Meeting Report

The Second Hepatitis B Expert Resource Panel (ERP) Consultation

10–11 December 2013
Tokyo, Japan
Participants of the Second Hepatitis B Expert Resource Panel (ERP) Consultation
Tokyo, Japan, 10–11 December 2013
REPORT

THE SECOND HEPATITIS B EXPERT RESOURCE PANEL CONSULTATION

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 in the Second Hepatitis B Expert Resource Panel Consultation and do not necessarily reflect the policies of the Organization.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for governments of Members States in the Region and for those who participated in the Second Hepatitis B Expert Resource Panel Consultation, which was held in Tokyo, Japan from 10 to 11 December 2013.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>ALC</td>
<td>Asian Liver Center</td>
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<tr>
<td>AEFI</td>
<td>adverse event following immunization</td>
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<td>APAVH</td>
<td>Asia Pacific Alliance on Viral Hepatitis</td>
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<td>CTC</td>
<td>controlled temperature chain</td>
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<td>DPT3</td>
<td>Third dose of diphtheria-pertussis-tetanus vaccine</td>
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<td>ECLIA</td>
<td>electrochemiluminescence</td>
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<td>EENC</td>
<td>early essential newborn care</td>
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<tr>
<td>EPI</td>
<td>Expanded Programme on Immunization</td>
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<td>ELISA</td>
<td>enzyme-linked immunosorbent assay</td>
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<tr>
<td>ERP</td>
<td>Expert Resource Panel</td>
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<tr>
<td>GAVI</td>
<td>Global Alliance for Vaccines and Immunization</td>
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<tr>
<td>HBeAb</td>
<td>hepatitis B core antibody</td>
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<td>HBeAg</td>
<td>hepatitis B “e” antigen</td>
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<td>HBIG</td>
<td>hepatitis B immunoglobulin</td>
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<tr>
<td>HbsAg</td>
<td>hepatitis B surface antigen</td>
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<tr>
<td>HBV</td>
<td>hepatitis B virus</td>
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<tr>
<td>HepB3</td>
<td>third dose of hepatitis B vaccine</td>
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<tr>
<td>HCW</td>
<td>health-care worker</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>JRF</td>
<td>UNICEF/WHO Joint Reporting Form</td>
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<tr>
<td>LQAS</td>
<td>lot quality assurance sampling</td>
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<tr>
<td>MCH</td>
<td>maternal and child health</td>
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<tr>
<td>MNTE</td>
<td>maternal and neonatal tetanus elimination</td>
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<tr>
<td>NIP</td>
<td>National Immunization Programme</td>
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<tr>
<td>NRA</td>
<td>National Regulatory Authority</td>
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<tr>
<td>PHA</td>
<td>passive hemagglutination</td>
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<tr>
<td>PPS</td>
<td>probability proportional to size</td>
</tr>
<tr>
<td>RED</td>
<td>Reaching Every District</td>
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<tr>
<td>RRL</td>
<td>regional reference laboratory</td>
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<tr>
<td>SAGE</td>
<td>Strategic Advisory Group of Experts on Immunization</td>
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<tr>
<td>TAG</td>
<td>Technical Advisory Group</td>
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<tr>
<td>VE</td>
<td>vaccine efficacy</td>
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<tr>
<td>VIDRL</td>
<td>Victorian Infectious Disease Reference Laboratory</td>
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<tr>
<td>VPD</td>
<td>vaccine-preventable disease</td>
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<td>VVM</td>
<td>vaccine vial monitor</td>
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SUMMARY

To support the Western Pacific Region in reaching the hepatitis B control targets, the Western Pacific Regional Hepatitis B Expert Resource Panel (ERP) was created in 2007.

The objectives of the ERP are:

1. to serve in the honorary capacity to advise on the status of hepatitis B control in the member states in the Western Pacific Region;

2. to serve in the verification panel when a request is received from a member state for verification of reaching the hepatitis B control targets, which may involve desk-review of documents submitted by a country or visit to Member States; and

3. to advise on issues related to hepatitis B control and achievement of the regional control goals.

Much progress has been made in hepatitis B control in the Region, including the achievement of the 2012 milestone of reducing chronic infection prevalence in children to less than 2%. Additional guidance is needed to sustain these achievements, reach the less than 1% goal and improve performance in priority countries.

This second meeting of the ERP focused on addressing technical issues raised by the 2012 Expanded Programme for Immunization’s Technical Advisory Group, providing guidance on the verification process and issues by country, and recommending strategies for achieving the less than 1% goal by 2017.

Recommendations were made including refinements to the verification process, the formation of a hepatitis B laboratory network, and specific guidance on the development of the new hepatitis B plan for the Western Pacific Region.
1. INTRODUCTION

In 2003, the WHO Regional Committee for the Western Pacific decided that measles elimination and hepatitis B control should be two new pillars to strengthen the Expanded Programme on Immunization (WPR/RC54.R3). In 2005, the Regional Committee resolved that the Region should reduce incidence of chronic hepatitis B infection in children aged at least five years to less than 2% by 2012 as an interim milestone towards the final goal of less than 1% (WPR/RC56.R8).

Since then, country commitments have led to high hepatitis B vaccination coverage and subsequent remarkable reductions in hepatitis B prevalence among children. Furthermore, the Region as a whole and up to 30 countries and areas have likely reached the 2012 milestone. With this important progress, the Expanded Programme on Immunization (EPI) and Hepatitis B Expert Resource Panel (ERP) advised setting 2017 as the target year to reach the regional goal of less than 1% prevalence in children. This target was adopted at the sixty-fourth session of the Regional Committee for the Western Pacific in October 2013.

To support the Region in reaching the hepatitis B control targets, the Hepatitis B ERP was created in 2007. The ERP consists of 10 members and has the following terms of reference: (1) to serve, in an honorary capacity, and advise on the status of hepatitis B control in WHO Member States in the Western Pacific Region; (2) to serve on the verification panel to confirm if a Member State achieved the hepatitis B control milestone; (3) to help with the verification process which may involve a desk review of country documents or visits to Member States; and (4) to advise on various issues related to hepatitis B control and achieving the milestone in the Region.

In 2009, the Technical Advisory Group (TAG) on Immunization and Vaccine-Preventable Diseases in the Western Pacific Region recommended that the Hepatitis B ERP hold quarterly teleconference discussions and annual meetings to monitor and facilitate progress towards the 2012 milestone.

The first meeting of the ERP took place in Tagaytay City, Philippines, in 2011. The meeting was an important opportunity to provide strategic direction for the hepatitis B control activities in the Region. In 2012, a meeting was not convened due to financial constraints and the panel provided guidance and technical input via email and teleconferences.

