Meeting Report

Fifth Pacific Immunization Programme Strengthening (PIPS) Workshop

Nagasaki, Japan
11–15 May 2009

World Health Organization
Western Pacific Region
REPORT

FIFTH PACIFIC IMMUNIZATION PROGRAMME
STRENGTHENING (PIPS) WORKSHOP

Nagasaki, Japan
11–15 May 2009

Convened by:

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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NOTE

The views expressed in this report are those of the participants of the Fifth Pacific Immunization Programme Strengthening (PIPS) Workshop and do not necessarily reflect the policies of the World Health Organization.

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Keywords:

This report has been printed by the Regional Office for the Western Pacific of the World Health Organization for the participants of the Fifth Pacific Immunization Programme Strengthening (PIPS) Workshop, which was held in Nagasaki, Japan from 11 to 15 May 2009.
LIST OF ACRONYMS

AEFI: adverse events following immunization
AFP: acute flaccid paralysis
AFR: acute fever and rash
AusAID: Australian Agency for International Development
DTP: diphtheria-tetanus-pertussis
EPI: Expanded Programme on Immunization
EVSM: Effective Vaccine Store Management
FHSIP: Fiji Health Section Improvement Program
GAVI: Global Alliance for Vaccines and Immunization
GDP: gross domestic product
GIVS: Global Immunization Vision and Strategy
HBAS: hospital-based active surveillance
HepB3: third dose of hepatitis B vaccine
Hib: *Haemophilus influenzae* type B
HMIS: health management information system
HPV: human papillomavirus
IMR: infant mortality ratio
ITN: insecticide-treated bed net
JICA: Japan International Cooperation Agency
JPIPS: Japanese support to Pacific Immunization Programme Strengthening
KAPB: knowledge, attitudes, practices and beliefs
MCH: maternal and child health
MDG: Millennium Development Goal
MMR: maternal mortality ratio
MR1: first dose of measles-rubella vaccine
MYP: multiyear plan
NIP: National Immunization Programme
NZAID: New Zealand’s International Aid and Development Agency
PIPS: Pacific Immunization Programme Strengthening
PMS: post-marketing surveillance
PMTCT: prevention of mother-to-child transmission (of HIV)
RED: Reaching Every District
SAGE: Strategic Advisory Group of Experts (on Immunization)
SIA: supplementary immunization activity
SRCC: Subregional Committee for the Certification of Poliomyelitis Eradication in Pacific Island Countries and Areas
WHO: World Health Organization
UNICEF: United Nations Children’s Fund
US CDC: United States Centers for Disease Control and Prevention
VII: Vaccine Independence Initiative
VMAT: Vaccine Management Assessment Tool
VPD: vaccine-preventable disease
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SUMMARY

The Fifth Pacific Immunization Programme Strengthening (PIPS) Workshop was convened by the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF) in Nagasaki, Japan from 11 to 15 May 2009. The meeting was hosted by Nagasaki University and jointly organized by the Australian Agency for International Development (AusAID), United States Centers for Disease Control and Prevention (CDC), Japan International Cooperation Agency (JICA), New Zealand’s International Aid and Development Agency (NZAID) and the Secretariat of the Pacific Community. Workshop attendees included 12 participants from 10 Pacific island countries and areas, observers and representatives from Rotary International District 2650, Fiji Health Sector Improvement Programme, Nagasaki University, Kyushu Industrial Health Association Foundation, and a Secretariat comprising PIPS partners, namely JICA, JPIPS, CDC, NZAID, UNICEF and WHO.

The objectives of the workshop were:

(1) to review technical updates and implementation status, share information on National Immunization Programme (NIP) status and identify major obstacles in each country and area with regard to:

   (a) strengthening the NIP, including achieving or maintaining high routine immunization coverage, promoting good management practices and appropriate training, and maintaining vaccine security;

   (b) achieving the regional twin goals of measles elimination and hepatitis B control, and maintaining polio-free status;

   (c) accelerating introduction of new and underutilized vaccines based on rational decision-making;

   (d) achieving or sustaining high-quality vaccine-preventable disease (VPD) surveillance; and

(2) to agree upon practical recommendations, commitments and plans required for the above four areas.

Major action points that were recommended at the meeting were:

(1) Countries should consult with their relevant government ministries on options beyond 2010 for vaccine supply in the Pacific and give feedback to the PIPS Secretariat by July 2009 before the Pacific Health Ministers Meeting in Madang, Papua New Guinea.

(2) Countries should allocate available and new funds more efficiently and effectively to address bottlenecks to high routine immunization coverage

(3) Countries should systematically review gaps in achieving and sustaining measles elimination goal, ensure good implementation of the effective strategies recommended, and make urgent and adequate efforts in strengthening acute fever and rash surveillance.
(4) Countries yet to conduct a national hepatitis B serosurvey should schedule a national survey in the next one to three years among children 5 years or older to determine the rate of HBsAg positivity in line with WHO guidelines.

(5) Countries should strengthen their human resources, cold chain and logistics management systems to prepare for rapid vaccine deployment (<7 days) in the case of a pandemic. Pandemic preparedness plans should be reviewed and population groups should be identified and prioritized for vaccination (e.g. population needed to keep the essential services running) in case of vaccine shortages.

(6) Donors should support Pacific island countries with the introduction of high-priority new vaccines based on a model similar to the Pacific Hepatitis B Project in 1996.

Recommendations were also made for continued strengthening of routine immunization services. These included continuation of subregional training activities and in-country training; improved data management and use, including coverage data; implementation of the Reaching Every District strategies; improvement of surveillance activities, including assessment of performance of those responsible for hospital-based active surveillance in 2007–2009, and ensuring the most suitable staff take this task; countries continuing to procure either WHO prequalified vaccines or vaccines from countries that have a functional National Regulatory Authority; developing or updating a national plan of action to quickly detect and respond to importation of wild poliovirus; and ensuring proper and safe EPI waste disposal management.
1. INTRODUCTION

The Fifth Pacific Immunization Programme Strengthening (PIPS) Workshop was convened by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in Nagasaki, Japan from 11 to 15 May 2009. The workshop was hosted by Nagasaki University and jointly organized by the Australian Agency for International Development (AusAID), the United States Centers for Disease Control and Prevention (CDC), Japan International Cooperation Agency (JICA), New Zealand's International Aid and Development Agency (NZAID) and the Secretariat of the Pacific Community. The programme for the workshop is attached as Annex 1.

1.1 Objectives

(1) To review technical updates and implementation status, share information on National Immunization Programme (NIP) status and identify major obstacles in each country and area with regard to:

(a) strengthening the NIP including achieving or maintaining high routine immunization coverage, promoting good management practices and appropriate training, and maintaining vaccine security;

(b) achieving the regional twin goals of measles elimination and hepatitis B control, and maintaining polio-free status;

(c) accelerating introduction of new and underutilized vaccines based on rational decision-making; and

(d) achieving or sustaining high-quality vaccine-preventable disease (VPD) surveillance.

(2) To agree upon practical recommendations, and made commitments and plans for each of the above four areas.

1.2 Opening remarks

Eleven Pacific island countries sent at least one national representative to the workshop. Also in attendance were representatives and observers from each of the co-organizing agencies as well as the University of Nagasaki, Fiji Health Sector Improvement Programme, Rotary International District 2650, Kyushu Industrial Health Association Foundation, and the Japanese support to the Pacific Immunization Programme Strengthening (JPIPS) project, as were temporary advisers and consultants. A list of participants is in Annex 2.

The opening ceremony was chaired by Dr Yang Baoping, WHO Regional Adviser for the Expanded Programme on Immunization (EPI). It started with a devotional service led by Sr Sereana Tuwere.

Professor Masahiro Takagi, Vice-President of Nagasaki University, warmly welcomed representatives and participants to Japan and expressed his hope that they would have a chance to
enjoy the city. He expressed his sincere appreciation to all participants, particularly those from the Ministry of Health in each of the Pacific island countries, who have cooperated so fully with various PIPS national and regional activities aimed to help improve immunization service provision in the island countries. He also extended sincerest appreciation to the PIPS partners - JICA, WHO, UNICEF, AusAID and Rotary International, Japan – for their full support of all past and ongoing PIPS activities and expressed the hope that the commendable partner interaction of PIPS would continue. He stated that Nagasaki University, Institute of Tropical Medicine and Center for International Collaborative Research is very pleased to have played an active role in EPI in the Pacific island countries through the JPIPS technical cooperation project supported by JICA. Positive reviews from PIPS partners regarding the JPIPS project’s success in meeting its objectives and achieving its set goals in the island countries were gratifying. Professor Takagi expressed the hope that the workshop would be successful and that results of the workshop would be utilized to achieve further reduction in child mortality and morbidity through improved immunization service provision. He commented that difficult challenges lie ahead but that the participants are determined and committed to cooperate to ensure success. He closed by saying that it was an honour and a privilege to be hosting the meeting and to meet everyone.

Dr Shin Young-Soo, WHO Regional Director for the Western Pacific, was unable to attend the meeting, but his remarks were read by Dr Yang Baoping, WHO Regional Adviser for EPI. After warmly greeting dignitaries and participants, Dr Shin noted that the Expanded Programme on Immunization has had much success in the Pacific island countries and areas over the past decade. All Member States have remained poliomyelitis free, endemic measles virus transmission has likely been interrupted and chronic hepatitis B infection rates among children born after the launch of hepatitis B immunization programmes have been substantially reduced. Other vaccine-preventable diseases such as diphtheria, pertussis and tetanus have become rare. Pacific island countries as a whole are proactive in assessing the need for and introducing new or underutilized vaccines. All Pacific island countries except one will have introduced Haemophilus influenzae type B (Hib) vaccine by the end of 2009, and several Member States are either actively considering or have integrated pneumococcal, rotavirus and human papillomavirus (HPV) vaccines into their national immunization programmes. He noted however that sustaining and building on these successes require even greater efforts. The failure to sustain high routine immunization coverage has resulted in pertussis outbreaks in some islands in recent years, and supplementary immunization activities (SIAs) for measles must be implemented in several countries between now and 2010. Member States need to make better use of programmatic tools such as micro-planning, improved coverage monitoring, strengthening the cold chain, and vaccine management to further improve the performance of immunization service delivery systems and promote good management practices. Sustained efforts are needed to improve the quality of surveillance for acute fever and rash and acute flaccid paralysis to required standards. Capacity of Pacific island countries needs to be strengthened so that they can make informed decisions about the introduction of new vaccines, policy-making and resource mobilization. Partners and Member States need to work together to address weaknesses and to increase the public health impact of immunization services. He noted that this workshop would provide an appropriate framework to discuss these issues and coordinate the efforts of all partners.

Dr Yang Baoping conveyed Dr Shin’s comments that the performance of immunization services serves as a good proxy indicator of the overall health services delivery systems in any country. The public health environment is becoming very complex and has many competing priorities. While continued efforts are needed to make immunization services more effective, safe and efficient to maintain the confidence that communities and policy-makers have in immunization services, there is also a need to integrate primary health care services at the grassroots level, taking advantage of synergies across different primary health care programmes. He expressed appreciation for the relentless efforts of all PIPS partners in providing financial,
technical and logistical support to the Pacific island countries and particularly thanked Nagasaki University in Japan for hosting this meeting and also Japan's Ministry of Health, Labour and Welfare, JICA, and CDC for their financial support for the workshop. He shared a very special thanks to all of those participating and wished them a successful, productive and enjoyable meeting, and a very pleasant stay in Nagasaki.

Dr Isiye Ndombi, UNICEF Pacific Representative, formally greeted the meeting participants and representatives and thanked PIPS members and Pacific countries for making immunization the entry point towards improvement of health care generally and child survival programmes specifically. He expressed gratitude to Nagasaki University and JICA for hosting the meeting and to the participants who would report on country programmes and share experiences, good practices and lessons learnt. He commented that he was encouraged by the meeting going forward despite the current challenges in global health, particularly in view of the H1N1 pandemic, as this illustrates that current high-impact health strategies such as immunization must be maintained despite other challenges. He affirmed the importance of immunization but discussed lessons from the Gambian case studies in the early 1990s that documented the effect of replacement mortality. In Gambia, mortality remained high despite high immunization rates because children saved from measles died of malnutrition, malaria, diarrhoea and other illnesses. Immunization alone could not save the children. Therefore, while he encouraged participants to focus on strengthening immunization programmes, he reminded them that comprehensive health programmes that reach all children must be cultivated.

Dr Ndombi noted that good progress continues in immunization throughout the Pacific. New vaccines have been introduced in a number of countries and preparations for measles SIAs and campaigns in three countries are nearing completion. These campaigns will also serve to strengthen routine immunization and for the first time in the Pacific they will integrate vitamin A supplementation and deworming in addition to demonstrations of effective hand-washing. In Solomon Islands and Vanuatu, insecticide-treated bed nets will be distributed; while in Kiribati, birth registrations will be expanded. He outlined that the findings of the recent cold chain assessments in Fiji and Vanuatu called for improvements in capacities of human resources at all levels so that supplies are maintained and cold chain ensued. He pledged that UNICEF would address continuity and warmly thanked partners for continued support in these areas. He acknowledged that cold chain remains one of the most challenging areas in EPI in most Pacific island countries and areas and that UNICEF and partners will continue to offer support, particularly in light of the current pandemic threats. He emphasized the need to prepare to provide even more effective health care, despite current global challenges, remembering that children who are most marginalized are likely to suffer greatly at such times and their rights must be protected. To ensure good programming in EPI, all elements of the health system must be strengthened. A results-based approach in health care must embrace the following: results in policy, systems and legislation; results in coverage and quality of services; and results relating to changes in practices and quality of life at the family and community levels. He informed the group that the UNICEF Vaccine Independent Initiative (VII) is due for review by the UNICEF Board in 2010 and that it has been conveyed to UNICEF Headquarters and Supply Division that this initiative is critical to sustaining immunization coverage of children with low-cost, high-quality vaccines and must be continued past 2010. It is expected that Pacific partners and countries will be involved in the review and further discussions would be held during the meeting. Dr Ndombi concluded by thanking all those involved in the meeting and wishing for a fruitful and happy workshop that would result in enhanced immunization coverage and health systems of Pacific island countries and areas.

Mr Hidetaka Nishiwaki, Director General, Human Development Department, JICA, formally greeted and welcomed everyone. He expressed his delight at being present at this meeting because it is the final year of the Japanese support to the PIPS project, and because
Nagasaki University has contributed immensely to the project and PIPS partnership. He extended his heartfelt gratitude to WHO, UNICEF, Nagasaki University, and everyone involved in making preparations for this workshop. He expressed his belief that the discussions at the workshop would carry weight in the JPIPS project, which has been implemented based on the PIPS strategy. He recalled that JICA started the JPIPS project in 2005 with the ambitious goal of working with the PIPS partners to give each and every child in the target area access to immunization. The role of JPIPS is to contribute to the vitality of PIPS and the Expanded Programme on Immunization in the Pacific region by supporting capacity development in the partner countries and supporting their capacity to sustain the situation in which all children would have access to immunization. He expressed the hope that what has been achieved under the project will be sustained and developed further after the completion of the project in February 2010. To that end, partner countries’ ownership and the recognition that JPIPS will support them in cooperation with PIPS partners is important.

