

SIXTH HEPATITIS B IMMUNIZATION EXPERT RESOURCE PANEL CONSULTATION



17–18 September 2018
Manila, Philippines



**Third Strategic and Technical Advisory Committee for Viral Hepatitis and Sixth Hepatitis B Immunization Expert Resource Panel Joint Consultation
17-20 Sept 2018, Manila, Philippines**

WORLD HEALTH ORGANIZATION
REGIONAL OFFICE FOR THE WESTERN PACIFIC

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MEETING REPORT

THE SIXTH HEPATITIS B IMMUNIZATION EXPERT RESOURCE
PANEL CONSULTATION

Convened by:

WORLD HEALTH ORGANIZATION
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NOTE

The views expressed in this report are those of the participants of the Sixth Hepatitis B Immunization Expert Resource Panel Consultation and do not necessarily reflect the policies of the conveners.

This report has been prepared by the World Health Organization Regional Office for the Western Pacific for Member States in the Region and for those who participated in the Sixth Hepatitis B Immunization Expert Resource Panel (ERP) Consultation, which was held in Manila, Philippines from 17 to 18 September 2018. The first half-day and closing half-day of this consultation were held jointly with the Strategic Technical Advisory Committee for Viral Hepatitis in the Western Pacific (STAC). Summaries and recommendations from the stand-alone ERP and STAC sessions on 17 and 18 September 2018 will be presented separately.

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Annex 1. List of participants
Annex 2. Meeting programme

Keywords

Hepatitis B – prevention and control / Immunization / Vaccination

SUMMARY

The Sixth Hepatitis B Immunization Expert Resource Panel (ERP) Consultation was held in Manila, Philippines, on 17–18 September 2018. It was attended by representatives from China and Malaysia that have held in-country consultations on developing elimination of mother-to-child transmission (EMTCT) of hepatitis B virus (HBV) over the past six months. Joint sessions were held with the Strategic and Technical Advisory Committee (STAC) for Viral Hepatitis to discuss cross-cutting issues and for planning activities to include EMTCT of HBV. Participants presented their country's progress in implementing the recommendations from the Fifth ERP Consultation and discussed their near- and long-term planned hepatitis B birth dose (HepB-BD) activities, including planning towards EMTCT of HBV. Staff from WHO headquarters and the Western Pacific Region presented updates on global and regional activities. A representative from the United States Centers for Disease Control and Prevention presented on recently completed hepatitis B impact serosurveys and lessons learnt from verifying low hepatitis B surface antigen (HBsAg) seroprevalence targets. It was generally recognized that the Western Pacific Region leads the way in responding to hepatitis B elimination goals through the widespread scale-up of hepatitis B immunization, in particular long-standing use of universal HepB-BD in all but two countries (Japan and New Zealand) in the Region.

With 24 of the 37 countries and areas in the Region indicating less than 1% HBsAg-positive seroprevalence among 5-year-olds by 2017 through nationally representative serosurveys, the Western Pacific Region has impressively reached a regional prevalence of 0.93% among 5-year-olds in 2017, despite having over 45% of the global burden of people living with hepatitis B. Per the 2017 Joint Reporting Form of the WHO and the United Nations Children's Fund (UNICEF), 20 of 35 countries and areas reported having achieved at least 95% HepB-BD coverage, and 18 of 35 countries and areas have achieved at least 95% third-dose of hepatitis B-containing vaccine (HepB3) coverage as established in the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020*. In addition, 20 countries and areas have serosurvey evidence of having reached less than 0.50% HBsAg-positive seroprevalence among 5-year-olds. To encourage countries and areas to reach the global elimination target of at least 0.1% among 5-year-olds by 2030, the ERP endorses the following interim targets for 2025:

1. All countries and areas in the Region should reduce HBsAg prevalence among 5-year-olds to less than 1% by 2025.
2. Countries and areas within the Region that have reduced HBsAg prevalence to less than 1% among 5-year-olds should further reduce HBsAg prevalence to less than 0.3% among 5-year-olds by 2025.

Operational research is needed to help document whether a country has reached these proposed regional targets. The ERP emphasized that high coverage levels of hepatitis B vaccination of newborns and young children remain the cornerstone of prevention in all countries, and hepatitis B vaccination programmes should be strengthened for all infants, regardless of the HBsAg status of their mothers, with the aim of achieving at least 95% coverage for both HepB-BD and HepB3. Concerted effort and/or direct assistance will likely be necessary to assist countries and areas that have not reached the 2012 and/or 2017 prevalence targets (2% and 1%, respectively) or the 2017 vaccination coverage milestones (95% for Hep-BD and 95% HepB3).