The second meeting took place in Tokyo from 10 to 11 December 2013 and focused on technical issues raised by the 2012 and 2013 TAG (including using hepatitis B immunoglobulin, using vaccine in a controlled temperature chain, strengthening knowledge regarding hepatitis B vaccine contraindications and providing guidance on acceptable hepatitis B surface antigen rapid tests), provided guidance on the verification process and issues by country, as well as strategies to achieve the less than 1% goal by 2017.
1.1 Objectives

(1) to develop technical guidance towards reaching the regional hepatitis B control goal, especially in technical areas raised by the EPI’s TAG during its 2012 annual meeting;

(2) to review the verification process and make adjustments as needed; and

(3) to review and obtain expert and independent input on the updated strategic plans towards achieving the goal of reducing childhood prevalence of hepatitis B to less than 1% by 2017.

1.2 Participants and agenda

The list of participants is shown in Annex 1. The agenda and timetable are shown in Annex 2 and Annex 3.

1.3 Opening ceremony

Dr Sergey Diorditsa, Team Leader, WHO EPI, delivered the opening remarks on behalf of Dr Shin Young-soo, WHO Regional Director for the Western Pacific, and welcomed the participants meeting. In the speech Dr Diorditsa congratulated the ERP for its valuable contributions to hepatitis B control in the Region, including verifying 11 countries as having met the 1% HBsAg prevalence goal among five-year-old children. He emphasized the remarkable achievements in hepatitis B control in the Region, and noted that considerable work is needed to achieve the 1% goal by the year 2017. Dr Haruo Watanabe, Director-General, National Institute of Infectious Diseases, welcomed the participants.

1.4 Appointment of officers of the meeting

Dr Takaji Wakita, who had been appointed as Chairperson by the Regional Director, assumed his position as Chairperson of the ERP. Moderators and rapporteurs were assigned for each session.

2. PROCEEDINGS

Session II: Overview

Moderator: Dr Benjamin Cowie
Rapporteur: Dr Takaji Wakita

Presentations:

(1) Regional EPI overview: Dr Sergey Diorditsa

Summary:

The objectives of the EPI programme in the Western Pacific Region are to: (1) maximize equitable access of vaccine of assured quality to control vaccine-preventable diseases (VPDs), including pandemic vaccine; (2) achieve targeted disease eradication,
elimination and control (polio, measles/rubella, hepatitis B, maternal and neonatal tetanus elimination (MNTE); (3) promote rational introduction of new vaccines; (4) strengthen programme monitoring, VPD surveillance systems, laboratory networks and data use; and (5) strengthen partnerships, advocacy and communication.

EPI achievements in the Region include: (1) polio-free status has been retained in the Region after an importation to China in 2011; (2) 33 of 36 countries and areas in the Region are likely to have interrupted indigenous measles transmission; (3) acceleration of rubella control through integrated measles and rubella immunization and surveillance activities; (4) achievement of the 2012 hepatitis B control goal; (5) elimination of MNTE in 33 of 37 countries and areas in the Region; (6) maintenance of a robust laboratory network; (7) introduction of new vaccines; (8) reducing disparities in vaccination coverage; and (9) improving vaccine safety and quality through establishment of national regulatory authorities (NRAs). Additional work is needed to strengthen immunization systems and increase equity in coverage.

(2) Global hepatitis B overview: Dr Ana Maria Henao-Restrepo

Summary:
Progress has been made in introducing and using hepatitis B vaccine globally. Some 93% of countries include hepatitis B vaccine in their national immunization schedules as of 2012. However, only 48% of countries have introduced birth-dose vaccination. Coverage with three doses of hepatitis B has been increasing and was 79% globally in 2012. Geographic variations in vaccination coverage persist, and challenges remain in monitoring the process and impact of the immunization programme. Globally it is estimated that 600,000 deaths occur annually due to hepatitis B infection. Prevalence of infection varies by country and region with the highest burden in Africa and Asia. It is recommended that all regions and countries should develop goals for hepatitis B control, that vaccination coverage be used as process indicators, and that serological surveys of HBsAg prevalence and surveillance for acute disease and mortality be used as outcome measures.

(3) WHO impact study: Dr Sir Andrew Hall

Summary:
Countries that have introduced a vaccine early are the best ones to study. Early adopters suggest a significant herd immunity effect for child-to-child transmission; newly acquired carriage is predominantly due to perinatal transmission; and impact on primary liver cancer is seen but with some odd patterns. The Western Pacific Region has moved from simply monitoring coverage to monitoring impact on HBsAg prevalence, setting targets, publicizing methodology and certifying success based on those surveys. Demonstrating success can be a double-edged sword if success leads to cuts in the budget.

A project has started to measure – and predict – the impact of hepatitis B vaccination country by country inspired by the Western Pacific Region. The goal is the provision of new evidence on hepatitis B virus (HBV) diseases, and vaccination and infection measures, in relation to the level of vaccine implementation. The outcomes will be evidence based and updated HBV recommendations with the identification of national implementation gaps and necessary adjustments to comprehensively prevent acquisition of new carriage.
(1) Global disease impacts: age, year, sex-specific prevalence of HBV infection, vaccination coverage, economic measures and trends in HBV-related cancers.

(2) Country-level impact of vaccination and strategy (selected countries only):

(a) EPI data on HBV, between-country comparisons and evaluated impact on disease rates; and

(b) online database with prevalence, vaccine coverage and timeliness of each dose, with manuscripts of results.

Components: global impact, systematic reviews (various schedules efficacy, effectiveness/safety, HBV infection prevalence by age, sex, year, and country, HBV vaccination coverage by dose, year, country). Modelling of HBV-attributable morbidity and mortality. Economic modelling and analysis and a report to the Strategic Advisory Group of Experts (SAGE) on Immunization. Selecting countries based on year of introduction, availability of relevant data, application and comparison using standard tools, impact assessment of hepatitis B vaccination programmes by means of data review and EPI collaboration. Communication/data sharing is the third component.

Process: management team and independent advisory group as subgroup of the International Agency for Research on Cancer (IARC). Would like to present plan in April 2014 and present summary of findings in November 2014. Overall outcomes to sustain ongoing refinement of hepatitis B vaccination programmes to minimize HBV disease, and to sustain political will in supporting these programmes.

Discussion:

(4) Regional hepatitis B overview: Mr Eric Wiesen

Summary:

The Western Pacific Region has adopted the <1% by 2017 goal, with coverage targets of 95% for birth dose and the third dose of hepatitis B vaccine (HepB3) nationally and 85% in all districts. New regional advocacy materials were developed, and hepatitis B was set as the theme for the 2013 Regional Immunization Week. Vaccination coverage is increasing in the Region and overall regional vaccination coverage in 2012 was 91% for HepB3 in the Region, and 76% for birth dose. Some countries have problems, specifically the Lao People’s Democratic Republic, the Philippines and Papua New Guinea (HepB3) and for birth dose (Viet Nam, Singapore, Papua New Guinea, Cambodia, the Philippines and the Lao People’s Democratic Republic). Huge progress has been made in reducing the prevalence with most countries at <2%. Eleven countries have been verified at <1%, five are ready for verification, 13 countries are planning serosurveys in the next two years and seven countries require programme improvements in order to meet the 1% goal. Recommendations from previous TAG meetings were reviewed with a focus on recommendations that require action. 2009 TAG recommendations include:

- consider creating subnational goals;
- use Uniject; and
- hold quarterly teleconference and annual meetings for ERP.
In 2010 the TAG recommended developing a 2010–2014 hepatitis B strategic plan with enhanced coordination across sectors. The 2012 TAG recommended further ERP guidance on:

- using HBIG for infants born of mothers with known chronic HBV infection;
- using vaccine in a controlled temperature chain (CTC);
- spacing the birth dose and the first dose of hepatitis B containing combination vaccine;
- developing methods for estimating coverage needed to achieve the <1% goal, providing guidance on contraindications; and
- providing guidance on the types of rapid tests that are acceptable.