As many nations in the Pacific region have shown some progress in achieving the Millennium Development Goals, Mr Hidetaka explained that JICA has been implementing projects to contribute to reducing the child mortality rate of MDG4 and the maternal mortality rate of MDG5 through EPI. JICA believes that EPI constitutes an important part of interventions for protecting maternal and child health. In Japan after World War II, maternal mortality ratio (MMR) was about 180 and infant mortality ratio (IMR) was about 50. After 1970, these rates fell rapidly and the drop was made possible by such factors as immunization activities at public health centres and schools nationwide, visits to neonates by public health nurses, better health guidance, and community health activities. He commented that he had come from Tokyo to Nagasaki the day before and visited the Peace Memorial Hall and the Peace Statue. He reflected that successes in the Pacific were a reflection of ongoing programme efforts, just as peace was the result of continuing efforts. He expressed the hope that what has been achieved can be sustained and developed further. He closed by once more expressing his sincere appreciation to WHO, UNICEF, Nagasaki University, PIPS partners, and all who have used their valuable time and labour to organize the conference.

When the introductory speeches concluded each participant introduced himself/ herself to the group, and a group photograph was undertaken before a short coffee break.

2. PROCEEDINGS

2.1 Workshop objectives and implementation of 2008 PIPS workshop recommendations

Dr Eliab Seroney Some, Chief of Health and Sanitation, UNICEF Pacific Office, presented an overview of the 2009 workshop objectives (as outlined in section 1.1 above). He then listed specific objectives as:

1. to review progress on routine immunization, polio eradication, measles elimination and hepatitis B control, including immunization safety;
2. to review progress on introduction of new vaccines;
3. to discuss vaccine procurement and future options;
4. to discuss cold chain and vaccine management;
5. to review Japanese support to PIPS and gain a future perspective;
(6) to receive an update on seasonal and pandemic influenza; and

(7) to discuss strengthening health systems for EPI and other maternal, newborn and child health programmes.

Dr Some presented the 33 recommendations from 2008. Seventeen (52%) had been largely achieved and 16 (48%) had been partially achieved (Table 1). In effect, some progress had been made on all the recommendations. Dr Some commented that the number of recommendations had been growing with each meeting and to some extent their value was lost unless each country clearly identified which recommendations they would undertake. He suggested a new approach for this meeting whereby each presenter of a session would suggest key actions required of the countries and/or development partners. A matrix of key actions would be prepared from all sessions and presented for discussion by the end of the meeting. Country delegates and countries not attending the Fifth PIPS Workshop would then indicate their priority actions for 2009–2010.

**Table 1. Implementation status of 2009 PIPS workshop recommendations**

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<tr>
<th>Recommendation</th>
<th>Implementing group</th>
<th>Status</th>
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<tr>
<td>Strengthening national immunization programmes</td>
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<td>(1) Annual regional training should be co-organized by PIPS partners including the Fiji Ministry of Health if the latter agrees. Timing, content and participants should be reviewed and participating countries will ideally increase their proportion of cost sharing to secure financial sustainability.</td>
<td>1°: JPIPS; Fiji Ministry of Health; Pacific island countries 2°: Other PIPS partners</td>
<td>Achieved</td>
</tr>
<tr>
<td>(2) A mechanism to execute regional training and an operational plan should be developed by PIPS partners and presented at the PIPS workshop in 2009.</td>
<td>1°: JPIPS; Fiji Ministry of Health 2°: Other PIPS partners</td>
<td>Achieved</td>
</tr>
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<td>(3) Assisted by PIPS partners, countries should continue implementing comprehensive in-country training annually for all relevant health staff, including disease surveillance systems, vaccine management, cold chain management, micro-planning, EPI performance monitoring and new vaccine introduction.</td>
<td>1°: Country EPI Managers 2°: WHO; UNICEF; JICA; CDC</td>
<td>Partly achieved</td>
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<tr>
<td>(4) UNICEF should undertake a detailed assessment of vaccine procurement mechanisms and distribution to identify possible improvements. Included in this review will be country cold chain capacity and logistics, a review of VII ordering and invoicing processes and the total funds required in the VII to be sufficient when all countries are using Hib, and anticipating other vaccines likely to be introduced soon.</td>
<td>1°: UNICEF 2°: Country EPI Managers</td>
<td>Partly achieved</td>
</tr>
<tr>
<td>(5) Assisted by PIPS partners, countries should continue to make efforts to improve all aspects of their immunization programmes: planning, monitoring, feedback, supervision, motivation and assessment.</td>
<td>1°: Country EPI Managers</td>
<td>Achieved</td>
</tr>
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<td>(6) The importance of quality supervisory visits by senior EPI staff must be promoted. Regular supervisory visits should be conducted</td>
<td>1°: Country EPI Managers</td>
<td>Partly</td>
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at all levels with timing to be decided locally, but ideally these should be at least twice a year.

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<td>(7) Encouragement of multisectoral approaches to service delivery, incorporating integrated maternal and child interventions, including EPI, and reaching remote and outer islands and hard-to-reach areas.</td>
<td>1°: Ministries of health  2°: PIPS partners</td>
</tr>
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<td>(8) All Pacific island countries should increase EPI emphasis on low-performing provinces/districts and present subnational antigen coverage and numbers of unimmunized children during the next PIPS workshop.</td>
<td>1°: Country EPI Managers  2°: PIPS partners</td>
</tr>
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<td>(9) The Pacific EPI e-mail network should be utilized to facilitate easy communication among EPI managers and PIPS partners and to share information.</td>
<td>1°: WHO and CDC; other PIPS partners  2°: Country EPI Managers</td>
</tr>
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<td>(10) Transportation issues should be recognized as a constraint to reaching rural areas and PIPS partners should assist countries to explore funding sources.</td>
<td>1°: Ministries of health  2°: PIPS partners</td>
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<td>(11) PIPS-participating countries should develop, if necessary, and otherwise review and regularly update their Immunization Policy document and EPI Handbook. These should include cold chain and waste management policies, a catch-up schedule for those who have missed immunizations and “frequently asked questions and answers”.</td>
<td>1°: Country EPI Managers  2°: PIPS partners</td>
</tr>
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<td>(12) Countries should consider formulating policies regarding immunization status of children entering school, and where these currently exist they should be reviewed and enforced.</td>
<td>1°: Ministries of health  2°: PIPS partners</td>
</tr>
<tr>
<td>(13) Countries should review their capacity to maintain and repair cold chain equipment and address shortfalls where necessary.</td>
<td>1°: Ministries of health  2°: PIPS partners</td>
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<tr>
<td>(14) Pacific island countries should detect, report, investigate and respond to cases of adverse events following immunization (AEFI) and improve current national licensing practices.</td>
<td>1°: Country EPI Managers  2°: PIPS partners</td>
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### Countries and areas with routine MCV1 and MCV2 coverage insufficient for measles elimination

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<td>(15) SIAs will need to be conducted for several Pacific Island countries and areas in 2008 and 2009. Based on data reported from countries on the WHO/UNICEF Joint Report Forms, these should include Samoa in 2008; and Solomon Islands, Vanuatu, FSM, Kiribati, CNMI, American Samoa, Niue, Fiji and Tuvalu in 2009.</td>
<td>1°: Ministries of Health, WHO, UNICEF; Other PIPS Partners  2°: PIPS Partners</td>
</tr>
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<td>(16) Countries should begin planning for these SIAs as soon as possible and communicate with donors regarding funding needs.</td>
<td>1°: Country EPI Managers  2°: PIPS Partners</td>
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<td>(17) Countries should reflect vaccine requirements in their vaccine forecasting with UNICEF.</td>
<td>1°: Country EPI Managers  2°: PIPS Partners</td>
</tr>
<tr>
<td>(18) As the Commonwealth of the Northern Mariana Islands and American Samoa have not conducted measles SIA and have MCV1 and MCV2 coverage levels that would allow for ongoing measles virus circulation across wide age ranges, these US jurisdictions may consider <strong>catch-up campaigns</strong> targeting children 9 months to 14 years old in 2009.</td>
<td>2°: UNICEF</td>
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<tr>
<td>1°: Ministries of Health, CDC; Other PIPS Partners</td>
<td>Partly achieved</td>
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<th><strong>To achieve high quality, case-based measles surveillance</strong></th>
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<td>(19) Use WHO-recommended indicators for monitoring surveillance performance in the context of <strong>monitoring progress towards measles elimination</strong>.</td>
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<td>2°: WHO</td>
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| (20) Specifically, every country should identify at least two non-measles suspected cases per 100,000 population per year, and at least 80% of sporadic suspected measles cases should have blood specimens collected (either by venipuncture or dried blood spots) within 28 days of rash onset to confirm or discard as measles or rubella. | 1°: National EPI surveillance coordinator |
| 2°: WHO | Partly achieved |

| (21) Share core variable data from **measles case investigations** with WHO in Fiji by the 10th of every month. | 1°: National EPI surveillance coordinator |
| 2°: WHO | Partly achieved |

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<th><strong>Hepatitis B Control</strong></th>
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<td>(22) Doses beyond the birth dose may preferably be provided through combination vaccines such as DTP-HepB-Hib. Combination vaccines including DTP, hepatitis B and Hib are most appropriate for most countries.</td>
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<td>2°: WHO; UNICEF; JICA; CDC</td>
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| (23) PIPS partners should explore and mobilize donor support to provide a stock of Hepatitis B vaccine as Unject available to Kiribati, Solomon Islands and Vanuatu and other countries with a significant number of births occurring outside health facilities. | 1°: WHO; UNICEF |
| 2°: Other PIPS Partners; Country EPI Managers | Partly achieved |

| (24) The WHO Regional Office for the Western Pacific should collate a summary of existing data on HBsAg prevalence in Pacific island countries and areas and submit it as a package to the Expert Resource Panel to determine if any of the existing studies are adequate for certification. Existing studies that would be acceptable to the committee could then be shared with individual countries and areas to use for their application for certification. | 1°: WHO (South Pacific and Regional Offices) |
| 2°: Country EPI managers | Achieved |

| (25) Countries with sustained high hepatitis B immunization coverage and evidence of having achieved the regional target(s) are encouraged to seek certification of achievement of the regional target(s). | 1°: Country EPI Managers |
| 2°: WHO (South Pacific and Regional Offices); CDC | Achieved |
| (26) | The Expert Resource Panel should be requested to provide guidance on hepatitis B control certification requirements specific for Pacific island countries and areas. | 1°: WHO (South Pacific and Regional Offices) | Achieved |
| Maintaining polio-free status |
| (27) | The Subregional Committee for the Certification of Poliomyelitis Eradication urges Pacific island countries, particularly those with relatively large populations, to develop or update a plan of action to respond to importation of wild polio virus. | 1°: Country EPI Managers | Achieved |
| 2°: WHO (South Pacific and WPRO offices) |
| (28) | Countries must improve their hospital-based active surveillance and case investigation through training of hospital coordinators and physicians. | 1°: Country EPI Managers | Achieved |
| 2°: WHO (South Pacific and WPRO offices) |
| (29) | Countries should maintain at least 90% coverage with three doses of oral polio vaccine. | 1°: Country EPI Managers | Partly achieved |
| 2°: PIPS Partners |
| Accelerating introduction of new and under utilized vaccines |
| (30) | As soon as possible, PIPS Partners should mobilize external support for introduction of Hib vaccine (preferably in the form of a combination DTP-HepB-Hib vaccine) in the four remaining Pacific island countries that are yet to introduce it. | 1°: PIPS Partners | Achieved |
| 2°: Country EPI Managers |
| (31) | WHO should support additional disease burden and health economic assessments of pneumococcal disease, rotavirus and HPV disease in selected Pacific island countries and areas (for rotavirus particularly including countries with higher child mortality), both to inform decision-making and assist advocacy efforts. Pneumococcal conjugate vaccines with serotype coverage greater than the current 7-valent vaccine and HPV vaccine are recommended as being of high priority for all Pacific island countries and areas. | 1°: WHO (Regional Office and South Pacific Office) | Achieved |
| 2°: Country EPI Managers |
| (32) | Countries introducing new vaccines should implement comprehensive activities, such as cold chain assessment, social mobilization and health worker training, to prepare for smooth introduction and to exploit it as an opportunity to strengthen overall immunization services. | 1°: Country EPI Managers | Partly achieved |
| 2°: PIPS Partners |
| Venue of the fifth PIPS workshop |
| (33) | The kind offer to host the Fifth PIPS Partners Meeting in 2009 in Japan was unanimously endorsed by the meeting. | 1°: Country EPI Managers | Achieved |
| 2°: PIPS Partners |

## 2.2 Regional overview of EPI
Dr Yang Baoping announced that the Western Pacific Region has continued to make progress towards achieving global and regional goals of vaccine-preventable disease control, elimination and eradication. All countries in the Region have sustained polio-free status for more than eight consecutive years and completed phase I laboratory containment for wild poliovirus. Australia and the Republic of Korea have declared measles elimination, and Pacific island countries and areas have likely interrupted measles virus transmission. All countries in the Region have conducted case-based and laboratory-supported measles surveillance activities. Twenty-six countries, comprising approximately 70% of the regional population, have achieved the hepatitis B control goal (seroprevalence of hepatitis B surface antigen [HbsAg] is less than 2% in children at least 5 years old). An increasing number of countries have introduced many new and underutilized vaccines. Regional immunization coverage has been maintained at a level of over 90%, and importantly, the number of countries and districts achieving over 90% immunization coverage has increased.

Major challenges still remain, however. In 2008, about 789,000 children in the Region had not received three doses of diphtheria-tetanus-pertussis (DTP3) vaccine. Great efforts are needed to immunize these difficult-to-reach children. Regional population coverage of new vaccines, such as Hib is still low (<20%), although 24 of 36 countries have introduced Hib vaccine and achieved high immunization coverage. A budget shortfall of US$ 15 million (50%) is anticipated for EPI in 2010 and 2011, and a further US$ 15 million will be needed from external sources to maintain polio-free status in priority countries from 2009 to 2012.

2.3 Progress review of EPI in Pacific island countries and areas

Dr Xiaojun Wang, EPI Technical Officer, WHO Suva, started her presentation by pointing out wide variations in birth rates, population sizes and gross domestic product (GDP) within the Pacific region, all of which have an effect on EPI. For example, she noted a correlation in some countries between low GDP, larger populations and lower DTP3 coverage. She highlighted major achievements in the Pacific, including: reduction of vaccine-preventable diseases thereby contributing to MDG4; maintenance of polio-free status; interruption of measles indigenous virus transmission; reduction of the hepatitis B disease burden in young generations; good progress made toward introduction of underutilized/new vaccines; and intensified efforts to strengthen routine immunization services and capacity-building, which have been undertaken within the PIPS partnership in recent years.