The ERP was encouraged by the triple elimination work led by the WHO Secretariat to ensure coordination among traditionally vertical programmes. To further the elimination of hepatitis B, the

goal should be to safely and efficiently incorporate additional hepatitis B interventions onto the strong foundational support of vaccination programmes, which are responsible for decreasing up to 90–95% of HBV transmission.

1. INTRODUCTION

1.1 Meeting organization

The Hepatitis B Immunization Expert Resource Panel (ERP) was created in 2007 to support the Western Pacific Region to reach the hepatitis B control goal. Its primary purpose is to advise on the status and strategies for achieving the regional hepatitis B control goal, support the verification process, and serve on Member State verification panels. Much progress has been made in hepatitis B control in the Region, including the achievement of the 2012 and 2017 milestones of reducing chronic infection prevalence among 5-year-old children to less than 2% and 1%, respectively. Additional guidance is needed to sustain these achievements, improve performance in priority countries and develop post-2017 regional targets that are in the line with the global 0.1% target among 5-year-old children by 2030.

1.2 Meeting objectives

The objectives of the ERP consultation were:

- 1) to review the status of the viral hepatitis burden and the 2017 verification status for hepatitis B prevention by country and provide country-specific recommendations as necessary; and
- 2) to review and provide guidance on immunization targets developed in the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020* and the *Global Health Sector Strategy on Viral Hepatitis 2016–2021*.

The joint objectives of the ERP and STAC were:

- 1) to discuss additional interventions to eliminate mother-to-child hepatitis B transmission, building upon high vaccine coverage; and
- 2) to develop recommendations for global criteria and process for validating elimination of mother-to-child transmission (EMTCT) of hepatitis B virus (HBV) and discuss the ERP and STAC's involvement in this process.

ERP recommendations were made in eight technical areas: achieving and maintaining high timely hepatitis B birth dose (HepB-BD) and third-dose of hepatitis B-containing vaccine (HepB3) coverage; elimination of HBV transmission; controlled temperature chain (CTC) and outside of the cold chain (OCC) HepB-BD; health-care worker vaccination; monitoring and evaluation of HBV progress; communication and advocacy; laboratory network; and vaccinating and documenting non-citizen populations.

1.3 Agenda and participants

The 6th ERP meeting was attended by representatives from China and Malaysia that have held in-country consultations on developing EMTCT of HBV over the past six months. Joint sessions were held with the Strategic and Technical Advisory Committee (STAC) to discuss cross-cutting issues and for planning activities to include EMTCT of HBV. The participants presented their country's progress in implementing the meeting's recommendations and discussed their near- and long-term planned HepB-BD activities, including planning towards EMTCT of HBV. WHO staff from headquarters and the Western Pacific Region presented updates on regional and global activities. A United States

Centers for Disease Control and Prevention representative presented on recently completed hepatitis B impact serosurveys and lessons learnt from verifying low hepatitis B surface antigen (HBsAg) seroprevalence targets. It was generally recognized that the Western Pacific Region leads the way in responding to hepatitis B elimination goals through the widespread scale-up of hepatitis B immunization, in particular long-standing use of universal HepB-BD in all but two of 37 countries and areas in the Region.

Annex 1 includes the list of participants and the meeting agenda is available in Annex 2.

1.4 Appointment of officers

Dr Takaji Wakita, General Director of the National Institute of Infectious Diseases, Japan, was appointed Chairperson of the ERP.

2. PROCEEDINGS

2.1 Combined ERP and STAC opening session

Dr Naoko Ishikawa, Coordinator for HIV, Hepatitis and Sexually Transmitted Infections (HSI), welcomed the participants to the Third Strategic and Technical Advisory Committee for Viral Hepatitis and Sixth Hepatitis B Immunization Expert Resource Panel Joint Consultation.