The 2013 TAG requested an updated strategic plan for reaching the <1% goal.

Finally, upon reviewing national policies on vaccinating health-care workers (HCWs), 49% of countries and areas have policies on vaccinating HCWs. In conclusion, additional work is needed in increasing vaccination coverage, improving birth dose data quality, protecting HCWs, measuring impact and planning for the future.

Discussion:

The enormous progress in Western Pacific Region is an example of the benefit of integrating EPI and hepatitis control programmes. Concern was raised that the WHO HQ hepatitis programme moved out of EPI and into the HIV/AIDS unit, which may limit attention to the vaccination component of hepatitis control. While other aspects of hepatitis control such as screening and treatment are important, the integration with EPI should be maintained. It was mentioned that the WHO HQ EPI unit still continues to work on hepatitis B control. It was also mentioned that a new hepatitis focal person will be joining the HIV and STI unit at the Regional Office for the Western Pacific.

There was a comment that some of the TAG recommendations are outdated, and those that are no longer relevant should be removed. Given the surprisingly low seroprevalence finding from the Philippines survey, there was a suggestion that the ERP could serve to review the serosurveys and highlight the biases that might be in the survey. It was mentioned that there is an upcoming vaccine supplement on hepatitis B in China.

Session III: Verification

Moderator: Dr Eric Mast
Rapporteur: Dr Ana Maria Henao-Restrepo

Presentations:

(1) Review of verification schedule: Mr Eric Wiesen

Summary:

Twelve verifications have been completed to date with 11 countries verified at less than 1% prevalence – Republic of Korea, Macao (China), Hong Kong (China), Malaysia, Australia, China, Mongolia, New Zealand, Palau, Brunei Darussalam, and Cook Islands – and one country (Tonga) verified at less than 2% prevalence. ERP guidance is required on
whether to proceed with verification in Fiji and Japan. ERP is awaiting verification packages from American Samoa, Wallis and Futuna, and Singapore. Serosurveys are planned or ongoing in 13 countries (French Polynesia, New Caledonia, the Commonwealth of the Northern Mariana Islands, the Marshall Islands, Niue, Kiribati, Samoa, Tuvalu, Tokelau, Tonga, Nauru, Guam, and the Federated States of Micronesia). Seven countries (Papua New Guinea, the Lao People's Democratic Republic, Viet Nam, Cambodia, the Philippines, Vanuatu and Solomon Islands) require programme improvements before submitting verification packages. A question was posed whether it is feasible for the ERP to handle up to 18 verifications in the next two years.

Discussion:

(2) Review of verification process: Dr Benjamin Cowie

Summary:

The verification process was established in 2007 and required vaccine coverage data and at least one source of representative seroprevalence data in children aged five years or above. The aim was to have a standard and independent mechanism. ERP consists of 10-15 members who serve on three-member verification panels. In 2011 the process was standardized and a reporting form and evaluation reference system developed. Questions were posed, including: Whether the current system is still adequate? Do the current tools require changes? Is the process clear and transparent? Is the process timely? Are changes needed to the verification panel process?

Discussion:

ERP members concluded that the current certification process has been working well overall and has provided important guidance to both the WHO Secretariat and the Member States. Given the goal recently endorsed by the Regional Committee for the Western Pacific and the expected workload in the years to come, the ERP discussed various approaches to strengthen and expedite the review and certification process.

Several modifications of the process were proposed. One ERP member suggested following the GAVI model which is to have a primary/secondary reviewer for each country, and meet at one time to review all submissions. Each primary reviewer gives a 5-10 minute summary of the evaluation, the secondary reviewer comments, and then the entire group discusses the issue in order to achieve consensus. It was suggested that with this process 17 verifications could be completed in one day. Another ERP member responded that with this central approach there is little opportunity to seek further clarification from countries or engage with the countries, which has proven helpful. Another suggestion was to review all verifications during an annual meeting. However, concerns were raised that this could delay the process.

One ERP member proposed reducing the size of the panel from three members to two, with a mix of laboratory and epidemiology expertise on each panel. There was some support for this suggestion but no agreement to change the panel size.

A recommendation was proposed to only require the panel chairperson to sign the letter with the findings of the panel. No objections were raised to this suggestion. It was also recommended that the findings of the panel be shared with all ERP members for review before finalization. This was also accepted by the group.
It was recognized that the process is now lengthy and that there is a need to instil more accountability into the process, including a timeline by which work has to be completed with firm deadlines.

It was also agreed that the ERP should meet annually to review progress and indicators of all countries to ensure that the gains are sustained and make recommendations as necessary.

Session IV: Special issues

Moderator: Dr Sir Andrew Hall
Rapporteur: Mr Eric Wiesen

Presentations:

(1) Burden of perinatal transmission: Dr Eric Mast

Summary:

Dr Mast provided background discussion topics:

- findings of recent seroprevalence studies: Bangladesh, Viet Nam and Papua New Guinea;
- developing methods for estimating coverage needed to achieve the <1% HBsAg prevalence goal;
- use of HBIG for infants born to mothers known to have chronic HBV infection; and
- spacing the birth dose and the first dose of hepatitis B-containing combination vaccine.

Discussion:

Programmatic targets are different from outcome measures. We should set high programmatic targets even if less is needed for reducing prevalence. Therefore, it was not recommended to go to great lengths to develop models to predict coverage levels needed to achieve the prevalence goal.

The recommendation for HBIG is clear, and ERP has nothing further to add. Administration of an antiviral (tenofovir) during pregnancy was mentioned as an approach for the prevention of mother-to-child transmission and has some beneficial characteristics compared to HBIG (cost, safety, accessibility) but is too early to make a recommendation at this time.

The ERP made no recommendation to change the current wording on birth dose timing or spacing.