Dr Wang emphasized that children are protected by vaccination, not vaccine, and that key programme areas require action in many countries. Many countries, for example, need to fill gaps between training and actual performance improvement. Furthermore, despite considerable support from partners, some countries still do not have effective, well-functioning cold chains, e.g. Solomon Islands and Vanuatu continue to deal with gas supply issues. Many countries still have weak vaccine management, resulting in both vaccine stock-outs and oversupply. In addition, EPI services providers often do not know the communities they serve, and health facility staff often fail to make immunization session plans or undertake sufficient outreach activities that target less accessible/remote communities. More tools and recommendations designed specifically for immunization safety in the Pacific are needed. Another concern is the quality of coverage data, which are often incomplete and not timely. Many countries have significant gaps between survey coverage and administrative coverage. Disease surveillance is still an issue in terms of completeness and timeliness of acute fever and rash (AFR) and acute flaccid paralysis (AFP) reporting. Considerable progress has been made with introduction of new vaccines with for example, all Pacific island countries but one now incorporating Hib into their schedules, but much work and many challenges remain.

2.4 Vaccine procurement and Vaccine Independent Initiative (VII)
2.4.1 Vaccine procurement and vaccine security

Ms Diana Chang Blanc, Regional Immunization Specialist, UNICEF EAPRO, explained that the UNICEF Supply Division procures vaccines and related immunization supplies on behalf of 80–100 countries globally. In 2008, UNICEF procured 2.6 billion doses of vaccine with a value of US$ 634 million, representing only 5% of the global market value. UNICEF supplies vaccines for Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and eight countries in the Western Pacific Region. In 2008, vaccines valued at US$ 651 951 were procured for Pacific island countries, of which 74% passed through the Vaccine Independence Initiative (VII) mechanism. A review by the UNICEF Board will determine whether VII will continue beyond 2010.

In order for UNICEF to ensure an uninterrupted, sustainable supply of affordable, quality vaccines (vaccine security), the Supply Division observes strict procurement principles and implements a comprehensive vaccine supply strategy. This encourages long-term agreements with multiple suppliers for multiple vaccines, and is predicated on accurate vaccine forecasting by individual countries. Pacific island countries need to improve accuracy in vaccine forecasting and ensure sufficient lead-time in ordering (at least three months). Furthermore, while the majority of Vaccine Arrival Reports for the Pacific island countries are received, improvements could be made in terms of timeliness and completeness.

2.4.2 Vaccine Independence Initiative: performance and future options

Dr Eliab Seroney Some presented the current situation with VII and considerations for potential changes in the future. Currently, 13 countries in the Pacific procure through VII. This mechanism was approved by the UNICEF Board for 2006–2010 and is being reviewed later this year for renewal after 2010. Presumably, if VII were approved for renewal beyond 2010, all Pacific island countries that are part of VII would prefer to stay. VII has been providing good-quality, low-cost vaccines in the Pacific since 1995 and is based on the WHO/UNICEF Pacific Regional Vaccines Procurement and Distribution System, involving bulk procurement, a central private cold store, local forwarder and customs clearance, and in-country storage and distribution by member countries. Donors (AusAID, NZAID, JICA) capitalized the initial Revolving Fund. Preplanning of vaccines and budgets is undertaken with technical support from WHO and UNICEF. UNICEF procures vaccines in a process that involves provision of cost estimates, international competitive bidding, establishment of long-term arrangements with vaccine manufacturers, internal and external quality control testing, procurement of only WHO prequalified vaccines, and shipment to a central private cold store in Fiji and to ports of entry in countries. Flexible credit terms enable the country to pay after the vaccine is received, although countries must sign a memorandum of understanding and the Ministry of Finance must issue a Letter of Financial Guarantee every two years or when there is a change in the funding ceiling.

In anticipation that VII may terminate, Pacific island countries and areas must begin to explore and consider a range of procurement options that are suitable to their regional and local context. When making decisions about the future, countries must consider their ability and capacity for ensuring an uninterrupted supply of vaccines, forecasting vaccine needs and budgeting, ensuring access to high-quality and low-cost vaccines, and ensuring access to foreign exchange. Dr Some presented table 2 summarising the options.
Table 2. Options available for Pacific island countries for procurement of vaccines beyond 2010

<table>
<thead>
<tr>
<th>Option</th>
<th>Description and key steps</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccine Use Independence Initiative</td>
<td>Use capitalized revolving fund to initiate orders through UNICEF and repay fund upon receipt of vaccine shipment. (1) Capitalization needed for all vaccines (2) Procurement by UNICEF (3) Credit facility – payment after delivery (4) Technical support from PIPS partners (5) WHO and UNICEF Secretariat</td>
<td>• Pacific island countries are familiar with this historically successful mechanism. • Payments for vaccines can be submitted after delivery.</td>
<td>• Programmed to run from 2006 to 2010. Mechanism is under review by the UNICEF Board for renewal past 2010. Will not be run by UNICEF for perpetuity. • Will require increasing capitalization with introduction of new vaccines.</td>
</tr>
<tr>
<td>UNICEF Procurement Services</td>
<td>UNICEF purchases and delivers supplies and equipment, as well as supply chain-related services, on behalf of government. (1) Payment in advance – 100% (2) Procurement by UNICEF (3) Credit facility – payment after delivery</td>
<td>• Countries can pay UNICEF prices for vaccine products. Only requires MOU between country and UNICEF, no letters of guarantee.</td>
<td>• Countries must submit payment to UNICEF before procurement order can be placed.</td>
</tr>
<tr>
<td>Regional Pooled Procurement</td>
<td>(1) Select a procurement mechanism: (a) information sharing and informed buying; (2) information sharing and coordinated informed buying; (3) group contracting; or (4) central contracting; (2) Set up revolving fund or trust fund that allows an empowered centralized unit to procure products on behalf of countries (3) Select a payment method: (a) advance payment of authorized purchases with reimbursements to the fund for the cost of each purchase, made within a specific time after delivery of the product; or (b) upfront payment for the cost (or part of the cost) of the products thereby not using the capital.</td>
<td>• Together, countries can increase their purchasing power and negotiate reduced prices. • Countries can reduce transaction costs by pooling resources. • If managed effectively, pooled procurement can ensure reliability, regularity and predictability of vaccine supply. • Promotes regional cohesion • Countries can access UNICEF procurement services to obtain competitive prices.</td>
<td>• Capital fund needs to be self-sustaining for all procured products. • Would require all countries agreeing on aspects such as control systems, location of functions, supplier and vaccine eligibility criteria, product specifications, quality control, terms of supply and delivery, and payment terms. • Risk of system collapse if it’s too complex or if members fail to harmonize their need and legal/financial frameworks.</td>
</tr>
</tbody>
</table>
### Independent Procurement

<table>
<thead>
<tr>
<th>Each country negotiates procurement directly with suppliers.</th>
<th>Country independence</th>
<th>Requires a functioning National Regulatory Authority to ensure vaccine quality.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• Increases transaction costs for all countries. There would be no economies of scale - vaccine prices would be very high as procurement orders would be small.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Requires national expertise in tendering, bidding and contracting.</td>
</tr>
</tbody>
</table>

### Procurement through donor countries

<table>
<thead>
<tr>
<th>Donor countries would finance and procure supplies on behalf of countries, at the same time as their own national procurement mechanisms.</th>
<th>If managed effectively, donor procurement can ensure reliability, regularity and predictability of vaccine supply.</th>
<th>Countries would pay prices set for donor countries, which are higher than UNICEF prices.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low transaction costs for countries</td>
<td>Countries may have less freedom of choice on products.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does not support self-sufficiency.</td>
</tr>
</tbody>
</table>

### 2.5 Japanese support to PIPS (JPIPS) and future perspective

#### 2.5.1 JPIPS activities in Pacific island countries and areas

Dr Kouchi Morita, Professor and Head, Department of Virology, Institute of Tropical Medicine, Nagasaki University, and Chief Adviser, JPIPS, explained that JPIPS is a technical cooperation project entrusted to Nagasaki University by JICA in March 2005. It is due for completion in February 2010. JPIPS targets 13 Pacific island countries and aims to achieve this goal: “All children in the target area are reached with potent vaccines according to the schedule.” The JPIPS project aims to strengthen human capacity in the area of immunization, including EPI epidemiology, vaccine logistics, cold chain maintenance and waste management, mainly through training activities in each of the participating countries. The JPIPS project, the Ministries of Health of each target country and relevant international organizations/donors are collaborating with each other to achieve the project objectives, and objectively verifiable indicators are used to monitor progress and evaluate the project performance.

During the life of the project, several indicators have shown encouraging improvements throughout the Pacific, including: vaccination rates greater than 80%; percentage of DTP1 and DTP3 dropouts less than 10% in each province/district; establishment of immunization policies addressing vaccine management, cold chain management, safe injection and safe disposal; annually updated cold chain inventory systems; and national EPI Plans of Action that addresses safe injection and EPI waste management. Challenges remain however, including ensuring that EPI coordinators and cold chain coordinators are trained appropriately and that all countries and areas are accurately reporting and utilizing vaccine wastage rates. Targeted training, supervisory visits and on-the-spot training are effective means of achieving overcoming these challenges.
Overall, JPIPS considers that the majority of objectives are achievable in coordination with PIPS partners by the end of the project.

2.5.2 Japanese support to PIPS (JPIPS) and future perspective

Ms Ryoko Kato, Programme Officer, Reproductive Health Division, Human Development Department, JICA Fiji office, indicated that although the JPIPS project is close to completion (February 2010), JICA would continue to support PIPS activities. JICA’s support to EPI and related issues may be part of the much broader context of “health systems strengthening” and the emphasis on integration of maternal, newborn and child health care systems. Human resource development for health in the Pacific region will be a primary focus. Technical cooperation for in-service training for health providers, including systems for continuity of care is expected to start in three Pacific island countries (Fiji, Tonga and Vanuatu) from 2010. Support for capacity development of training mechanisms for EPI-related service providers through regional and volunteer activities would be considered. Detailed activities will be planned by taking into account the results of the final review of JPIPS in July 2010 and the direction of other PIPS partners.

2.6 Cold chain and vaccine management

2.6.1 Effective vaccine store management assessment in Fiji

Sister Seini Ravea, National EPI Coordinator, Fiji, announced that she and Dr Kshem Prasad (UNICEF consultant) conducted an Effective Vaccine Store Management (EVSM) assessment in Fiji in March 2009, the first of its kind since the store was built in Suva in 2005. The assessment was based on the Ten Global Criteria that cover all aspects of vaccine store management. The overall result was 63%, indicating that there are still aspects that can be improved to reach the target of 80%. Gaps and strategic actions required to move forward have been identified with the aim to achieve the target of Fiji being the first Pacific country to achieve WHO-UNICEF EVSM Certification in 2010.

2.6.2 Cold chain and vaccine management assessment results in Vanuatu

Mr Leonard Tabilip, National EPI Coordinator, Vanuatu, described the process and results of a 2009 vaccine management assessment study that included the national vaccine store, six provincial stores and 15 health facilities. The study was conducted with the assistance of Dr Kshem Prasad (UNICEF consultant). Using 11 criteria, a number of strengths were identified, including good staff commitment, good support from some province managers, knowledge of correct storage conditions at national and provincial levels, sufficient storage capacity at national and provincial levels including storage space for the upcoming measles campaign, no failures of electrical equipment, physical verification of stocks carried out in some provinces, and matching diluents always used and cooled before use. Several improvements were also identified, including: use of only standard WHO-approved equipment; proper temperature recording twice every day; proper use of the vaccine refrigerator; the need for spare parts for repairs; and the need for improved stock keeping. Immediate needs are to ensure continuity of gas supply and to aim progressively to be totally solar powered, needing about 100 solar refrigerators over the next five years. It was identified that improved equipment and strengthened human resources are needed, with this latter to be achieved via capacity building at all levels with regular training and supervision. The upcoming measles campaign is seen as an opportunity to improve staff practices.
2.6.3 Key elements of vaccine management

Dr Ingrid Hilman, Child Survival Specialist, UNICEF Pacific Office, revised the key elements of cold chain and vaccine management. Many factors are important, including: use of approved cold chain equipment and devices with systems for temperature monitoring; regular equipment maintenance; good vaccine use and management; correct forecasting; good immunization service systems; safe disposal; adequate well-trained staff; and continuing supervision. Assessment tools, such as EVSM and the Vaccine Management Assessment Tool (VMAT), are helpful to help identify resource and training needs and develop in-country capacity to ensure sustainable improvements. The key issues identified can be addressed by developing a strong EPI team with capable technical staff, building a national team of EPI trainers and supervisors to support training of trainers, and strengthening the cold chain.

2.6.4 Cold chain analysis and maintenance

Mr Tatsuhiko Tsukakoshi, Vaccine Logistics Management, JPIPS Project Office in Suva, described the expansion of cold chain coverage in Fiji and Solomon Islands and noted that no area was currently in urgent need of equipment. He noted that while trained nurses are able to minor cold chain repairs, the capacity of cold chain managers must be strengthened to monitor vaccine stocks, distribution and vaccine wastage at all levels. Countries must also update their inventory lists and determine additional cold chain capacity (using two possible methods) to meet increased storage requirements; plan and find financing for refresher training on cold chain maintenance and repair for health workers and technicians; and specify a time-frame for equipment replacement (non-functional equipment that is more 10 years old may be not worth repairing) and outline procedures for the disposal of nonfunctional equipment. Training should be provided for cold chain technicians who are responsible for providing preventive maintenance on schedule and repair services as needed; developing guidelines and conducting technical assessments for unreliable or broken equipment; and creating a maintenance system including inventory management of spare parts and tools for repair.

2.6.5 Cold chain pandemic preparation

Ms Diana Chang Blanc acknowledged the generous grant given by the Government of Japan in 2006, which has allowed UNICEF to help more than 45 countries to prepare national systems to prevent, control and mitigate a potential catastrophic pandemic. Approximately US$ 8 million was used to implement a multipronged vaccine strategy that included strengthening national capacities to distribute vaccines. The development of vaccine to protect against Influenza A(H5N1) or Influenza A(H1N1) is plagued with production uncertainties. Nevertheless, if a vaccine is produced, the responsibility will fall on EPI to handle rapid distribution (<7 days) using the vaccine cold chain (2°C–8°C degrees). In preparation for this eventuality, countries should work now to bolster cold chain and logistics systems to ensure:

1. smooth airport arrival and brisk vaccine clearance process;
2. proper vaccine handling at national and subnational stores and efficient transport and distribution; and
3. effective control and communication systems.

Countries should strive to build human resource capacity to help support and facilitate these critical activities.
2.7 Service delivery

2.7.1 Essential elements of EPI service delivery

Ms Diana Chang Blanc presented the five operational components of the Reaching Every District (RED) strategy, namely:

1. re-establishment of outreach services,
2. supportive supervision,
3. community links,
4. monitoring and using data for action, and
5. planning and management of resources.

When re-establishing outreach, priority activities should be established after an analysis of the local situation is conducted to identify barriers to a community’s access to health services (DTP1) or utilization of services (DTP3). The situational analysis can be divided into four categories: high access/high utilization, high access/low utilization, low access/high utilization, and low access/low utilization. The activities to address these circumstances should be based on a micro-plan that is feasible and funded, as well as an activity schedule developed by health centres. Health workers should actively use monitoring tools available, such as immunization registers, health catchment maps, coverage monitoring charts and defaulter ‘tickler’ systems, to identify and follow up on missed groups or defaulters. Combining these activities with effective health worker training, frequent communication with the community and regular supportive supervision will enable health workers to find children that remain out of reach or have dropped out of their immunization schedule.

