriology.

Specific recommendations:

I. Polio Laboratory Network

1. Changes in the new accreditation checklists for the national polio laboratories (NPLs) and the regional reference laboratories (RRLs) should be implemented among network laboratories including 31 provincial laboratories in China as soon as possible. Standard operating procedures (SOPs) should be also revised to meet new requirements in the checklists. Emphasis on laboratory management and biosafety should be addressed accordingly.

2. It is encouraged to implement new algorithm for virus isolation (but can perform parallel polio neutralization test) and SOPs and laboratory database in each laboratory should be also revised and these changes should be shared with the regional laboratory coordinator. Management of polio laboratory database can be challenging if both traditional and new algorithm are used in the Region.

3. For the laboratories with frequent shipment of poliovirus isolates to RRL, introduction of intratypic differentiation (ITD) function can be considered.

4. Countries with low number of acute flaccid paralysis (AFP) samples and low non-polio enterovirus (NPEV) rates, supplementary enterovirus or environmental surveillance can provide additional information on sensitivity of laboratory surveillance.

5. All laboratories with ITD function will possibly establish a new real time polymerase chain reaction (PCR) ITD which is being developed by US CDC, Atlanta, once the methods are finalized: Australia, Japan, China, Hong Kong (China), New Zealand and Singapore.

6. Training of the laboratories with ITD function should be conducted in the Region during 2009 - six existing ITD laboratories and Malaysia.

7. All NPL without ITD function including provincial labs in China should forward positive samples to RRLs as soon as possible and the same EPID number should be used at all times.
8. Cell sensitivity testing should be performed on a regular basis at least once midway through 15 passages and the results should be reported to regional laboratory coordinators within 48 hours of completion of testing.

9. Considering that the network has not introduced the new algorithm yet, traditional virus isolation proficiency test (PT) which has been used in the past would be used for 2008 PT. Any lab shifting to new algorithm should be evaluated with the new panel and timeliness.

10. Until new CDC real time PCR and vaccine-derived poliovirus (VDPV) PCR are fully introduced among network ITD laboratories, current CDC PCR ITD can be used to differentiate poliovirus strains.

11. Since our Region does not have enough reagents for ITD ELISA, sequencing can use a second ITD method. A standardized protocol and proficiency test for polio sequencing method should be investigated.

12. Laboratories should maintain regular communications with national EPI or surveillance units and report laboratory data on a regular basis (at least monthly) to the regional laboratory coordinator.

II. Measles Laboratory Network

1. The new case-based laboratory reporting scheme should be used in all network laboratories where possible and network laboratories are requested to submit their monthly data for the previous month by 10th. This reporting will include a linelist and summary data for the year to date.

2. As recommended by the Global Measles Laboratory Network Meeting (Sep 2007), new checklists for the national and regional reference laboratories which emphasize the timeliness and completeness of genotyping and sequencing of measles viruses should be used for the accreditation of network laboratories.

3. Laboratories with capacities to perform isolation and molecular detection of measles and rubella viruses are encouraged to do so. Genotype information on circulating measles and rubella virus strains in all countries should be collected as much as possible and all countries are encouraged to collect genotypic information on measles and rubella strains by 2009. These data should be submitted to the WHO genotype database and also shared with the regional laboratory coordinator. Labs are also strongly encouraged to submit their sequence information to GenBank.

4. As implemented in the new checklist, results of virus detection and genotyping (if performed) should be completed within two months of receipt of specimens and data reported to WHO monthly, for at least 80% of samples appropriate for genetic analysis:

5. To ensure acceptable laboratory performances of the regional measles network, all network laboratories will be reviewed for accreditation by 2009.
6. A confirmatory testing mechanism should be established on a regular basis for all national laboratories in the Region to ensure the accuracy and quality of testing. The number of samples or selection of samples to be referred to RRL can be coordinated with the regional laboratory coordinator before samples are sent to RRL. The results of confirmatory testing should be shared with the global and regional laboratory coordinators. Possible reasons for any discordant results between national measles laboratories (NMLs) and RRL should be sought and immediate corrective actions should be taken in the NML.

7. All network laboratories are encouraged to perform anti-rubella IgM as well as measles IgM for Acute Fever and Rash samples as recommended by WHO. Laboratories should be prepared to receive and test specimens from congenital rubella syndrome (CRS) surveillance.

8. National laboratories should keep all measles and rubella positive samples for the global PT and for future virus identification. The Regional laboratory coordinator should be contacted before disposing any positive samples. Those laboratories with positive serum samples with volumes of greater than 0.5ml are encouraged to submit them to the WHO proficiency testing panel in consultation with the regional lab coordinator.

9. Laboratory training or workshops focusing on measles and rubella virus isolation and molecular detection will be provided to strengthen the capacity of the laboratories in 2009.

10. WHO will advocate for resources to strengthen the Measles and rubella regional LabNet and especially for supporting NMLs in priority countries.

11. Non validated Measles and rubella IgM ELISA kits used in network laboratories, including sub-national laboratories, should be evaluated using a validated panel of serum samples.

12. A mechanism for sample referral among PICs should be reviewed and re-established in the Region.

13. As IgM detection in serum samples remains the gold standard for laboratory confirmation of measles, ELISA employing DBS and oral fluid samples can be applied among countries with moderate to high measles incidence which have challenges in transporting samples to the nominated testing laboratory.

14. Efficient reporting and communication system should be established between national surveillance and laboratory staff. Network laboratories are encouraged to work with their surveillance colleagues to collect and test measles/rubella samples from all regions of the country.
III. Japanese encephalitis (JE) laboratory network development and laboratory integration and other issues

1. Potential global specialized laboratory (GSL) (1), RRL(1-2) and National laboratories should be identified by 2008. Terms of reference and governmental support will need to be negotiated.

2. The final version of WHO manual for the laboratory diagnosis of JE will be distributed to the network laboratories when finalized and this manual should be used as a guideline among JE laboratories in the Region.

3. Evaluation data on in-house and commercial JE IgM ELISA kits used in the Region should be collected and validated by early 2009.

4. Training workshop for the laboratory diagnosis of JE should be organized in the Region by early 2009.

5. Proficiency test panels for JE should be arranged for the network laboratories in the Region by 2009.

6. Laboratory capacity to support acute encephalitis syndrome surveillance and to detect bacterial antigens as well as JE should be established in the Region. The laboratory capacity for confirming bacterial vaccine preventable diseases (VPDs) will be strengthened by designating regional reference laboratories to confirm bacterial VPD in the Region.

7. Confirmatory testing mechanism similar to measles and rubella should be established to ensure the accuracy and quality of testing.

8. A formal accreditation system to evaluate the laboratory performances of the network laboratories should be established in collaboration with HQ and SEARO.

9. Preexisting VPD laboratory networks such as polio and measles/rubella should be utilized to establish the new laboratory network as much as possible for JE diagnosis in the Region. Validated ELISA kits will be provided to priority countries.

10. A Laboratory reporting system for JE network laboratories will be developed and distributed by 2008 and a laboratory information system to facilitate data management should be established by early 2009.