(2) Overview of research on birth dose at 24 hours and >24 hours: Dr Minal Patel

Summary:

Hepatitis B birth dose is recommended to be given within 24 hours. However, evidence for this recommendation is variable. The articles which SAGE reviewed to base
their recommendation only showed that vaccination within 24 hours is more effective than none. One article discussed showed that delaying vaccination past three days puts the child at risk for having HBsAg. More recent articles have been published since the SAGE review. A study from Indonesia showed no difference between giving vaccine within three days and between 3–7 days. In China, one study showed no difference between one-day and 2–7 day administration, while another shows that giving vaccine within 24 hours is more protective than giving it between 1–7 days. Many studies do not have sufficient numbers to answer the question of the difference in vaccine efficacy between <24 hours vs. 1–3 days vs. 4–7 days. It is unethical to do a prospective study, so the United States Centers for Disease Control and Prevention (CDC) is interested in using ~30 historical serosurveys to model the answer. Data are currently being collected.

Discussion:

Several comments were made regarding the timing of the birth dose. One ERP member recommended giving the dose up to seven days if it is not possible to give it within 24 hours. It was also mentioned that virus type may be an important factor in determining rates of perinatal transmission. It was noted that serotype A has most perinatal transmission. It was mentioned that differences in genotypes between China and Bangladesh may account for the differences in perinatal transmission. It was also noted that viral load is a major factor in perinatal transmission with >20 million IU per ML as the major factor in vaccine failure.

The ERP emphasized the importance of giving the birth dose within 24 hours, but felt that that it should be administered up until the first combination dose is given if it is not possible to give it within 24 hours.

(3) Hepatitis B in Japan: Dr Takaji Wakita

Summary:

Japan's screening programme to prevent mother-to-infant infection began in 1986. In 2010, 173 acute hepatitis B cases were reported through the Infectious Disease Report. Other data sources estimate a higher number of annual acute hepatitis B cases (up to 5000). Surveys from 1978 to 2007 all indicate HBsAg seropositivity rates of less than 1% among children. A study was carried out testing serum samples from 2000 children aged 4–9 years that were collected between 2005 and 2011 from 15 prefectures. Three of the samples (0.15%) were positive for HBsAg using a commercial ELISA kit (Enzygnost). A separate study of 300 people from three age groups tested hepatitis B core antibody (HBcAb) as a marker of past infection. The study found 2.3% of the sample was positive for HBcAb. The presentation concluded that horizontal infection seems to be a major source of HBV infection in childhood, and it is important to consider introducing universal hepatitis B vaccination for children.

Discussion:

An ERP member raised a concern that because Japan does not have a policy of universal hepatitis B vaccination, the majority of the population is susceptible to infection. The concern was that while HBsAg prevalence may be low, the fact that the population is susceptible to infection means that hepatitis B is not effectively controlled in Japan. Representatives from Japan mentioned that there is interest in introducing universal infant
vaccination with hepatitis B, as well as conducting a catch-up campaign, but that it is difficult to change the vaccination policy in the country.

(4) Lao People's Democratic Republic serosurvey: Dr Masahiko Hachiya

Summary:

A three-stage cluster sample was carried out in 2011. In the first stage 12 districts were selected per strata using population proportional to size (PPS) (the strata were defined as districts with DPT3 coverage of 76% and above and districts with < 76% DPT3 coverage). In the second stage, two villages were selected per district, and in the third stage 21 mother-child pairs were selected per village from resident lists. Of the 1008 pairs of five-to nine-year-old children and mothers selected, 43 were excluded from the analysis. Using the HBsAg Determine rapid test, prevalence among children was 1.7% and prevalence among mothers was 2.9%. HBsAg among children was associated with having an HBsAg-positive mother. The prevalence levels were lower than expected and it is unclear why.

Discussion:

An ERP member mentioned that the reason for the belief in high pre-vaccine prevalence in the Lao People's Democratic Republic was that many hill tribes came to the United States of America as refugees, and 13% were HBsAg positive. Hmong and boat people also had very high prevalence. Also Lao migrant workers in Thailand had high prevalence. It was mentioned that the Lao government was not investing in immunization, but that this is changing now.

Session V: Routine immunization and birth dose issues

Moderator: Dr Tilman Ruff
Rapporteur: Dr Minal Patel

Presentations:

(1) On-time hepatitis B birth does as an opportunity to strengthen the routine immunization programme: Dr Yoshihiro Takashima

Summary:

A demonstration project on improving hepatitis B birth dose coverage in China was described which focused on promoting hospital delivery, strengthening collaboration between maternal and child health (MCH) and EPI, and developing strategies for home deliveries. The programme included EPI registration of infants before birth. The project resulted in marked increases in timely birth dose coverage both among home deliveries and hospital deliveries. The presentation went on to highlight data from Viet Nam, Cambodia, and the Lao People's Democratic Republic suggesting that prevalence targets can be met even if vaccination targets are not met. The presentation also stated that reported EPI coverage data often are not accurate.

Discussion:

The discussion focused on how hepatitis B benefited from improved health facility delivery rates in China, but that this was not due to the hepatitis B programme but rather to the Government's desire to reduce neonatal and maternal morbidity and mortality rates. Dr
Takashima emphasized the usefulness of registering infants for vaccination before birth. Dr Diorditsa specified that while prevalence targets may be met with lower-than-recommended vaccination coverage levels, the message should not be to stop birth dose. Dr Samuel So mentioned that the link between hepatitis B and liver cancer is poorly understood among the general public and liver cancer should be added to the theme for Regional Immunization Week such as: “Stop hepatitis B and liver cancer. Vaccinate at birth”.

(2) Using vaccine in controlled temperature chain (CTC): Dr Minal Patel

Summary:

The Lao People’s Democratic Republic hepatitis B birth dose coverage is subpar, at ~33% for seven-day coverage (2011). One reason is that many health facilities have challenges with maintaining an adequate cold chain. Since hepatitis B vaccine is stable at 37°C for 30 days, we conducted a pilot test in rural areas of the Lao People’s Democratic Republic over six months using hepatitis B outside of the cold chain. The objectives were to: (1) establish best practices for scaling up national CTC policy; (2) assess HCW comfort/problems with CTC; (3) monitor out-of-range temperature of vaccines stored in CTC vs. those stored in cold chain; (4) assess impact of CTC on improving coverage; and (5) use lessons learnt for guidance in creating global guidelines and policies. Data collected bimonthly showed that there were no adverse events. There was an excess amount of vaccine (54%) that was thrown away at day 30 even though the vaccine vial monitor (VVM) was still adequate. Final data have just come in, and data cleaning is ongoing. However, preliminarily, birth-dose coverage among children born during the implementation of the study was 39% compared with 12% in children born before the programme. Most of this improvement was among children born in health facilities. Once final results are available, they will be presented to the Ministry of Health for potential scale up. The best-case scenario is if vaccine is relabelled to indicate the CTC storage conditions.

Discussion:

Studies for the past 20 years have shown that CTC for hepatitis B is safe and effective. However, there has been a distinct lack of scale up. It is exciting to see the Lao People’s Democratic Republic moving on this, but many countries are limited by the off-label nature since there is no guidance from WHO HQ on this, and many countries do not have robust national regulatory authorities that feel comfortable making this decision on their own. Relabeling was discussed, as Project Optimize has been working on this. Data are promising but the required studies are costly and manufacturers need to feel confident that there is a market for this. ERP members expressed concern that the lack of a regulatory approval for CTC was a barrier to implementation even though the science is sound. The consensus among ERP members was that we should be promoting the use of CTC in order to improve birth-dose coverage.