2.7.2 Success in raising coverage in Fiji

Sr Seini Ravae revealed that immunization has been low in Fiji, ranging from 70% to 85%, even though the Immunization Policy developed in 2004 aimed at 95% coverage until 2012. An EPI coverage survey conducted in 2005 showed 82% coverage with DTP3 and 76% coverage with the first dose of measles-rubella vaccine (MR1). A repeat survey in 2008 showed marked improvements, with coverage rates of 99% for 3 dose of pentavalent vaccine, 94% for MR1 94% and 93% for MR2. Factors that contributed to these increases were: appointing a National EPI Coordinator to monitor the programme; efficient coordination with JIPS/JICA and FHSIP/AusAID; training of EPI personnel at all levels including Fiji School of Medicine and Fiji School of Nursing; micro-planning training for managers and supervisors; increased cold chain equipment coverage for vaccine storage; effective vaccine delivery systems in place and implemented; reporting and networking for nurses (EPI Nurses Network) and the incentive of the immunization coverage competition and award.

2.7.3 Service delivery in Tuvalu

Ms Alaita Taulima, an EPI nurse, described the delivery of EPI services in Tuvalu. She provided details of services and acknowledged the gaps and areas that need strengthening. Main constraints are: transport, lack of knowledge held by health care providers and parents, and accessing the hard-to-reach children. Priorities are: increase the number of immunization sessions per week, set appointments with children’s mothers either using the media or directly tracing defaulters, and use radio programmes for advocacy on EPI. Improved transport is vital, as is in-country training, increased supervisory visits including semi-annual visits to outer islands, guaranteed supply of vaccine at national level, and improved waste management and
data management systems. To create and sustain an effective EPI system, the scope of delivery of EPI services needs to be evaluated and reassessed with support from PIPS partners.

2.8 Coverage monitoring

Dr Wang started her talk by describing coverage monitoring scenarios that she has encountered when visiting Pacific island countries and areas. From these visits, she learnt the following: (1) complete data sets are being compromised by health facilities not submitting timely monthly reports and supervisors/managers not following up on missing reports; (2) poor accuracy means that the target population is grossly underestimated and administrative coverage can be quite different from actual coverage; and (3) data, although submitted monthly, are being analysed annually and used for reports and documentation rather than action, with little attention to completeness and therefore accuracy of extrapolations. Practical solutions are: keep accurate birth registers so that the target population is known and updated in a timely manner, and maintain vaccination records by child (or woman) and vaccine. Data should be accurately consolidated monthly with correct recording in immunization register books, on tally sheets and on coverage charts hanging in health facilities. Timely reports should be submitted every month to central levels. Motivating activities such as awards for the best performing health facility should be considered.

2.9 Influenza: seasonal and pandemic influenza virus: the risk of epidemics and pandemic and the role of vaccination

Dr Manju Rani, Scientist, EPI, WHO Regional Office for the Western Pacific, initially clarified that ‘flu’ is an upper respiratory tract infection caused by influenza virus that may be complicated by lower respiratory tract infections. Flu has a seasonal pattern most obvious in temperate climates and causes approximately 250,000 to 500,000 deaths worldwide annually. Transmission is by droplets or aerosol and incubation period is 1–5 days. Influenza A is largely the cause of big epidemics. Virus particles are enveloped with a lipid bilayer that includes Hemagglutinin (HA) and Nueraminidase (NA) proteins. Currently, 16 recognized HA proteins and nine NA proteins circulate widely in nature. Human epidemics have been caused by subtypes H1N1, H2N2 and H3N2. Gradual mutations in the HA surface protein over time allows the virus to evade our immune system year after year, as last year’s vaccine will no longer be effective. In contrast, pandemics are caused by an antigenic shift, where a major change in the viral HA or NA proteins occurs through reassortment with other influenza viruses circulating in natural reservoirs, and produces a substantially different sub-type from strains that have been circulating in humans for many preceding years. As a result, a high proportion of people in the community are susceptible. There is high person-to-person transmissibility of the new virus and often high morbidity and mortality with an observed higher proportion of deaths in younger adults during pandemic years. Major pandemics have been the Spanish flu A(H1N1) in 1918, which caused 40–50 million deaths, Asian flu A(H2N2) in 1957, which caused 2 million deaths, and 1968 Hong Kong flu A(H3N2), which caused 1 million deaths. It is estimated that a new pandemic may affect 20–30% of the world’s population, and will spread faster than previous pandemics because of globalization, leading to enormous social and economic disruption. Hopefully health systems will be better able to cope, but mortality and morbidity will depend largely on the virulence of the strain. Avian flu A(H5N1) has high mortality but is not easily transmissible, while Pandemic (H1N1) 2009 has low mortality but is highly transmissible, but reassortment of the two to produce a new variant could be very dangerous.

Current influenza vaccines are injectable trivalent inactivated vaccines (TIV) or live attenuated vaccines that come as a nasal spray. This season’s flu vaccines contain two A virus strains (H1N1, H3N2) and one B type. They are licensed for populations over 6 months of age. Flu vaccines need to be given every year with average duration of protection only four to six
months. Protection will depend on a good match between vaccine antigens chosen for that year (based on surveillance data from the WHO global influenza surveillance network) and those viruses circulating.

Dr Rani explained that vaccine production takes at least four to five months after identification of a pandemic viral strain. A country’s capacity to procure and deploy the vaccine will determine its use. Guidelines developed by WHO emphasize the necessity of rapid deployment of vaccines and antivirals during a pandemic. Dr Rani touched upon the approach that calls for initial rapid containment of a virus with pandemic potential at the point of emergence and then highlighted the complex and difficult decisions with ongoing public health measures.

2.10 Polio eradication

2.10.1 Gaps and actions: maintaining polio-free status

Dr Lisi Tikoduadua, Consultant Paediatrician, Chairperson of the Subregional Committee for the Certification Poliomyelitis Eradication, described how Pacific island countries and areas are still at risk of reintroduction of polio because of lapsing attention to high immunization coverage and good surveillance. Fiji has successfully improved coverage of the third polio dose through improved knowledge and skills via training. Hopefully, other countries can follow Fiji’s example. AFP surveillance remains dangerously inadequate throughout the Pacific, with the norm being non-reporting or late reporting, incomplete information, inadequate stool collection for investigation, and 60-day follow-up not done. She recommended that clinicians or hospital coordinators should receive further training on surveillance, and that community awareness activities should be conducted at all levels to avoid inadequate or late (beyond 14 days) presentation of stool for analysis. She also recommended that all countries should have a plan of action in place to respond timely and appropriately to the importation of wild poliovirus.

2.11 Measles elimination

2.11.1 Regional measles elimination update: change we can believe in

Dr David Sniadack, Medical Officer, EPI, WHO Regional Office for the Western Pacific, reported recent or upcoming changes in approaches to measles elimination. The goal set forth in the Global Immunization Vision and Strategy (GIVS) is for a 90% reduction in deaths from measles by 2010, as compared to 2000. In May 2008, at the 61st World Health Assembly, the representative from Bahamas requested to examine the feasibility of global measles elimination and to present its report to the Executive Board in May 2009. This request was endorsed at the November 2008 meeting of the Strategic Advisory Group of Experts (SAGE). A final report is due in May 2011 after global consultation.

The following recommendations were put forth at the SAGE meeting in April 2009:

1. MCV2 may be added to the routine immunization schedule in countries that have achieved >80% MCV1 coverage for three consecutive years at the national level as determined by WHO/UNICEF estimates.

2. Countries with ongoing measles transmission and MCV1 delivered at 9 months of age should administer MCV2 at 15–18 months of age to confer early protection of the individual, slow accumulation of susceptible young children, and reduce risk of outbreaks, with a minimum interval between MCV1 and MCV2 of one month. In countries with very low measles transmission (i.e. near elimination), MCV1 can be administered at 12 months
to take advantage of higher seroconversion rates at this age compared with 9 months and an optimal age for administration of routine MCV2 should be selected to achieve the highest population immunity.

(3) Both MCV1 and MCV2 should be recorded on the child's immunization card and in the clinic vaccination register. A systematic effort to check vaccination status of all children at school entry is recommended to ensure that they have received at least two doses of measles vaccine and other needed vaccines.

(4) In countries that rely on regular SIAs to achieve high population immunity, cessation of SIAs should be considered only when both MCV1 and routine MCV2 coverage is greater than 90%-95% for three consecutive years at the national level as determined by the most accurate means available.

Dr Sniadack noted that measles vaccination coverage in Pacific island countries and areas has been steadily climbing in the last two decades, but remains patchy, although measles incidence is <1 per million people. Completeness and timeliness of measles surveillance data reported to the WHO Regional Office remain poor. Several Pacific island countries and areas are undertaking measles SIAs within the next year, with a total target population of 136,000 children.

2.11.2 Lessons learnt from detection of measles cases in Fiji in 2009

Ms Kylie Jenkins from the Fiji Health Sector Improvement Program (FHSIP), an AusAID-funded initiative, presented the lessons learnt from the detection of two cases of measles in Fiji and the subsequent notification of 45 cases of acute fever and rash from three divisions. In January 2009, a small cluster of AFR cases was detected. Subsequent case investigations and serological testing, however, revealed that these cases were not due to measles or rubella viruses. Toward the end of January 2009, the Ministry of Health was notified of a serologically confirmed case of measles, and a second case was identified three weeks later. A thorough investigation of both cases revealed no significant history of exposure or travel. Both children were less than 12 months of age and were therefore ineligible for vaccination under the current Fiji Childhood Immunisation Schedule. The notification of these two cases prompted the Ministry of Health to enhance surveillance and to encourage zero reporting in all divisions. Enhanced surveillance was also extended to private practices and general practitioners were encouraged to notify cases of AFR. Of the 45 cases of AFR notified to the Ministry of Health in 2009, 71% came from the main children’s hospital.

Ms Jenkins highlighted the importance of thorough case investigations when sporadic cases of measles are identified, with the aim of identifying the source of infection and potential secondary cases. Strengthening of syndromic surveillance is needed within Fiji. Regular meetings between public health and laboratory staff are essential to ensure rapid case identification, notification and proper serological testing. Ms Jenkins emphasized that by far the best protection against a large-scale measles outbreak is high coverage with MCV. Fortunately, Fiji's recent immunization coverage survey results indicated MR1 coverage to be 94%.

2.11.3 Lessons learnt from a review on hospital-based active surveillance performance

Dr Wang gave a presentation on the hospital-based active surveillance system that was set up by WHO in 1997, combining active surveillance for AFP, AFR and neonatal tetanus (NT) cases. The system requires monthly zero reporting. After reviewing measles data from Fiji (2006, 2008), Pacific-wide surveillance data and rubella data from Samoa (2003/2004), a number of specific recommendations to improve case detection and notifications were made:
(1) Conduct on-the-job sensitization sessions for key staff in each divisional hospital focusing on surveillance, case management and case definition.

(2) Carry out advocacy presentations on AFR/AFP surveillance to medical associations.

(3) Develop and conduct well-structured competency-based training using different training methodologies (lectures, brainstorming, group discussions, simulations, etc.) for medical staff.

(3) Adopt a new notification system for remote reporting sites, e.g. by radio-telecommunication or telephone, with proper registration of telephone calls or phone texts.

(4) Provide all reporting sites with information, education and communication (IEC) materials (WHO/UNICEF), including posters for case definition, flow charts for reporting, contact numbers, national guidelines and standard operating procedures for case investigation and specimen collection.

(5) Undertake analysis of data and give feedback to increase trust and reporting compliance.

(6) Carry out informal sensitization of private sector and school health systems. Establish a link with nearest health care facility.

(7) Develop a cascaded plan for supervision that indicates the supervisors at each level, sites selected for supervision, timeline and cost.

Dr Wang recommended the following immediate actions: raising community awareness with the aim of addressing late case detection and notification; improving monthly reporting as well as case detection, notification and investigation by conducting training that targets hospital coordinators and beyond; developing and distributing IEC materials; and improving communication among those involved in surveillance.

2.11.4 Supplementary immunization activities in 2008-2009

2.11.4.1 Measles SIA in Samoa in 2008

Mrs Fuapepe Iese Manuleleua, National EPI Coordinator, National Health Services, Samoa, opened her talk by sharing the vision of “a healthy Samoa”, that being, a place where children are nurtured in body, mind and spirit (Samoa Health Sector Plan 2008-2018). This aspiration is in accordance with WHO and UNICEF approaches to improve routine vaccination and case-based surveillance for vaccine-preventable diseases, and to encourage introduction of new vaccines to reduce child mortality and improve maternal health. Samoa aims to provide the first dose of measles vaccine to all children at 12 months, with the second dose at 15 months, and to establish a system to monitor coverage and conduct measles surveillance. It was recognized that a supplementary campaign was needed to achieve over 90% measles coverage. After a planning meeting with the manager of nursing and principal nurses, plans were made to train vaccinators on both of the two islands. A budget was allocated for all expenses, including transportation, training and media publicity. Vaccination started on 9 June 2008 and the campaign finished on 4 July 2008. The target population (children 12 to 69 months) was 25 300. The campaign successfully immunized 23 064 children and therefore achieved 91% coverage.

2.11.4.2 Integrated measles campaign in Vanuatu
Mr Leonard Tabilip explained that the specific objectives of the upcoming SIA in Vanuatu are: to cover at least 95% of children aged 12 months to 4 years with the measles vaccine, vitamin A and deworming tablets; to strengthen routine immunization by building the capacity of health staff; to reach children and families previously un-reached by the immunization services; to improve micro-planning capacity, monitoring and logistics; to rehabilitate the cold chain; and to improve measles surveillance. The campaign has two phases with a rolling over strategy. Children aged 6 months to 11 months will be given vitamin A only, those aged 12 months to 59 months will be given measles vaccination in addition to vitamin A and mebendazole, and all children between 6 months and 59 months will be given bed nets. All parents and children will receive demonstrations of effective hand-washing.

Vanuatu is on track with planning and implementation of this integrated measles campaign, with a target of 99% coverage, and it is hoped that providing integrated services will boost coverage as well as yield other health benefits. It is anticipated that there will be an immediate positive influence on routine immunization services via strengthening of staff skills and improved EPI practices.

2.11.4.3 Preparation for measles SIA in Kiribati

In his presentation, Dr Teatao Tira, Public Health Officer, Ministry of Health and Medical Services, Kiribati, highlighted the geography of Kiribati, objective of the SIA, workplan, obstacles faced during the preparedness phase and what has been done to counter these obstacles. Because of the isolation of the Kiribati islands, the main challenges will be accessibility, delivery of the vaccines and transportation of SIA staff. The hot climate and high sea spray add to the difficulty by contributing to the short lifespan of the cold chain equipment. The objectives of the SIA are: to achieve measles elimination; to achieve 95% coverage; to provide vitamin A supplementation and deworming tablets; to improve data; to improve staff capacity including micromanagement skills; and to rehabilitate the cold chain system.

Activities carried out by MHMS Kiribati have been: plan for mass measles vaccination and EPI strengthening proposed and endorsed; joint Government of Kiribati, UNICEF and WHO operation initiated; operational guidelines and structure of integrated measles campaign developed; situational analysis, procurement and staff enlistment completed; and training of trainers for micro-planning and implementation undertaken. Remaining activities include: training of vaccinators, development of micro-plans, establishment of supervision and monitoring system, and campaign implementation. A number of obstacles have been identified, including: data management (from recording to analysis), maintenance of fridges, transportation between the islands, high staff turnover and unrealistic terms of reference, and training. It has been recognized that the way forward for Kiribati includes data improvement, working as a team, improved monitoring, good cold chain maintenance, implementation of a maternal and child health strategy, improved birth certification and registration, improved continuity of care, encouraging behavioural change, support of government and policy-makers and improved external and internal funding.

2.12 Hepatitis B control

2.12.1 Accelerating hepatitis B control and evaluating the process

Dr Manju Rani noted that the effective early introduction of hepatitis B vaccine in the Pacific with time-limited, coordinated external support serves as a model for introduction of other new vaccines. Progress on each of the eight strategies to control hepatitis B, as outlined in the Regional Plan, is summarized in Table 3.
Table 3. Progress on the eight strategies to control hepatitis B in the Regional Plan

<table>
<thead>
<tr>
<th>Strategies to control hepatitis B in the Regional Plan</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Universal infant immunization</td>
<td>Low coverage remains a concern in some countries. Countries must aim to achieve at least 85% in 2009.</td>
</tr>
<tr>
<td>2. Birth dose within 24 hours + HBIG (where resources allow)</td>
<td>Coverage is still low in some countries. Why is the birth dose coverage reported as lower than the institutional delivery care? Is this is a reporting error with lack of careful monitoring? Training nurses and doctors in all the maternity wards will increase likelihood of timely birth dose. Avoiding stock-outs of the vaccine is important. Consider use of Unijet for births outside of institutions.</td>
</tr>
<tr>
<td>3. Catch-up immunization of older children (5; 5–15 years)</td>
<td>With catch-up immunization, the first priority is to ensure 100% vaccination for children under 5, followed by immunization of children 5 to 15 years old and, if resources allow, those older than 15 years. Some countries have done catch-up immunization of their whole population at the time of introduction. Countries need to check the year of introduction and check coverage when making these decisions.</td>
</tr>
<tr>
<td>4. Immunization of high-risk adult population groups, with health workers the first priority</td>
<td>Countries are encouraged to check if they have a policy and clarify who is responsible for implementation. It is recommended to carry out one-time catch-up immunization for all health workers if it has not been done and then annual immunization for new health workers.</td>
</tr>
<tr>
<td>5. Self-reliance for hepatitis B vaccine financing</td>
<td>All Pacific island countries and areas finance hepatitis B vaccine with their own funds.</td>
</tr>
<tr>
<td>6. Ensuring vaccine potency by preventing freezing</td>
<td>All countries need to ensure an adequate cold chain and good vaccine management.</td>
</tr>
<tr>
<td>7. Advocacy and social mobilization</td>
<td>Education and advocacy need to be undertaken with health workers and parents.</td>
</tr>
<tr>
<td>8. Inclusion of hepatitis B goals and targets in the multiyear immunization plans</td>
<td>Countries need to ensure this is done.</td>
</tr>
</tbody>
</table>

Dr Rani then discussed evaluation of hepatitis B vaccination by serosurveys as a means to validate reported coverage and vaccine quality. Achievement of the hepatitis B control goal is based on HBsAg positive rates among children 5 years or older, born after the start of a nationwide infant vaccination programme, with persistence of HBsAg for six months as a marker for chronic infection. If there has been high vaccination coverage (HepB3 and hepatitis B birth dose) with potent vaccine, the percentage of children testing positive for HBsAg should be low. Few countries have undertaken the nationwide surveys needed to assess progress and to advance the programme further. If funds allow, surveys should use enzyme-linked immunosorbent assay, or ELISA (standard test), for HBsAg, AntiHBs and AntiHBC; otherwise, rapid tests can be used to simplify logistics. The point estimates of HBsAg prevalence among children 5 years or older
have to be less than 2% for the interim goal and less than 1% for the final goal. The accuracy of the estimates of HBsAG should be within ±0.5% with 95% confidence. Dr Rani described the certification process in detail and how hepatitis B vaccine coverage and seroprevalence data are both important in this process.

2.12.2 Findings of hepatitis B survey in Fiji

Mr Tsukakoshi described the survey undertaken in Fiji in 2008 that assessed micronutrient status (vitamin A, iron and zinc) and hepatitis B markers among children aged 6 months to less than 5 years. The survey was supported by the Fiji Ministry of Health, JICA, Nagasaki University, JPIPS and Rotary International District 2650. Objectives of the survey were: to determine the prevalence rates for HBsAg as a key indicator of ongoing Hepatitis B virus infection; to determine the prevalence rate of hepatitis B surface antibody (anti-HBs); to assess immunity level against hepatitis B; and to determine the prevalence rate of antibody to hepatitis core antigen (anti-HBc), which is a marker of past Hepatitis B virus infection. Three subdivisions were chosen to represent the three main divisions in Fiji. Blood samples (5 ml) obtained by venipuncture from healthy children were analysed by passive hemagglutination (PHA) and ELISA. Health cards were reviewed. None of the children was found to be HBsAg positive, but eight children who had completed HepB immunization were susceptible (HBsAg, anti-HBs, anti-HBc negative), suggesting that they had not received potent vaccine. When coverage data were reviewed, it was apparent that coverage was very high, although 15% of children received the first dose of hepatitis B vaccine late. Limitations of the study included lack of sampling in remote areas, exclusion of children 15 years or older because of the micronutrient component, and sampling size was not compatible with WHO guidelines. Overall, however, the survey indicated that Fiji’s immunization programme has been effectively delivering the first and subsequent three doses of hepatitis B vaccine to over 95% of the population and supports the contention that hepatitis B infection is almost completely preventable by immunization.

2.13 Introduction of new vaccines

2.13.1 Update on available new vaccines

Dr Manju Rani described 2000–2007 as the “golden years” for vaccines because of the landmark introduction of technologically complex vaccines that can significantly impact on MDG4 and MDG5. New vaccines can attack important causes of childhood mortality, morbidity and disability. Thirteen percent of childhood deaths are due to pneumonia (reduced by Hib and pneumococcus vaccines), 17% to diarrhoea (reduced by rotavirus vaccine), and 17% to acute meningitis (reduced by Hib, pneumococcus vaccines). Pneumonia and diarrhoea are major causes of hospitalization among children under 5 years, while meningitis can lead to childhood disability. In addition, premature adult mortality and morbidity are reduced by the human papillomavirus (HPV) vaccine, as cervical cancer is the second most common cancer for women. While there is a need to achieve hepatitis B certification throughout the region and to complete the introduction of Hib in one Pacific country, countries also need to proceed with or start preparation for the introduction of pneumococcal, rotavirus and HPV vaccines. These vaccines have added complexity in terms of timing – rotavirus vaccine must be given before 12 weeks to minimize the risk of intussusception and hepatitis B vaccine should be given to newborn infants when the risk of developing a carrier state is highest. Disease burden studies that have been undertaken in the Pacific have consistently shown significant morbidity from these vaccine-preventable diseases. Appropriate delivery systems will be required for some vaccines. A new presentation of rotavirus is needed, for example, as the current packaging requires excessive cold chain storage space. All these new vaccines are relatively expensive, emphasizing the importance of reducing vaccine wastage by more efficient vaccine management. Higher costs present new challenges, but new opportunities for financing are arising. It has been suggested,
for example, that a Pacific Pneumococcal Project (PPP) should be established with financial support from AusAID, NZAID and JICA and technical support from UNICEF and WHO. She concluded by remarking that clear decision-making pathways should be in place for countries to make informed and rational choices on vaccine introduction.

2.13.2 Importance of regulatory function for introduction of new vaccines

Mr Lahouari Belgharbi, Technical Officer, Quality, Safety and Standards, WHO Headquarters, Geneva, conveyed that WHO has set standards to ensure that 100% of vaccines used in all national immunization programmes are of assured quality. This requires a fully functioning National Regulatory Authority (NRA) independent from vaccine manufacturers and procurement systems to ensure that the six regulatory functions are met and that no unresolved reported problems exist with the vaccine. The regulatory functions are as follows:

1. Marketing authorization and licensing activities
2. Post-marketing activities including surveillance of AEFI
3. NRA lot release
4. Laboratory access
5. Regulatory inspections

As Pacific island countries do not yet have functioning NRAs, all countries should continue to procure either through the United Nations, which supplies WHO prequalified vaccines, or from countries that have a functional NRA as an interim measure.

2.13.3 New vaccines: country sharing

2.13.3.1 Achievements and challenge of Hib vaccine introduction in Solomon Islands

Mr Raymond Maurisi, National EPI Manager, Reproductive and Child Health Division, Solomon Islands, described how Hib vaccine was introduced in Solomon Islands after a disease burden study in 2002 established a need. To start with, since Solomon Islands was eligible for support from the Global Alliance for Vaccines and Immunization (GAVI), a proposal for the introduction of Hib as part of a pentavalent vaccine was developed and submitted in 2006, with approval received in mid-2007. By April 2008, all the EPI guidelines had been reviewed, printed and distributed and IEC materials had been developed and finalized. Staff training at national and provincial levels occurred in March 2008 and included improvement of safe injection activities and disease surveillance and monitoring. The pentavalent vaccine arrived in mid-June, and, with the national team supervising, was successfully administered throughout the country. One of the challenges was coping with major changes to the immunization schedule – DTP and hepatitis B vaccine given from January to July and pentavalent vaccine given the rest of the year. Timing of the first dose of measles vaccine changed from 9 months to 12 months, which ultimately affected coverage. Other issues included: return of all doses of DTP to provincial centres; delay in use of revised monthly reporting forms; inadequate gas supply; and a stock-out of pentavalent vaccine after three months. Lessons learnt included: the importance of good planning at all levels and sound leadership skills during implementation, the need for more knowledge and skills on vaccine forecasting and ordering for clinic nurses; and the need to identify weak areas for follow-up. Because global demand for pentavalent is very high, national and provincial levels need to improve stock management to ensure supply. Familiarity with a single multivalent vaccine rather than multiple injections will take time, and GAVI reporting requirements are demanding.
2.13.3.2 Introduction of new vaccines in Cook Islands

Ms Mamatoranga John, Public Health Nurse, Ministry of Health, Cook Islands, presented the Cook Islands’ plan to introduce new vaccines appropriately, based on assessment of disease burden, cost-effectiveness and affordability. Once the decision was made by the Ministry of Health to proceed with the introduction of pentavalent vaccine, a request for assistance was submitted to UNICEF/WHO. Public awareness materials, including pamphlets, posters, news articles, radio talks and television spots, have been prepared and training of public health nurses will begin on 1 June 2009. Challenges include staff work commitments with multitasking, workforce shortages, funding delays and continuous professional development. She expressed thanks for assistance from JICA, UNICEF and WHO.

2.13.3.3 Lessons learnt from HPV vaccination Fiji

Mrs Kylie Jenkins presented the lessons learnt from the HPV SIA in Fiji during 2008/2009. The Ministry of Health was offered as a donation 110 000 doses of HPV vaccine with a market value of US$11 000 000. This amount of vaccine was enough to fully immunize four birth cohorts of girls aged 9–12 years. A national taskforce of representatives from UNICEF and WHO was established to make recommendations on programme implementation requirements. The Government of Fiji accepted the donation towards the end of August 2008, launched the programme on 22 September 2008, and rolled out the national, school-based campaign on 6 October 2008. The HPV SIA was targeted at 30 000 girls aged 9–12 years. Rapid introduction was necessary because of the short shelf-life of the vaccine, which expired on 20 June 2009. A comprehensive media campaign, including posters, brochures, television and radio advertisements, alerted the public to the availability of the HPV vaccine, which was to be delivered through a school-based immunization programme. However, the negative press experienced in the first month of the campaign seriously impacted on the number of girls who consented to HPV immunization. Early data showed 64% of the target population was reached with the first dose (HPV1) with a 17% dropout rate for the second dose (HPV2). Reasons for the large dropout rate were negative media and absenteeism from school. An intensive campaign to follow up defaulters and to counsel parents who withdrew consent is planned for 2009. A comprehensive evaluation will be undertaken later in 2009 to evaluate all aspects of the HPV programme and to make recommendations about the future of the HPV vaccination programme in Fiji.

2.13.3.4 Introduction of rotavirus in Guam

Ms Annette Aguon, CDC Coordinator III Supervisor, Department of Public Health and Social Services, Guam, presented on the introduction of rotavirus vaccine in Guam in March 2008. Rota Teq, the live oral vaccine that protects against five rotavirus strains (G1, G2, G3, G4 and P1), was selected. maximum age for dose 1 of Rota Teq is 14 weeks and 6 days, the maximum age for the last dose of rotavirus vaccine is 8 months and 0 days, and the minimum interval between doses of rotavirus vaccine is 4 weeks with no maximum interval set. Steps taken to introduce the vaccine included: following CDC recommendations; developing a Vaccines for Children (VFC) contract; developing standing orders; sending VFC providers letters, with follow-up phone calls and meetings; and training medical staff. Challenges to be overcome included: confusion surrounding the schedule and its age limits and additional rules; economics and costs; health insurance providers not paying for the vaccine; physician attitudes; lack of data on disease burden; lack of demand; and bad publicity from the late 1990s when a vaccine was withdrawn from the market due to cases of intussusception.
2.14  Immunization safety

2.14.1  Regulatory aspects to be considered for the introduction of new vaccines

Dr Nora Dellapiane DeRey Tolve, Scientist, Quality, Safety and Standards, WHO Headquarters, Geneva, made a presentation on regulatory aspects of introducing new vaccines and noted at the outset that new vaccines present new challenges. A number of regulatory functions must be undertaken to ensure that vaccines are of assured quality. If the vaccine has been developed specifically for emerging markets in developing countries, it may be licensed for export only and may undergo clinical trials with limitations due to small sample size, limited follow-up period and limited information on relevance to special populations. In this case, post-marketing surveillance (PMS) will ordinarily be undertaken in countries using the vaccine. On the other hand, when vaccines are being introduced for global use, they will normally be licensed in the producing country; however, there will still be no PMS data and no guarantee that clinical data and presentation or packaging are relevant to developing country populations. Marketing authorization and pharmacovigilance of safety and efficacy cannot be performed by others on behalf of the user country. These two functions must be conducted by each and every country independently of the vaccine source. To assist in the process, WHO has a system of rapidly evaluating vaccines for supply through United Nations agencies. Prequalified vaccines must meet the following criteria: they have been licensed by a functional National Regulatory Authority; their relevance for target populations in terms of specifications, stability and clinical data has been assessed by WHO; they have been tested by WHO and released lot by lot by NRA; and they are subject to regular inspections by NRA and reassessment by WHO. Receiving countries should consider using this expedited procedure for licensure and WHO should offer training to assist implementation. While countries need to perform their own post-marketing surveillance, a sentinel post-marketing network has been established to provide user countries with information on possible issues with a particular vaccine. User countries therefore also need to focus resources on development of a PMS system to ensure safe introduction of new vaccines.