(3) Improving birth-dose uptake: Dr Karen Hennessey

Summary:

An update and overview of birth dose-related activities since the last ERP meeting were reviewed. Five countries outside the Pacific island countries and areas remain a priority for improving birth dose: the Philippines, Papua New Guinea, Cambodia, Viet Nam, and the Lao People’s Democratic Republic. Cambodia and Viet Nam have undergone impressive improvements over the last few years making them a lower priority. However, sustaining
confidence in birth-dose vaccination is critical in Viet Nam given recent adverse events following immunization (AEFI) after birth-dose vaccination.

Since the last ERP meeting, three of the five priority countries have conducted birth-dose assessments in health facilities. The assessments have identified areas for increasing birth-dose coverage. In addition, a birth-dose consultation with the five priority countries was jointly conducted by EPI and MCH in June 2012. Countries identified actions for strengthening birth dose implementation, which require Regional Office follow-up and support.

Activities for birth-dose strengthening were presented and the ERP was asked to rank their importance in terms of high, medium and low.

Discussion:

High-priority activities for increasing birth-dose coverage were use of CTC, guidance on practical implications of "no contraindications", MCH coordination, intensive support to reach home births, increasing facility births, preventing vaccine stock-outs, linking birth dose to hospital accreditation, advocacy, improved monitoring of coverage, vaccine delivery mechanisms, and use of simple injection devices such as Unijet.

Session VI: Laboratory issues

Moderator: Dr Mark Kane
Rapporteur: Dr Eric Mast

Presentations:

(1) Laboratory update: Dr Young-mee Jee

Summary:

WHO HQ has evaluated rapid tests for HBsAg in 2001 and enzyme-linked immunosorbent assay (ELISA) tests for HBsAg in 2004. A summary of the assays used for hepatitis B serosurvey by country was presented. Nine countries used ELISA tests, four countries used ECLIA (electrochemiluminescence), 11 used rapid tests, and one used PHA (passive hemagglutination). A summary of results was provided for select serosurveys in the Region. Advantages of rapid tests over laboratory tests were described. The potential role of a hepatitis B laboratory network was described including supporting serosurveys, conducting serosurveys, and producing a scientific basis for national policy-making.

Discussion:

Documented problems of laboratory errors in hepatitis B testing necessitate special attention to ensure high-quality testing of specimens for hepatitis B. These errors include implausibly high carrier rates (e.g., 50% carrier rates), use of uncertified rapid tests and hepatitis B carriers vs. acute cases. All ERP members agreed that a regional laboratory network for hepatitis B diagnostic testing is needed in the Western Pacific Region to provide high-quality laboratory data to measure progress and support achievement of hepatitis B control goals. Development of a regional hepatitis B laboratory network in Western Pacific Region might encourage development of laboratory networks in other WHO regions. The Victorian Infectious Disease Reference Laboratory (VIDRL) has been designated as WHO
Western Pacific Region hepatitis B regional reference laboratory (RRL) and could provide support for developing a regional hepatitis B laboratory network.

Possible functions of a hepatitis B laboratory network might include:

1. Coordinating quality control and:
   - developing a handbook with norms, standards and reference materials;
   - developing proficiency panels to send to network laboratories on a regular basis;
   - establishing procedures to send serum samples to the regional reference laboratory (RRL) for quality assurance testing;
   - developing an accreditation process to maintain high laboratory performance levels;
   - providing hands-on training workshop on the laboratory diagnosis of hepatitis B;
   - encouraging countries to use laboratory tests with highest sensitivity and specificity;
   - updating the list of acceptable rapid tests and ELISAs used for HBsAg detection; and
   - developing standardized data collection procedures, and implementing quality assurance procedures to improve data collection.

2. Developing hepatitis B reference diagnostic capacity in national laboratories and supporting national, 50% carrier rates), use of uncertified rapid tests and ELISAs problems classifying types of viral hepatitis (A, B, C, D, E) and classification of hepatitis B carriers vs. quality assurance-related activities of laboratories performing hepatitis B diagnostic testing, including laboratories in developing capacity at subnational levels.

3. Helping to identify gaps in diagnostic testing in resource constrained settings.

4. Formalizing relationships between the RRL and national laboratories, including conducting regional meetings to discuss progress and challenges of the network laboratories.

5. Conducting systematic studies of HBeAg prevalence, viral titres and genotypes in pregnant women to assess reasons for different rates of perinatal HBV transmission, among countries in the Region.

6. Developing standardized methods and optimize tools to detect and classify HBV mutants and variants.

Next steps

1. Need to develop charter and terms of reference for the laboratory network.

2. Need to establish national reference laboratories. These could be identified using the governance structure of Member States with selection of laboratories by national governments. Use of this process might be used to identify financing and enhance sustainability of the network.

3. Need to coordinate with WHO HQ and with global laboratory working group. Regional input is important for the global process.
4. Need to consider how a hepatitis B laboratory network could play a role in developing laboratory capacity for overall hepatitis control efforts, including screening and treatment, standards and capacity to measure viral load, and diagnostic capacity for surveillance of all types of viral hepatitis.

5. Need to consider linking with existing quality control and quality assurance procedures used for blood banks.

(2) VIDRL update: Dr Benjamin Cowie

Summary:

Recent activity as the hepatitis B reference laboratory was described, including genotype projects in Malaysia and Australia’s Northern Territory, sequencing for antiviral resistance, validation of rapid test kits, collaboration with countries and with the WHO Regional Office for the Western Pacific (birth dose consultation in Manila in 2012), and support for WHO’s global hepatitis programme.

(3) Use of oral fluids for HBsAg testing: Dr Minal Patel

Summary:

Oral fluid testing is safer and oral fluid is easier to collect than blood, especially in children. Oral fluid of hepatitis B carriers contains the hepatitis B surface antigen. There have been previous studies looking at sensitivity/specificity of testing HBsAg, and published literature shows promise. As part of a serosurvey in Bangladesh among children and mothers, we conducted a sub-study in conjunction with Public Health England to assess the sensitivity/specificity of oral fluids as compared to serum. Sensitivity was 97% (84%-99%) and specificity was 100% (98%-100%). One limitation was we had fewer positives than originally predicted, thus have wide confidence intervals around sensitivity. Future studies would need to be done in high-burden populations to get enough positives to get a better measure of sensitivity.