All countries need an AEFI system to follow up on events that result in death, in hospitalization or prolongation of existing hospitalisation (e.g. encephalopathy, seizures, aseptic meningitis), and in persistent or significant disability or incapacity (e.g. paralysis). It is also important to evaluate potential "signals" that indicate a possible causal relationship or one previously unknown. Events potentially caused by a programme error (e.g. bacterial abscess, severe local reaction, high fever or sepsis, BCG lymphadenitis, toxic shock syndrome, clusters of AEFI), significant events of unexplained cause occurring within 30 days after a vaccination and events causing significant parental or community concern would usually also be investigated.

2.14.2  Disposal practices for used and expired vaccines

Mr Tsukakoshi made a presentation on the safe disposal of health centre waste, which is typically comprised of 80% non-infectious waste, 15% pathological and infectious waste, 1% sharp waste and 3% chemical or pharmaceutical waste. Live, weakened vaccines such as measles–rubella (MR), measles–mumps–rubella (MMR), oral polio vaccine (OPV), BCG, and tetanus toxoid (TT) are classified as infectious waste. As such, separation and incineration are advised. Although vaccines made from killed virus are not infectious, the same disposal method is recommended. In urban areas with access to modern facilities, infectious waste should be safely transported to an incinerator, shredder and/or autoclave to ultimately be disposed of in a safe ash pit; meanwhile, non-infectious waste can be sent to municipal waste services. In rural areas, infectious waste should be transported safely to a small incinerator and then buried in a secured pit. If no incinerator is available, vaccine vials may be shredded in a hand mill or an electric shredder to reduce their volume after autoclaving and then buried. While pretreatment by disinfection is an attractive option for reducing the infection potential of pathogenic waste, little information is available on appropriateness because of environmental hazard concerns.
Professor Yasuhiro Ishibashi, Professor at Nagasaki Institute of Applied Sciences and an expert in waste management, continued the presentation. He outlined the risks associated with handling vaccine vials, such as infection by live and weakened vaccines and injury by sharps, e.g. broken glass. Various disposal practices are possible for used and expired vaccines, including chemical disinfection, boiling, dry heat sterilization and autoclave sterilization. However, incineration is the preferred disposal method because unopened vaccine vials should be shredded without causing dispersion of the infective pathogen. Incomplete incineration of medical waste is a great concern because of the generation of toxic emissions, such as dioxins, carbon monoxide, nitrogen and sulfur-based toxic gases. Dioxins are oil soluble, so they are don’t decompose well, and tend to accumulate in organisms where they are highly toxic. Japan has formulated and strictly implements laws for dioxin countermeasures to ensure waste incineration facilities undertake correct procedures for minimizing dioxin production. He described the conditions in which dioxins are produced, attributes of different models of incinerators and combustion testing for dioxins and other toxic gas emissions.

2.15 Problem shooting: good management practices

2.15.1 Effective supervision in Fiji

Sr Penina Druavesi, EPI Project Officer, Central/Eastern Health Services, Fiji, described how a supervisory checklist was initially developed during micro-planning workshops in 2007, and then was refined and revised with staff input until a final version was distributed nationally in February 2009. She described how the checklist is an important tool that assists nurses as EPI implementers to become competent in providing quality services to their clients. It assists in identifying training needs for the staff, assists in achieving good EPI coverage rate, ensures that the objectives at lower levels are consistent with the national objectives, assists in identifying what has been done well and encouraging staff to continue good work, identifies areas needing improvement, allows documentation of the programme management every quarter, gives a framework for the supervisor’s quarterly visit, acts as a tool to measure staff output, gives a means of observing immunization procedures in clinics and ensuring that the target population is vaccinated according to Fiji EPI policy, and helps to build partnerships among nurses and make them more accountable for their work. During visits, the supervisor assesses storage of vaccines by checking temperature charts and vaccine stock books; observes, assists and advises on procedures and EPI waste management; assesses coverage according to the data monitoring chart; gives onsite training and advice; and undertakes minor cold chain repairs. Supervisors find that the checklist is comprehensive and easy to follow, improves documentation, is a good monitoring tool for assessing staff performance and has improved communication between supervisors and staff. In conclusion, supportive supervision has contributed significantly to the sustainable improvement of the EPI programme in Fiji.

2.15.2 Promoting good management practice in Tonga

Sr Sela Sausini Paasi, National Coordinator Immunization Services and Reproductive Health Services, Tonga, outlined the main strategies that have led to immunization rates of over 98% for all vaccines in Tonga in 2008. Immunization services are conducted in every health centre and clinic on Mondays. A monthly report is sent from all health centres and reproductive health clinics by the tenth day of the month. All reproductive health nurses have mobile phones for easy communication and meet monthly in all island districts. Newly recruited nurses participate in an orientation programme and subsequently receive regularly training. Any issue of concern is reported as soon as possible to the Coordinator or Area Coordinator. There is a computerized registry of babies who received immunization and there is good management of immunization services and cold chain according to the EPI policy. There is teamwork among the community, community health workers and parents. In addition, an effective referral system is in
place, defaulters are contacted or visited the week after the missed appointment, good practices are shared, and there is an annual census of every district before the end of the year and an annual programme review. Sr Sela expressed her view that the annual review is an excellent opportunity for all programmes to share and learn from experiences and best practices, to present district data, to identify needs, and to take part in setting goals and targets for coming year. Among the many successful resulting from these meetings is the recently announced Government plan to extend maternity leave from one month to three months in 2010.

2.16 Policy and implications

2.16.1 Developing a fully-costed multiyear plan (MYP) and using it to improve the immunization programme

Dr Manju Rani described how a multiyear plan gives a detailed analysis of past performances, is progressive and forward-looking, provides a list of goals and short- and medium-term objectives with clearly identified strategies, includes costing of all activities proposed, forms the basis for development of annual plans, and can work as an advocacy document with donors to mobilize funding. In general, multiyear planning gives a sense of direction on what can be achieved in a given time-frame, what needs to be done to achieve set objectives, and what resources will be required to achieve the objectives. The six steps involved in developing a multiyear plan are: (1) conduct a situational analysis, either a programme review or desktop review depending on the situation; (2) set national objectives and milestones; (3) plan strategies and key activities; (4) make an activity timeline; (5) estimate costs; and (6) put the MYP in action. Dr Rani gave an example of a multiyear costing tool that can be used to assist with the fifth step. She also explained that the sixth step involved getting approval and endorsement from higher national levels, presenting and discussing the MYP with partners, disseminating the plan to subnational levels and others, reviewing the MYP annually as part of preparing the annual plan, conducting a mid-term evaluation of the MYP, and preparing a new MYP one year prior to expiry or when outdated.

2.16.2 Potential role of EPI programming in health system strengthening: sector-wide results-based planning and budgeting for investment cases to remove bottlenecks

Dr Eliab Seroney Some encouraged participants to consider the advantages of linking EPI to other programmes, as ultimately it would save lives. When only one programme area is strong, replacement mortality occurs. It is generally accepted that over 70% of deaths occur among children under five and his examples showed this to be true in the Pacific island countries selected. All programmes face system constraints such as shortage of human resources, incomplete and untimely data, difficulty of distributing supplies and supervision due to challenges of logistics and transportation, and inadequate financing and budgetary allocation. The benefits of working together include: delivery of multi-interventions results in better strengthening of the health system for routine interventions; packaged delivery of interventions is value for money; opportunity costs of users and carers are optimized; and performance-based incentives can be introduced for all programmes. As a consequence, patient satisfaction is improved, and needs are served in a new way. He encouraged countries to use available funds and allocate more funds to remove bottlenecks to high coverage, and thus ensure that funds are efficiently and effectively utilized, by applying them to interventions where most benefit will be obtained, that is “best buys”. He advised that scaling up and accelerating MDGs need to be done with equity, not neglecting services to distant islands, for example. He also urged improvement of data collection and analysis, including determining knowledge, attitudes, practices and beliefs (KAPB) for low-coverage interventions and addressing health management information systems (HMIS). Dr Some encouraged countries to ensure sector-wide, results-based programming for all health-related MDGs, as this leads to best provision for all services. He finished by citing examples of programme integration, such as joint systems/programme reviews, and integrated
programme communication, and accepting interventions such as EPI+, which adds prevention of mother-to-child transmission of HIV (PMTCT), vitamin A distribution, exclusive breast-feeding, complementary feeding, provision of insecticide-treated bed nets (ITN) and deworming interventions to the delivery of EPI.

2.1.6.3 Training and capacity-building

Dr Kouichi Morita made a presentation on behalf of JPIPS on capacity-building and training. Capacity-building is defined as "activities that strengthen the knowledge, abilities, skills and behaviour of individuals and improve institutional structures and process such that the organization can efficiently meet its mission and goals in a sustainable way" (World Custom Organization). It includes: (1) human resources development, (2) organizational development, and (3) institutional and legal frame development (UNDP). The presentation reviewed JPIPS training activities from 2005 to 2008 including Training of Trainers held in Suva and National Trainings in project target countries. Under the regional training strategy, JPIPS trained a total of 155 personnel since 2005 and several in-service training (national training) initiatives have been undertaken both by countries and the JPIPS project. Countries are at different stages in their training programmes. Continued support is necessary where the number of qualified trainers is still low.

The DTP3 coverage rate was used in the presentation as an indicator of the extent to which the trainings have contributed to EPI service performance. The EPI performances of countries varied, depending on the health situation, health system and the policies/strategies in that country. Fiji, for one, showed evidence of great improvement. At the end of presentation, some recommendations and suggestions for the direction of future training plans were made.

2.17 Closing session

An informal closing ceremony was conducted with impromptu speeches from representatives of the various organizations. The participants were complimented on their free exchange of ideas that illustrates the teamwork necessary to achieve EPI aims. Speakers touched on the challenging times with the pandemic threat and worldwide financial crisis and the pain that has been experienced in Nagasaki with so many lives lost when all participants are working hard to save lives. Heartfelt thanks were expressed to all for their participation and to JICA, JPIPS, Nagasaki University and all those who worked hard to make the meeting such a success.
3. CONCLUSIONS

As noted earlier a new approach was trialled in an attempt to make the meeting conclusions and recommendations more relevant to countries. A list of action points submitted by speakers was compiled by the rapporteur and discussed during this last session of the meeting. The list was revised on the basis of these discussions (Table 4).

As agreed during the workshop, the list of workshop recommendations was sent to the Ministries of Health of 20 Pacific island countries. The countries were requested to prioritize the recommendations based on the country situations and needs. The country responses were summarized in Annex 4 as Table 4-1: List of EPI priority action points by country in 2009–2010, and Table 4-2: Top ten EPI priority action points by country in 2009–2010.

Table 4: Key action points from the Fifth Pacific Immunization Programme Strengthening Meeting after general discussions with country participants

<table>
<thead>
<tr>
<th>Action points</th>
<th>Priority Yes/No/Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vaccine procurement and Vaccine Independent Initiative (VII):</strong></td>
<td></td>
</tr>
<tr>
<td>(1) All countries should achieve vaccine forecasting within 20% of vaccine</td>
<td>□ Y □ N □ NA</td>
</tr>
<tr>
<td>ordering for all antigens.</td>
<td></td>
</tr>
<tr>
<td>(2) All countries should submit a vaccine arrival report (VAR) to UNICEF</td>
<td>□ Y □ N □ NA</td>
</tr>
<tr>
<td>within 72 hours of receipt.</td>
<td></td>
</tr>
<tr>
<td>(3) All countries should achieve zero vaccine stock-outs in the next 12 months.</td>
<td>□ Y □ N □ NA</td>
</tr>
<tr>
<td>(4) All countries should make payments to the VII Revolving Fund within 60</td>
<td>□ Y □ N □ NA</td>
</tr>
<tr>
<td>days of receiving vaccine invoices for 2009 and 2010.</td>
<td></td>
</tr>
<tr>
<td>(5) All countries should consult with their relevant government ministries on</td>
<td>□ Y □ N □ NA</td>
</tr>
<tr>
<td>options beyond 2010 for vaccine supply in the Pacific and give feedback to</td>
<td></td>
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<tr>
<td>the PIPS secretariat by July 2009 before the Pacific Health Ministers</td>
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<tr>
<td>Meeting in Madang, Papua New Guinea.</td>
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<tr>
<td><strong>Cold chain and vaccine management:</strong></td>
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<tr>
<td>(6) All countries should use WHO prequalified refrigerators, cold boxes and</td>
<td>□ Y □ N □ NA</td>
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<tr>
<td>vaccine carriers for storage and distribution of vaccines, and use</td>
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<tr>
<td>appropriate temperature monitoring devices to monitor performance of the</td>
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<tr>
<td>cold chain, (and/or adhere to the CDC standards if vaccines are supplied</td>
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<td>by the United States of America).</td>
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<td>(7) All countries should improve their vaccine handling and management by</td>
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<td>applying recommended tools and practices for vaccine arrival and receipt,</td>
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<td>stock management and vaccine distribution. Standard indicators can be</td>
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<td>used such as zero stock-outs, wastage rates less than the national</td>
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<td>average, and vaccine vial monitors (VVMs) or temperature monitors within</td>
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<td>usable range.</td>
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<td>(8) All countries should have adequate and trained personnel in vaccine</td>
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<td>management to manage their cold chain and logistics systems: (a) EPI</td>
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<td>manager; (b) cold chain manager will monitor vaccine stocks, distribution</td>
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<td>and vaccine wastage at all levels; update inventory list and determine</td>
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<td>additional cold chain.</td>
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capacity to meet increased storage requirement; plan and finance refresher training on cold chain maintenance and repair for health workers and technicians; specify a time-frame for equipment replacement; and outline procedures for the disposal of non-functional equipment; (c) cold chain technician will provide preventive maintenance on schedule and repair services as needed; develop guidelines and conduct technical assessment for the unreliable equipment; and create a maintenance system including inventory management of spare parts and tools for repair; and (d) EPI coordinators.

(9) All countries should consider evaluating the performance of their cold chain and logistics systems by conducting either a WHO/UNICEF Vaccine Management Assessment or Effective Vaccine Store Management assessment, or the CDC equivalent, and implementing a plan to address weaknesses.

(10) All countries should build capacity by conducting trainings that have adequate curricula and include good vaccine management practices and appropriate supportive supervision.

(11) All countries should strengthen their human resources, cold chain and logistics management systems to prepare for rapid vaccine dispatch (<7 days) in the case of a pandemic.

Service delivery:

(12) All countries should strive to implement all five components of the Reaching Every District (RED) strategy – re-establish outreach, conduct supportive supervision, develop community linkages, monitor and use data for action and improve planning and management – or the equivalent CDC policy to reach every child.

(13) All countries should develop micro-plans based on a problem analysis of the local health facility situation and identify barriers to a community’s access to health services (DTP1) or utilization of services. (DTP3). Actions to address these barriers should be feasible, prioritized and funded.

(14) All countries should actively use monitoring tools available, such as immunization registers, health catchment maps, coverage monitoring charts and defaulter 'tickler' systems, to identify and follow up on missed groups or defaulters.

Coverage monitoring:

(15) The national EPI team should work closely with subnational EPI focal points (if applicable) to actively monitor reporting status of EPI data and ensure timely follow-up of all missing reports. A simple report monitoring form is recommended.

(16) The national EPI team should train and require staff at health facilities (where EPI services are provided) to utilize coverage-monitoring charts to monitor coverage and take rapid actions when needed.

(17) Complete data should be received from subnational levels in a timely manner. Data should be analysed by the national EPI team at both national and subnational levels quarterly, allowing identification of concerning areas, feedback to local programme managers, and field visits when necessary.

Surveillance:

(18) Each country should assess the performance of hospital coordinator(s) responsible hospital-based active surveillance in 2007–2009, and choose the most
(19) Each country should conduct in-country training on AFP/AFR surveillance through multiple approaches, either through annual EPI training or combining with other programme such as communicable disease surveillance.

(20) Completeness and timeliness of monthly zero reporting should be improved from subnational to national level and from each Pacific island country to the WHO South Pacific office.

(21) Surveillance supervision may be strengthened and incorporated with supervisory visits for other purposes; checklists should be used and movement plans that include schedules and funded travel costs should be developed. Regular meetings with those involved will strengthen surveillance.

**Polio eradication:**

(22) The Subregional Committee for the Certification of Poliomyelitis Eradication urges Pacific island countries and areas, particularly those with relatively large populations and frequent international population movements, to develop or update a national plan of action to quickly detect and respond to importation of wild poliovirus. Knowledge could be drawn from the process of developing influenza preparedness, and requests for technical assistance to strengthen these areas may be appropriate.

(23) Countries should improve their hospital-based active surveillance and case investigation through training of hospital coordinators and physicians. The main goal of AFP case investigation is to quickly determine if a case could be polio; this requires sufficient virological and clinical information and WHO-facilitated laboratory analysis.

(24) Countries should maintain at least 90% coverage with three doses of polio vaccine. During the strengthening of routine immunization for polio in countries with lower coverage, supplemental doses may be added when supplemental immunization activities (SIAs) for other antigens are being conducted.

(25) Countries should increase community awareness of AFP through the development and distribution of information, education and communication (IEC) materials.

**Measles elimination:**

(26) Identification, reporting and investigations of suspected measles (AFR) cases should be improved so that a minimum of two AFR cases per 100 000 population are discarded as non-measles every year.

(27) HBAS case definition for suspected measles should be changed to AFR in persons of any age or suspected measles diagnosed by a physician.

(28) To improve sensitivity and timeliness of AFR case reporting: (a) national notifiable disease surveillance systems should be used to identify and respond to reported AFR cases in addition to hospital-based active surveillance; (b) radio-telecommunication or cell phone may be used for case notification from remote areas, with proper registration of contents of verbal messages or text messages; (c) VPD surveillance training, report forms and IEC materials may be provided for staff in all health facilities; (d) monitoring of surveillance using recommended indicators and feedback to all health facilities and staff through various means (e.g. print and electronic media, meetings) may be conducted periodically; (e) administrative assistants may be designated at sentinel surveillance sites to assist hospital coordinators; (f) community-based key informants may be useful for
increasing case notification.

(29) Countries and areas may follow SAGE guidelines for establishing or updating their MCV1 and MCV2 schedules. Recommendations were given in several recent SAGE meetings: November 2006 (Weekly Epidemiologic Record, 2007, 82:1–16), November 2008 and April 2009 (to be published in Weekly Epidemiologic Record in June 2009).

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(30) As recommended by SAGE, follow-up SIAs should be conducted if and when the number of susceptible children reached the size of one birth cohort. Countries and areas may apply this recommendation for subnational levels, such as particular islands with low routine MCV1 and MCV2 coverage. Strengthening routine MCV1 and MCV2 coverage using established RED and GIVS strategies can delay or eliminate the need for periodic SIAs.

**Hepatitis B control:**

(31) All countries should schedule a national serosurvey in the next 1–3 years among children who are 5 years or older to determine the rate of HBsAg positivity in line with WHO guidelines. Countries need to consider the scope, the choice of integrating other antigens, the cost and the timing, noting especially school terms and health worker availability, and they need to give at least 12 months warning to PIPS partners to ensure assistance is available.

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(32) All countries should ensure that all children receive the hepatitis B birth dose within 24 hours to prevent mother-to-child transmission.

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(33) All countries should take special measures to increase routine coverage with three doses of hepatitis B vaccine for all infants and ensure at least 85% coverage by the end of 2009.

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(34) All countries should carry out at least one detailed review of timely birth dose immunization in all the maternity hospitals.

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(35) All countries should regularly supervise maternity staff and provide on-the-job training for the delivery of the hepatitis B birth dose and ensure that timely birth dose coverage is at least equal to that of births delivered in institutions.

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(36) All countries should assess and implement immunization for health workers by 2012.

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**New vaccine introduction:**

(37) Technical issues surrounding new vaccines, such as Pneumococcal, rotavirus, HPV, should be regularly discussed in national EPI meetings and workshops to increase awareness and to help make informed decisions. While waiting for vaccine introduction, countries should assess programmatic capacity (staff, cold chain capacity, etc.), cost of introduction, potential financing and timing.

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(38) The EPI team should regularly collect disease-burden data from hospitals – admissions for pneumonia, meningitis, diarrhoea (among children under 5) and cervical cancer – to be used for advocacy and awareness-building.

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(39) Countries should seek support from donors for the introduction of high-priority new vaccines (pneumococcal conjugate vaccines and HPV) based on a model similar to the Pacific Hepatitis B Project in 1996.

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**Immunization safety:**

(40) All countries should continue to procure either WHO prequalified vaccines or vaccines from countries with a functional National Regulatory Authority.

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(41) All countries should ensure that reporting systems for adverse events following immunization (AEFI) are in place. □ Y □ N □ NA

(42) All countries should ensure they have a vaccine donation policy consistent with the WHO-GAVI-UNICEF vaccine donation policy. □ Y □ N □ NA

**Waste management:**

(43) All countries should ensure proper, safe EPI waste disposal management, including procurement of appropriate equipment as part of their National Waste Management Plan. □ Y □ N □ NA

(44) All countries should identify one well-trained focal point person to take responsibility for and report on waste, including management and operation of Incinerators. □ Y □ N □ NA

(45) All countries should plan and finance refresher training on waste management to ensure appropriate disposal of infectious wastes, including sharp wastes. □ Y □ N □ NA

**Training and capacity-building:**

(46) All countries should review their existing health worker training plans, if any, and identify the current status. □ Y □ N □ NA

(47) All countries should clarify to what extent training of trainers is needed to achieve and maintain high EPI performance and ensure that the number of core trainers requested to conduct health worker training nationally is the functional minimum. Current numbers are: Cook Islands (8), Fiji (30), Kiribati (6), Marshall Islands (20), Micronesia (4), Nauru (2), Niue (4), Palau (2), Samoa (10), Solomon Islands (20), Tonga (10), Tuvalu (9) and Vanuatu (20). □ Y □ N □ NA

(48) All countries should examine institutional capacity for the implementation of future training to ensure continuous training activities can be maintained. □ Y □ N □ NA

(49) All countries should develop a training strategy and/or plan after clarification of training-of-trainer needs and institutional capacity. □ Y □ N □ NA

**Link to other health interventions:**

(50) Countries should use available funds and allocate more funds to remove bottlenecks to high coverage, and thus ensure that funds are efficiently and effectively utilized, i.e. “best buys”, and that Millennium Development Goals (MDGs) are scaled up and accelerated with equity. □ Y □ N □ NA

(51) Countries should improve data collection and analysis, e.g. determine knowledge, attitudes, practices and behaviours (KAPB) for low-coverage interventions and use health and management information systems (HMIS). □ Y □ N □ NA

(52) Countries should ensure sector-wide results-based programming for all health-related MDGs □ Y □ N □ NA

(53) All countries should have a National Child Health Week as a means of focusing on integrated child care. □ Y □ N □ NA

**Influenza:**

(54) Countries should review their pandemic preparedness plans and critically review the immunization component. Identify and prioritize the population groups (e.g. population needed to keep the essential services running) that must be immunized in case of shortage of vaccines. □ Y □ N □ NA
(55) Countries should identify and enter into agreements with alternative cold storage facilities and transportation services to distribute and deploy vaccines rapidly in the event of an epidemic.

(56) As part of national pandemic preparedness plan, countries should estimate the number of staff that may be required to administer the vaccine. Keep a reserve of trained staff who could be mobilized to administer the vaccines in the event of a pandemic.

(57) Countries should assess the possibility of using seasonal influenza vaccines for priority population groups (elderly population, health workers, etc.) where affordable and where justified on disease burden.
**ANNEX 1 Workshop agenda**

**FIFTH PACIFIC IMMUNIZATION PROGRAMME STRENGTHENING (PIPS) WORKSHOP**  
11-15 May 2009, Nagasaki, Japan

**TENTATIVE TIMETABLE**

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday, 11 May</th>
<th>Tuesday, 12 May</th>
<th>Wednesday, 13 May</th>
<th>Thursday, 14 May</th>
<th>Friday, 15 May</th>
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<tbody>
<tr>
<td>08:00-08:30</td>
<td>REGISTRATION</td>
<td>08:30-10:30</td>
<td>08:30-10:00</td>
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<td>08:30-10:00</td>
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<tr>
<td>08:30-10:00</td>
<td>Opening session</td>
<td>12 Polio eradication</td>
<td>10 Hepatitis B control</td>
<td>14 Policy and implications</td>
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<td>Opening remarks, goals, targets, stakeholders, etc.</td>
<td>Eradicating hepatitis B control and evaluating the progress</td>
<td>Assessing hepatitis B control and evaluating the progress</td>
<td>Assessing hepatitis B control and evaluating the progress</td>
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<td>10:30-12:00</td>
<td>Workshop objectives and use of Expanded PIPS recommendations</td>
<td>Service delivery</td>
<td>Measles elimination (Contd)</td>
<td>25 Conclusions and recommendations</td>
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<td></td>
<td>Real world overview of Expanded PIPS implementation and recommendations</td>
<td>Essential elements of 5th service delivery</td>
<td>Lessons learnt from eradication of measles cases in PIP</td>
<td>Closing session</td>
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<td>12:00-14:00</td>
<td>Vaccine procurement and Vaccine Independence Intiative (VII)</td>
<td>Vaccine procurement</td>
<td>14 Field visit</td>
<td>18 Problem solving</td>
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<td>13:30-14:00</td>
<td>VIII performance and 5th service delivery</td>
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**WPR/2009/DCC/04/EPIT(1)/2009.1**  
7 May 2009
### ANNEX 2 List of participants

#### PROVISIONAL LIST OF PARTICIPANTS, TEMPORARY ADVISERS, OBSERVERS/REPRESENTATIVES AND SECRETARIAT

1. PARTICIPANTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Position/Role</th>
<th>Address</th>
<th>Telephone/Email</th>
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</thead>
<tbody>
<tr>
<td>American Samoa</td>
<td>Ms Jackie Tulafono</td>
<td>MCH Coordinator</td>
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<td>Fax no.:</td>
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<tr>
<td></td>
<td>Mr John Mamatoranga</td>
<td>Senior Public Health Nurse</td>
<td>Ministry of Health</td>
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<td></td>
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<td>Tel. no.: (677) 29100</td>
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<td></td>
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<td></td>
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</tr>
<tr>
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<td>Fax no.: (679) 3388003</td>
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<td>Email:</td>
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<tr>
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<tr>
<td></td>
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<td></td>
<td>123 Chalan Kareta</td>
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<td></td>
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</tr>
<tr>
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<td>Mangilao, Guam 96913</td>
<td>Email: <a href="mailto:michelle.leonguerrero@dphss.guam.gov">michelle.leonguerrero@dphss.guam.gov</a></td>
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<tr>
<td></td>
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ANNEX 3 PIPS partners coordination meeting minutes

PIPS Partners Co-ordination Meeting
10/5/09
Nagasaki, Japan

Present:

Rotary International District 2650: Mr Chohei Hashimoto, Mr Kosuke Hirata, Mr Kunikatsu Kumamoto, Mr Hideo Kishi, Dr Rokuro Matsubara

NZAID: Ms Emma Dunlop-Bennett

CDC: Dr Susan Reef

JICA: Dr Tomohiko Sugishita, Mr Ryosuke Yoshida, Ms Ryoko Kato, Ms. Tomoko Takeuchi

JPIPS: Dr Kouichi Morita, Mr Tatsuhiko Tsukakoshi, Ms Yasuhiko Ishibashi, Ms. Yumiko Nakamura

FHSIP Mrs Kylie Jenkins

WHO: Dr Yang Baoping, Dr Yoshikuni Sato, Dr Manju Rani, Dr David Sniadack, Dr Wang Xiaojun,

UNICEF: Dr Isiye Ndombi, Dr Diana Chang Blanc, Dr Eliab Seroney Some, Dr Ingrid Hilman

Temporary Advisers/ Consultants: Dr Lisi Tikoduadua,

Rapporteur: Dr Robyn McIntyre

Chair: Dr Tomohiko Sugishita

1. Update of Major activities/support from partners

NZAID: Ms Dunlop-Bennett stated that NZAID entered an agreement with UNICEF in 2009 to provide NZD4,000,000 over 4 years to support EPI. A further NZD1,000,000 has been committed to boost the VII Revolving Fund. She emphasised that NZAID takes its cues for funding from partners and PICs, with the understanding that funds are provided to undertake interventions that are relevant, important, provide good value for money and will achieve significant results.

CDC: Dr Susan Reef explained that the CDC focuses on the 6 US territories or Freely Associated States located in the Pacific. Assistance is either financial or technical, with each country drawing funding either from the Vaccines for Children or their Discretionary Fund. President Obama’s recent Incentives Package has made some additional funding available. Technical assistance is available with examples being recent seroprevalence studies undertaken for Hepatitis- B free Certification and coverage surveys.

Rotary International District 2650: Mr Chohei Hashimoto explained that Rotary International has been guided by WHO and has provided assistance in PNG and PICs including Tonga, Solomon Islands, Tuvalu and the Cook Islands including health centre and cold chain equipment and incinerators. Rotary International provided assistance during the floods in Fiji earlier this year by providing a new solar incinerator, and hospital and school supplies in response to requests from the Fiji Government. He expressed their gratitude to the Fiji Government, JICA, JPIPS and WHO for their co-operation that facilitated smooth implementation of aid activity. They are planning a visit to Kiribati later in the year with
the expectation of WHO providing support as with the previous mission and in close consultation with WHO/WPRO will provide assistance directed at strengthening routine immunisation via refresher training for EPI nurses, provision of an EPI Incinerator and a vehicle for EPI. He expressed their appreciation for the opportunity to attend the workshop and exchange views.

WHO: Dr Xiaojun Wang outlined that WHO has continued to provide technical support to strengthen Immunization programmes and has been able to contribute modest funding in 2008/2009. Focus has been on routine immunization via country visits and other means and now with the impending SIAs WHO has been very active in facilitating decision making and planning. A consultant has been recruited for 3 months for the Vanuatu SIA and this will also be done for Solomon Islands. They will co-ordinate with CDC to also provide a “STOP” team member to assist. Coordination and support of surveillance has remained a major focus, including an emphasis on timely monthly reporting within Fiji. Disease burden assessments have been undertaken in countries in preparation for new vaccine introductions, and with UNICEF they successfully assisted Kiribati and Solomon Islands with GAVI applications for assistance and are preparing for Hib introduction into 3 more countries, which means 19/20 PICs will have incorporated Hib into their regular schedule.