Session VII: Future directions

Moderator: Dr John Ward
Rapporteur: Dr Young-mee Jee

Presentations:

(1) Targeting high-risk populations: Mr Eric Wiesen

Summary:

Subnational differences in HBsAg prevalence and vaccination coverage exist, yet the current focus has been on national level targets. Discussion questions were raised including whether to consider subnational goals, the viability of MNTE method for hepatitis B, the need for subnational prevalence data, the importance of analysing subnational coverage data, and differences in vaccine efficacy (VE), for example the freezing of vaccine in Mongolia.
Discussion:

One approach to improving vaccination coverage in districts is the Reaching Every District (RED) strategy. On the other hand, it was mentioned that a focus on low-performing areas should not lead to neglect of other areas. It was suggested that vaccination coverage data by district be analysed and that vaccination coverage levels should be mapped to understand and respond to geographic variations in coverage. It was also mentioned that it is important to distinguish between high-risk groups and low-performing districts. High risk is typically used to refer to populations with exposure risks, such as health workers and injecting drug users.

(2) Post verification in China: Dr Hui Zhuang

Summary:

China was verified as having achieved the regional goal of reducing chronic hepatitis B infection rate to <1% among children at least five years of age in 2012. The following measures have been taken to sustain the high timely birth dose and three-dose hepatitis B coverage: (1) increasing awareness of the importance of a timely first dose and three-dose coverage among providers and parents; (2) intensifying training for HCWs; (3) improving hospital delivery rate through provisions of subsidies; (4) building bridges between MCH and immunization services; (5) subsidizing HBV vaccine providers; and (6) developing technical strategies for improvement of HBV vaccine coverage by the Ministry of Health in 2013.

China started monitoring HBsAg positivity among pregnant women in 2011. In 2012, 11.4 million pregnant women (63% of the national total) from 1156 counties of 31 provinces were screened for HBsAg, and 6.3% were HBsAg positive. Some 94.4% of infants born to HBsAg-positive mothers were immunized free of charge with HBIG and HBV vaccine within 24 hours after birth in 2012.

The HBV vaccination strategies have changed in China since 2012 in the following ways: (1) for infants born to HBsAg-positive mothers, three doses of 5μg HBV vaccine alone without HBIG replaced by HBIG 100 IU plus three doses of 10μg HBV vaccine; (2) for infants born to HBsAg-negative mothers, three doses of 5μg HBV vaccine alone replaced by three doses of 10μg HBV vaccine; (3) three doses of 5μg HBV vaccine replaced by three doses of 10μg HBV vaccine for catch-up vaccination; and (4) the dosage of HBV vaccine for adults increased from 10μg to 20μg of HBV vaccine.

In order to guide further enhancements of the hepatitis B control programme, China has improved the surveillance of acute hepatitis B, and a national action plan for HBV control from 2011 to 2015 was set up with the national goal of reducing HBsAg rate to <1% among children at least 10 years of age, and to 6% in the general population by 2015.

Discussion:

ERP members congratulated China on its extraordinary success in hepatitis B control.
(3) Republic of Korea experience: Dr Young-mee Jee

Summary:

The Republic of Korea’s experience in perinatal hepatitis B infection prevention during 2002–2012 was presented. HBV vaccine was introduced during early 1980s and was included in the National Immunization Programme (NIP) in 1995. A perinatal prevention programme was launched in July 2002, and by 2006 the HBsAg-positive rate among children (under 10 years) was 0.2%, while the HBsAg-positive rate among the population (>10 years) was 3% — an average for all age groups. The perinatal prevention programme includes: 1) birth-dose HBV vaccine and HBIG at birth; 2) two additional doses of HBV vaccine at 1 and 6 months; and 3) laboratory testing for HBsAg and HBsAb at 9–15 months. Some 254 public health centres and 3500 private clinics participate in this programme. The budget for this programme is US$ 2 million—50% supported by the Korea Centers for Disease Control and Prevention (KCDC) and 50% by local government.

Results of the 10-year programme show that 96.4% of infants at risk were covered by this programme (estimated percentage based on the HBsAg-positive rate of mothers). Testing of infants of HBsAg positive mothers over the 10 year period found that mother to child transmission was prevented in 97% of the babies. KCDC also conducted a cost-benefit analysis for HBV universal vaccination and the perinatal prevention programme.

Additional research is ongoing for the high-risk group with higher HBV DNA titre of >107/ml by treatment of mothers with higher titre from 28 or 32 weeks until delivery to prevent vaccine failure cases.

Discussion:

There was some discussion of the potential use of antivirals for the prevention of mother-to-child transmission. Some concerns were raised about potential resistance with antiviral use. There was a suggestion that tenofovir could be used to prevent transmission if HBIG is not available. It was recognized that this strategy may prove helpful in developed countries, but because of the cost of screening and the antiviral medication, this strategy would have the same challenges as HBIG in resource-poor settings.

(4) Communication and advocacy for 2017 goal: Dr Samuel So

Summary:

Lack of public awareness and lack of provider awareness are challenges for hepatitis B control. The Asian Liver Center (ALC) is partnering with US CDC, Zeshan Foundation and the WHO Regional Office for the Western Pacific to support and strengthen hepatitis B control initiatives. Field visits in the Lao People’s Democratic Republic revealed that posters do not clearly inform women of when and where to get immunizations. ALC and the Asia Pacific Alliance on Viral Hepatitis (APAVH) developed and donated new banners to the Lao People’s Democratic Republic in 2011. ALC also conducted advocacy work in Viet Nam, the Philippines, and Mongolia. ALC conducted a free catch-up campaign in Qinghai province of China. ALC supported Hong Kong (China) World Hepatitis Day activities, including engaging with the local population to develop a video.
Discussion:

ERP members congratulated the ALC on its important advocacy work. It was mentioned that Australia is also working on building advocates following the success civil society had in influencing HIV policy. The discussion shifted to the topic of what to do about people who are already hepatitis B carriers. A concern was raised that the issue of treatment is being driven by hepatologists rather than public health advocates. It was mentioned that the Zeshan Foundation will support new hepatitis B officer positions in WHO Regional Office for the Western Pacific (in the HIV programme) and in WHO China. There was agreement that significant work is needed in providing treatment for carriers, but that this is not included in the area of work for the ERP. It was mentioned that there will be a need to expand laboratory capacity for treatment and management of hepatitis B.

(5) Age at infection and disease progression: Dr Sir Andrew Hall

Summary:

Dr Hall presented data showing that age standardized rates of liver cancer are dramatically different between China and Gambia (Africa) despite a similar prevalence of infection. HBV DNA levels may be a factor. Birth order through a relationship to perinatal infection may be a significant factor in determining DNA levels. In hepatitis B. This emphasises the critical importance of a timely birth dose in reducing morbidity and explains some of the heterogeneity in disease rates globally.