UNICEF: Dr Eliab Seroney Some expressed his gratitude for the partnership with NZAID, AusAID and the Australian National Council for UNICEF. This has allowed UNICEF to respond to country requests for assistance and help strengthen routine immunization services. Annual work planning is being undertaken with 3 countries, and a regional work-plan is in place with the rest. UNICEF has continued to have a key role in procurement of vaccines and equipment, and in partnership with JICA have responded to requests for Cold Chain equipment for EPI and Pandemic Influenza Preparedness. UNICEF and WHO have ensured that the measles SIAs in 2009/2010 will be delivered with a package of childhood health interventions for the first time. Annual reviews of EPI programmes are being supported in a number of countries and UNCEF has been able to implement their Core Commitments for Children including immunization of affected populations when emergencies have occurred in the Pacific. UNICEF has continued to work to ensure a continuum of care is provided through integrated Maternal and Child Health programmes and communication activities have been supported. Dr Isiye Ndombi added that UNICEF is also working to improve the integrity of data in PICs and emphasising data use to formulate policies and systems, identify coverage and quality of services and make an impact on practices and quality of life at the household level.

JPIPS: Mr Tatsuhiko Tsukakoshi explained that the major foci of JPIPS have been EPI training in general, and the provision of and training on maintenance of cold chain and on waste management. Aspects of these will be undertaken in FSM, RMI, Palau, Tuvalu, Kiribati, Solomon Islands and Vanuatu this year in conjunction with partners. In July the JICA team will visit for final assessment of the JPIPS project as it reaches its conclusion and JPIPS looks forward to assistance from partners for this process. Rotary International District 2560 is supplying funds for Kiribati that for health staff training in September, a local survey and supply and installation of a new solar powered incinerator. Regional training for EPI and Cold Chain Maintenance will be repeated for the fourth consecutive year in Suva in October or November. Early in 2010 a meeting will be held for the handover process by the JPIPS team to the Fiji Ministry of Health with the project finishing in February.

2. Vaccine procurement and vaccine independent initiative.

Dr Some discussed that this point arose from the issue presented to the meeting earlier in the day regarding the need for consensus and discussion regarding future directions for the VII. The options would not be explained again as brief outline of implications of different approaches would be supplied a little later in the week.

Ms Jenkins requested whether an assessment of operational aspects of VII had been completed and Dr Chang Blanc clarified that a global assessment of EPI that included the Pacific would be undertaken later this year.
Dr Morita asked whether there remained a funding shortage for the VII and whether countries were slow to make repayments. Dr Some answered that the revolving fund had been supplemented by generous donations of AUD1,000,000 by AusAID and a commitment of NZD1,000,000 by NZAID so there was no funding issue at present.

After further discussion amongst the meeting participants it was recognised that a key date was the Pacific Health Ministers meeting in July and the August forum members meeting in addition to the September UNICEF board meeting at which the future of VII globally is to be discussed. Further discussions in Suva PIPS Partner Meetings will therefore be vital to clarify issues.

3. Direction of EPI training/capacity building in the Pacific

JICA had outlined in-service and capacity building plans during presentations that afternoon and invited input and comments from partners.

A general discussion ensued with consensus that whilst it is difficult to assess impact and is very expensive, EPI staff want and need on-going training. Effectiveness needs to be ensured however, as it is evident that training alone is not enough to sustain improvements in immunization practices. Subject choice is important and Dr Sniadack asked that surveillance be included.

Ms Jenkins described that in Fiji young, committed, enthusiastic nurses were carefully chosen for initial training, and started with a 3 day general training session and then a 2 day micro-planning workshop, then went on to disseminate their knowledge using a training of trainers model. On-going supportive supervision using checklists and contact has been key and there has since been 100% training of immunization providers. Ultimately coverage is the proof and success would be evident in the workshop presentation on Fiji the next day.

A number of speakers mentioned that Human Resource issues also impacted greatly and Dr Sugishita commented that JICA would be willing to offer assistance in this area and could explore further during their assessment visit in July. Dr Some noted that the Pacific Human Resources for Health was making progress based on the Asia model looking at issues including staff retention, culture, incentives and numbers.

Dr Sugishita suggested from the Chair that further discussions should be held amongst partners in Suva.

4. Partner support and coordination in measles Supplementary Immunization Activities (SIAs) in 2009-2010

Handouts were supplied outlining that preparations are well underway for SIAs for June 2009 in Kiribati, for July-August 2010 for Vanuatu, September 2009 Solomon Islands and Tuvalu in February 2010. Dr Hilman emphasised that an integrated package of interventions will be undertaken during the SIA, that all technical consultants are on board and expressed appreciation that a JICA volunteer will form part of the Vanuatu team. Dr Wang emphasised that the presence of consultants will add to the strengthening of routine activities as well as assist the SIAs.

Timing is yet to be decided and supports are yet to be finalised for the planned SIAs in FSM, CNMI and AMS. Dr Reef stated that FSM will likely use money from the Stimulus Package but it is unclear whether the others will follow.

5. Introduction of underused/new vaccines in the Pacific

WHO and UNICEF informed the meeting that financial support is needed for Vanuatu to become the last PIC to introduce Hib vaccine. A one off preparation cost of USD100,000 is needed and then USD90,000 per year. It is assumed that the Vanuatu government would gradually assume the latter.
Dr Rani made the point that Hib is a serious disease and that there was minimal treatment available in Vanuatu so USD 90,000 was not a lot when placed in perspective.

Ms Dunlop-Bennett asked when this information became available as NZAID recently committed their funds to UNICEF and this request was not part of their negotiations. Further NZAID and AusAID work to funding cycles and therefore need long term approaches, so that money is now currently largely committed. She added that AusAID has taken the lead in Vanuatu with the SWAP process and Dr Some was able to confirm that this is proceeding. He further stated that UNICEF uses the funds from AusAID and NZAID to focus on routine immunization activities, and that when a new vaccine is to be introduced they would review existing funding arrangements. Funds have been allocated for SIAs, and cold chain, especially with Pandemic Preparedness, but using UNICEF funds to support this vaccine introduction had not been ruled out.

A second discussion point was that large numbers of countries are looking at adding new vaccines and although not all use UNICEF to obtain vaccines, by 2012 the Revolving Fund would need to USD6,000,000 to meet needs, and USD5,000,000 more by 2016. Dr Wang called for all partners working together to establish sub-regional financial aid mechanism to assist introduction of highly cost-effective new vaccines in low- or middle low income countries in the Pacific.

Dr Rani exhorted the meeting to treat the need for introduction of vaccines such as HPV as urgent because countries have no treatment for cervical cancer so delay just meant more lives lost. She encouraged partners to remember the example of successful rapid introduction of HepB vaccine despite relative high expenses and that many lives were saved as a result. Very high rates of HPV from studies in Tonga and Fiji indicate urgent effort is needed. She further added that introducing a new vaccine can enthuse the public and be a chance to re-energise immunization systems.

The Chairman suggested that this is another topic that warrants further partner discussions.

6. Role of EPI in ensuring continuum of care for maternal, newborn and child health

Dr Some introduced ideas that will be presented to the general meeting on Friday and summarised in the meeting report. This emphasised the role of EPI in strengthening health systems and how sector wide results based planning is needed, which means sector wide reviews and planning and therefore sector wide monitoring. He emphasised the need to identify and address system bottlenecks so that funds were most effectively utilised to produce the “best buys”. The results would be to scale up and accelerate MDGs with equity. With the 2015 dates approaching he encouraged partners to do a “countdown” assessment every 2 years.

A brief discussion ensued with Dr Manju making the point that we must be sure that any new tool presented to countries is practical and easily applied. It was decided that further discussion could be undertaken during the EPI Meeting later in the week.

The meeting closed at 1800 hours.
ANNEX 4  Country responses to prioritization of workshop recommendations

4-1 List of EPI priority action points by Country in 2009-2010

<table>
<thead>
<tr>
<th>Action points</th>
<th>AMS</th>
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<tr>
<td><strong>A. Vaccine Procurement and VII:</strong></td>
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<tr>
<td>1. All countries to achieve vaccine forecasting within 20% of vaccine ordering for all antigens.</td>
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<td>2. All countries to submit VAR to UNICEF within 72 hours of receipt.</td>
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<td>3. All countries to achieve zero vaccine stock-outs in the next 12 months.</td>
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<td>4. All countries to make payment to VII Revolving Fund within 60 days of receiving vaccine invoices for 2009 and 2010.</td>
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<td>5. All countries to consult their relevant Government ministries on options beyond 2010 for vaccine supply in PICTs and give feedback to the FIPS secretariat by July 2009 before Pacific Health Ministers Meeting in Madang, PNG.</td>
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<td><strong>B. Cold Chain and Vaccine Management:</strong></td>
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<td>6. All countries should use WHO pre-qualified refrigerators, cold boxes and vaccine carriers for storage and distribution of vaccines, and use appropriate temperature monitoring devices to monitor performance of the cold chain, (and/or adhere to the CDC standards if vaccines are supplied by USA).</td>
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<td>7. All countries should improve their vaccine handling and management by applying recommended tools and practices for vaccine arrival and receipt, stock management and vaccine distribution. Standard indicators can be used such as zero stock-outs, wastage rates less than the national average and VVMs/temperature monitors within usable range.</td>
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<td>8. All countries should have adequate and trained personnel in vaccine management to manage their cold chain and logistics systems: a) EPI Manager; b) Cold Chain manager who will monitor vaccine stocks, distribution and vaccine wastage at all levels; update inventory list and determine additional Cold chain capacity to meet increased storage requirement; plan and finance refresher training on Cold chain maintenance and repair for health workers and technicians; specify a timeframe for equipment replacement and outline procedures for the disposable of non-functional equipment; c) Cold chain technician who will provide preventive maintenance on schedule and repair services as needed; develop guidelines and conduct technical assessment for the unreliable equipment; and create a maintenance system including inventory management of spare parts and tools for repair; and d) EPI coordinators)</td>
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<td>9. All countries should consider evaluating the performance of their cold chain and logistics systems by conducting either a WHO/UNICEF Vaccine Management Assessment (VMAT) or Effective Vaccine Store Management Assessment (EVSM), or the CDC equivalent and implementing a plan to address weaknesses.</td>
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<td>10. All countries should build capacity by conducting trainings with good methodology that have adequate curricula and include good vaccine management practices and appropriate supportive supervision.</td>
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<tr>
<td>11. All countries should strengthen their human resources, cold chain and logistics management systems to prepare for rapid vaccine</td>
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dispatch (<7 days) in the case of a pandemic.

C. Service Delivery:

12. All countries should strive to implement all five components of the Reaching Every District strategy to reach every child or the equivalent CDC policy: Re-establish outreach; conduct supportive supervision; develop community linkages; monitor and use data for action; and improve planning and management.

13. All countries should develop micro-plans based on a problem analysis of the local health facility situation and identify barriers to a community’s access to health services (DTP1) or utilization of services (DTP3). Actions to address these barriers should be feasible, prioritized and funded.

14. All countries should actively use monitoring tools available to identify and follow-up with missed groups or defaulters: immunization registers, health catchment maps, coverage monitoring charts, and defaulter ‘tickler’ systems.

D. Coverage Monitoring:

15. National EPI team should work closely with subnational EPI focal points (if applicable) to actively monitor reporting status of EPI data and ensure timely follow up of all missing reports. A simple report monitoring form is recommended.

16. National EPI team should train and require staff at health facilities (where EPI services are provided) to utilize coverage-monitoring charts to monitor coverage and take rapid actions when needed.
17. Complete data should be received from subnational levels in a timely manner. This should be analysed by the National EPI team at both national and subnational levels quarterly, allowing identification of concerning areas, feedback to local programme managers, and field visits when necessary.

E. Surveillance:

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47. All countries to clarify to what extent of TOT is needed to achieve and maintain high EPI performance and ensure that the number of core trainers each have requested to conduct Health Worker training nationally is the functional minimum. Current numbers are: Cook (8), Fiji (30), Kiribati (6), Marshall (20), Micronesia (4), Nauru (2), Niue (4), Palau (2), Samoa (10), Solomon (20), Tonga (10), Tuvalu (9) and Vanuatu (20).

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55. As part of national pandemic preparedness plan, estimate the number of staff that may be required to administer the vaccine. Contact and keep/train additional alternative staff on standby, who could be mobilized to administer the vaccines in an event of pandemic.

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| Note: As of November 2009 eleven Pacific Island countries responded. | ES | ES | ES | ES | ES | ES |
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7. All countries should improve their vaccine handling and management by applying recommended tools and practices for vaccine arrival and receipt, stock management and vaccine distribution. Standard indicators can be used such as zero stock-outs, wastage rates less than the national average and VVMs/temperature monitors within usable range.

8. All countries should have adequate and trained personnel in vaccine management to manage their cold chain and logistics systems: a) EPI Manager; b) Cold Chain manager who will monitor vaccine stocks, distribution and vaccine wastage at all levels; update inventory list and determine additional Cold chain capacity to meet increased storage requirement; plan and finance refresher training on Cold chain maintenance and repair for health workers and technicians; specify a timeframe for equipment replacement and outline procedures for the disposal of non-functional equipment; c) Cold chain technician who will provide preventive maintenance on schedule and repair services as needed; develop guidelines and conduct technical assessment for the unreliable equipment; and create a maintenance system including inventory management of spare parts and tools for repair; and d) EPI coordinators.

9. All countries should consider evaluating the performance of their cold chain and logistics systems by conducting either a WHO/UNICEF Vaccine Management Assessment (VMAT) or Effective Vaccine Store Management Assessment (EVSM), or the CDC equivalent and implementing a plan to address weaknesses.

10. All countries should build capacity by conducting trainings with good methodology that have adequate curricula and include good vaccine management practices and appropriate supportive supervision.

11. All countries should strengthen their human resources, cold chain and logistics management systems to prepare for rapid vaccine
13. Dispatch (<7 days) in the case of a pandemic.

C. Service Delivery:

12. All countries should strive to implement all five components of the Reaching Every District strategy to reach every child or the equivalent CDC policy: Re-establish outreach; conduct supportive supervision; develop community linkages; monitor and use data for action; and improve planning and management.

13. All countries should develop micro-plans based on a problem analysis of the local health facility situation and identify barriers to a community’s access to health services (DTP1) or utilization of services (DTP3). Actions to address these barriers should be feasible, prioritized and funded.

14. All countries should actively use monitoring tools available to identify and follow-up with missed groups or defaulters: immunization registers, health catchment maps, coverage monitoring charts, and defaulter ‘tickler’ systems.

D. Coverage Monitoring:

15. National EPI team should work closely with subnational EPI focal points (if applicable) to actively monitor reporting status of EPI data and ensure timely follow up of all missing reports. A simple report monitoring form is recommended.

16. National EPI team should train and require staff at health facilities (where EPI services are provided) to utilize coverage monitoring charts to monitor coverage and take rapid actions when needed.
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2. Some countries have been identified more than ten priority action points or faced challenges to decide the order of the priorities (e.g. considers several action points all as the first or second priority).