Discussion:

The data were very well received by the group and it was mentioned that this probably explains why such a high proportion of liver cancer patients in China had HBsAg-positive mothers. It may also help explain the differences in liver cancer outcomes in countries with similar HBsAg prevalences, such as China and Gambia. HBV genotype,

Session VIII: Guidance on a hepatitis B regional plan

Moderator: Dr Hui Zhuang
Rapporteur: Dr Samuel So

Presentations:

(1) Guidance on a hepatitis B regional plan: Mr Eric Wiesen

Summary:

The Western Pacific Regional Plan for Hepatitis B Control through Immunization is six years old, and the 2013 TAG recommended that it be updated. Suggested changes include revising the strategic areas to: (1) vaccination of infants; (2) vaccination of health care workers; (3) vaccine supply and quality; (4) measurement of impact; and (5) advocacy. Discussion questions included: Should the new plan promote the use of CTC? Should the new plan promote school-entry vaccination requirements? Should coverage of health worker vaccination be measured? Are new or improved systems to monitor birth-dose coverage needed? Are catch-up campaigns still needed? To what extent should the strategy include a focus on areas/groups with low vaccination coverage or high prevalence? Is there a need to focus on vaccine safety? Should we consider a goal after 2017? Would it be sufficient to
sustain the achievement or strive for something more – lower prevalence or subnational targets)? Should the plan include optimal timing for hepatitis B birth-dose vaccination to harmonize with MCH Early Essential Newborn Care (EENC) – such as 1.5–2 hours after delivery? Should the strategy include use of devices such as Uniject? Do the verification guidelines need to be updated? Do the birth-dose guidelines need to be updated?

Discussion:

Each participant was given an opportunity to comment on the presentation and the questions posed regarding the new regional plan. The discussion included a concern that the focus of hepatitis control should remain on vaccination as the most cost-effective cancer prevention strategy.

Specific recommendations for updating the regional plan are presented in the recommendations section of this report.

Other recommendations not pertaining directly to the new regional plan included:

- A systematic review of performance is needed for those countries that have already been verified. This should be done prior to 2017 to ensure that those countries are sustaining their low prevalence.
- The regional birth-dose guidelines should be updated and the modelling data should be taken out.
- The regional certification guidelines should be updated and the modelling data should be taken out.
- Hepatitis B should be included as part of the SAGE HCW recommendations for measles and rubella vaccination.

3. RECOMMENDATIONS

3.1 Response to issues from 2012 TAG

(1) Spacing of birth dose:

- The ERP affirms that the birth dose should be given within 24 hours or as soon as possible, but that it is never too late. Regardless of the timing of the birth dose, the schedule for the first combination dose should not be changed.

(2) Contraindications:

- The ERP recommends additional education for health workers to avoid missed opportunities to vaccinate due to misunderstanding of the contraindications for hepatitis B vaccination, such as delaying vaccination for low birth-weight babies. Vaccination should be delayed for unstable infants.

(3) Use of HBIG:

- The ERP affirms that the WHO position paper is clear regarding the use of HBIG and no further guidance is required.
• The ERP recommends a review of the evidence on the use of antivirals (tenofovir) to prevent perinatal transmission for countries with effective antenatal screening programmes.

(4) Controlled Temperature Chain (CTC):

• The ERP recommends that the use of CTC should be promoted in the Region as it can improve birth dose coverage and data have shown that it is safe and effective. Uniject is a useful example of a CTC approach, but use of CTC does not require any specific additional technology.

• The ERP expressed the urgent need for global guidance on CTC use, including:
  o SAGE guidance on the use of CTC for hepatitis B birth-dose vaccination; and
  o WHO HQ support for efforts to label monovalent hepatitis B vaccine for CTC use including collaboration with manufacturers.

(5) Estimating coverage needed for 1% goal:

• While vaccination coverage targets have been set, the ERP recognizes that modelling data is not accurate enough to predict when a country may have reached the 1% goal. The ERP recommends that countries conduct serologic surveys when it is programmatically important to do so. This can include gaining a better understanding of prevalence for programme improvements and determining if the regional goal has been achieved.

(6) Guidance on rapid tests:

• The ERP recommends that WHO HQ update the evaluation of rapid and laboratory hepatitis B assays.

3.2 Verification process

The ERP recommends the following modifications to the verification process:

(a) Deadlines should be set for the review of the verification package by the ERP panel.

(b) To expedite the process, only the panel chairperson will be required to sign the verification letter.

(c) To increase transparency, the panel recommendations will be circulated to all ERP members for comment before finalizing the decision.

(d) Countries will be informed of the timeline and process so that they know when to expect a response.

3.3 Upcoming verifications

The ERP recommends that American Samoa, Wallis and Futuna, and Singapore submit their verification packages. The ERP recognizes that up to 13 countries and areas
(French Polynesia, New Caledonia, the Commonwealth of the Northern Mariana Islands, the Marshall Islands, Niue, Kiribati, Samoa, Tuvalu, Tokelau, Tonga, Nauru, Guam, and the Federated States of Micronesia) are in the process of conducting serosurveys and may be ready for verification within the next two years.

3.4 Serosurveys

(a) The ERP recommends conducting a review of the methods and implementation of the 2013 Philippines survey.

(b) The ERP recommends that Fiji conduct a representative serosurvey before submitting its verification package.

3.5 Laboratory network

The ERP recommends the establishment of a regional hepatitis B laboratory network. Specific recommendations for the hepatitis B laboratory network are provided below.

3.6 Strategy for 2017 and beyond

(a) The ERP recommends that the WHO Regional Office for the Western Pacific develop a new regional strategic plan for hepatitis B to include updated guidance on performance monitoring, impact measurement, vaccine safety and vaccination of health workers. Specific suggestions for the new plan are provided below.

(b) In order to explore potential goals beyond 2017, the ERP recommends that the WHO Regional Office for the Western Pacific develop a methodology for measuring prevalence less than 1%.

3.7 Regional guidelines

The ERP recommends that the WHO Regional Office for the Western Pacific update the hepatitis B certification and birth-dose guidelines.

3.8 ERP meeting schedule

The ERP recommends holding annual meetings to review vaccination coverage country-by-country to ensure gains are being sustained and information shared. In the interval between meetings, the ERP recommends maintaining regular communication via email and teleconferences as needed.
Recommendations for creation of a regional hepatitis B laboratory network

Documented problems of laboratory errors in hepatitis B testing necessitate special attention to ensuring high-quality testing of specimens for hepatitis B. These errors include implausibly high carrier rates (e.g., 50% carrier rates, etc.), use of uncertified rapid tests and ELISAs, problems classifying types of viral hepatitis (A, B, C, D, E) and classification of hepatitis B carriers vs. acute cases. During the second Hepatitis B ERP meeting in 2013, all ERP members agreed that a regional laboratory network for hepatitis B diagnostic testing is needed in the Western Pacific Region to provide high-quality laboratory data needed to measure progress and support achievement of hepatitis B control goals. Development of a regional hepatitis B laboratory network in Western Pacific Region might encourage development of laboratory networks in other WHO regions.

The VIDRL has been designated as a WHO regional reference laboratory, and could provide support for developing a regional hepatitis B laboratory network.

Possible functions of a hepatitis B laboratory network might include:

1. Coordinating quality control and quality assurance-related activities of laboratories performing hepatitis B diagnostic testing, including:
   - developing a handbook with norms, standards and reference materials;
   - developing proficiency panels to be sent to network laboratories on a regular basis;
   - establishing procedures to send serum samples to the regional reference laboratory (RRL) for quality assurance testing;
   - developing an accreditation process to maintain high laboratory performance levels;
   - providing hands-on training workshop on the laboratory diagnosis of hepatitis B;
   - encouraging countries to use laboratory tests with highest sensitivity and specificity;
   - updating the list of acceptable rapid tests and ELISAs used for HBsAg detection; and
   - developing standardized data collection procedures and implementing quality assurance procedures to improve data collection.

2. Developing hepatitis B reference diagnostic capacity in national laboratories and supporting national laboratories in developing capacity at subnational levels.

3. Helping to identify gaps in diagnostic testing in resource-constrained settings.

4. Formalizing relationships between the RRL and national laboratories, including conducting regional meetings to discuss progress and challenges of the network laboratories.

5. Conducting systematic studies of HBeAg prevalence, viral titres and genotypes in pregnant women to assess reasons for different rates of perinatal HBV transmission among countries in the Region.

6. Developing standardized methods and optimizing tools to detect and classify HBV mutants and variants. This may be accomplished through long-term periodic surveillance for variants at a few selected sites in the Region.
**Next steps**

1. Need to secure the funding and human resource to establish the new hepatitis B laboratory network in the Region.

2. Need to develop a charter and terms of reference for the laboratory network.

3. Need to establish national reference laboratories. These could be identified using the governance structure of Member States with selection of laboratories by national governments. Use of this process might be used to identify financing and enhance sustainability of the network.

4. Need to coordinate with WHO HQ and with the global laboratory working group. Regional input is important for the global process.

5. Need to consider how a hepatitis B laboratory network could play a role in developing laboratory capacity for overall hepatitis control efforts, including screening and treatment, standards and capacity to measure viral load, diagnostic capacity for surveillance of all types of viral hepatitis.

6. Need to consider linking with existing quality control and quality assurance procedures used for blood banks.
ERP suggestions for updating the Western Pacific Regional Plan for Hepatitis B Control through Immunization:

Vaccination of health workers: The best policy is a legal requirement for health-care workers to be vaccinated. The ideal time for vaccination is during training. Catch-up campaigns could be considered. Monitoring health worker vaccination policies is more practical than monitoring coverage for health-care workers. More discussion is needed to develop guidance on vaccination of other adult populations.

Controlled temperature chain (CTC): It is unlikely that the label will change in the near future, but the ERP feels strongly that CTC should be promoted in the region, as it can improve birth dose coverage and data have shown that it is safe and effective. Uniject can be mentioned as a useful example of a CTC approach, but use of CTC is not dependent on any particular technology. It is important to keep a supportive reference in WHO guidance for CTC delivery of a hepatitis B birth dose. Currently, the Western Pacific Region birth dose guidelines are the only place where WHO explicitly supports CTC.

Monitoring birth-dose coverage: Improved systems to monitor birth-dose coverage are needed. There are problems with the data under the current system. Monitoring coverage by hospital vs. home delivery would be useful in countries where home births are still common – at least 10% of births occur at home.

Catch-up campaigns: This should be recommended as a secondary strategy after routine infant vaccination reaches the target levels if countries have resources and if it is epidemiologically appropriate. Priority groups include children above 1 year – starting with the youngest age cohorts – and health care workers.

Focus on poor-performing districts and high-prevalence groups: Should promote additional analysis of subnational coverage data including mapping in order to meet the goal of 85% coverage in all districts. Particular attention should be paid to underserved or high-prevalence populations. Priority groups could be ethnically or geographically defined and special efforts should be made to reach marginalized populations.

Vaccine safety: The plan should include language emphasizing the safety of the vaccine and include guidance on how to handle questions of vaccine safety. Clear guidance should be provided that low birth weight is not a contraindication, but the birth dose should only be given after the baby is stable and should not interfere with other urgent clinical care.

Timing of birth dose: Detailed practical recommendations for birth dose should be country specific to fit in with the prevailing guidance for post-partum care, addressing who should give the birth dose and to avoid interfering with any urgent clinical care needs – but aim for administration within 24 hours – and minimize false contraindications, especially low birth weight.
Goal after 2017. It would be good to develop a post-2017 goal. Ensure that all populations are protected. Need to identify a methodology for measuring prevalence under 1%. The focus of a target after 2017 could be on interrupting remaining perinatal transmission.

Guidance on serosurveys: Guidance on when and why to do serosurveys is needed. The ERP suggests that the WHO Secretariat develop draft guidance. The guidance should promote inclusion of mothers in serosurveys.

Monitoring of countries already verified: Post verification, regular monitoring of coverage and supporting countries to maintain high and timely coverage are important to ensure that the gains are sustained.
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Annex 1

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AGENDA

1. Opening session

2. Overview
   2.1 Global overview
   2.2 WHO impact study
   2.3 Region overview

3. Verification
   3.1 Review of verification schedule
   3.2 Review of verification process

4. Special issues
   4.1 Burden of perinatal transmission
   4.2 Overview of research on birth dose at 24 and > 24 hours
   4.3 Hepatitis B in Japan
   4.4 Lao People's Democratic Republic serosurvey

5. Routine immunization and birth dose issues
   5.1 On-time hepB-birth as opportunity to strengthen the routine immunization programme
   5.2 Using vaccine in controlled temperature chain (CTC)
   5.3 Improving birth dose uptake

6. Laboratory issues
   6.1 Laboratory update
   6.2 VIDRL update
   6.3 Use of oral fluids for HBsAG testing

7. Future directions
   7.1 Targeting high-risk populations
   7.2 Post-verification experience in China
   7.3 Post-verification experience in the Republic of Korea
   7.4 Communication and advocacy for 2017 goal
   7.5 Mode of HBV acquisition in Africa

8. Guidance on hepatitis B regional plan
   8.1 Western Pacific Region hepatitis B strategic areas

9. Wrap up
   9.1 2014–2015 verification work plan
   9.2 Meeting recommendations

Closing
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<td>Registration</td>
<td>09:00-</td>
<td>6. Laboratory issues</td>
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<td>09:00-</td>
<td>1. Opening</td>
<td>10:00</td>
<td>• Laboratory update (YM Jee)</td>
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<td>• Opening remarks (S Diorditsa)</td>
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<td>• VIDRL update (B Cowie)</td>
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<td>• Welcome (H Watanabe)</td>
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<td>• Introductions (All)</td>
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<td>• Use of oral fluids for HBsAG testing (M Patel)</td>
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<td>• Overview</td>
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<tr>
<td>10:45-</td>
<td>2. Overview</td>
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<td>7. Future directions</td>
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<td>3. Verification</td>
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<td>• Targeting high-risk populations (E Wiesen)</td>
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<td>• Burden of perinatal transmission (E Mast)</td>
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<td>• Overview</td>
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<td>• Mode of HBV acquisition in Africa</td>
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<td>5. Routine immunization and birth dose issues</td>
<td>03:00-</td>
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