Dr Mark Jacobs, Acting Director for Programme Management, delivered opening remarks on behalf of Dr Shin Young-soo, WHO Regional Director for the Western Pacific. Dr Jacobs welcomed the participants to the joint consultation. He acknowledged the progress made in the Region and government commitment to addressing hepatitis. World Hepatitis Day was celebrated in Mongolia this year, marking the country's success in combating viral hepatitis through providing universal coverage for diagnosis and treatment for the entire population through the national health insurance programme. However, there are many more people who will need to be tested and linked to care and treatment, given the substantial burden in the Region. Dr Jacobs encouraged participants to review the progress and lessons learnt and recommend ways that the Region can meet the targets of the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020* to reduce the morbidity and mortality due to hepatitis.

2.2 Global overview

Dr Marc Bulterys presented an overview of HBV prevention and global progress towards elimination of viral hepatitis. To eliminate viral hepatitis as a public health threat by 2030, which includes reductions in incidence by 90% and mortality by 65%, will require: addressing gaps in prevention, particularly timely birth dose (defined as birth dose given within 24 hours) and harm reduction for people who inject drugs; and testing and ensuring access to affordable treatment at scale. Timely HepB-BD has been successful in the Western Pacific Region, where perinatal transmission historically was a major problem. However, global coverage was still low at 39% by 2015, and even lower in the WHO African Region, which is highly endemic for HBV. Vaccine coverage for HepB3 improved globally to about 83% in 2017.

Dr Bulterys noted the substantial burden of chronic HBV and hepatitis C virus (HCV) infections, particularly in low- and middle-income countries, and the disproportional burden of HBV in the Western Pacific Region. Low-cost generic medicines for HBV treatment are now widely available;

however, countries still need to work on making treatment accessible. Global cascades of HBV and HCV care show that many infected individuals remain undiagnosed, and only a minority are accessing treatment. WHO's focus includes: delivering for country impact; addressing data, normative and policy needs; and positioning the hepatitis response within the broader universal health coverage agenda.

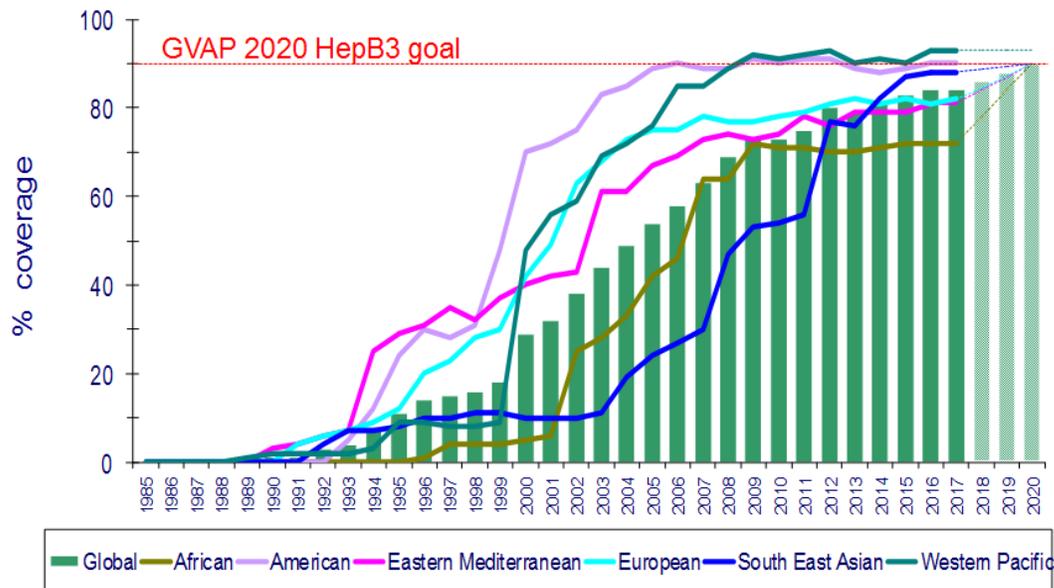
2.3 Regional overview

2.3.1 Progress of hepatitis B control through immunization in the Western Pacific

Twenty-four countries in the Western Pacific Region have serosurvey evidence of meeting the target of less than 1% HBsAg among 5-year-old children. This target was regionally set for achievement by 2017 and globally by 2020. The Region as a whole has met this 1% target, with 0.93% prevalence among children born in 2012.

HepB3 coverage has progressed globally, with the WHO Western Pacific Region demonstrating the highest HepB3 coverage. HepB-BD coverage, while improving in the Western Pacific Region and Region of the Americas, remains low in most other regions (Figs 1 and 2).

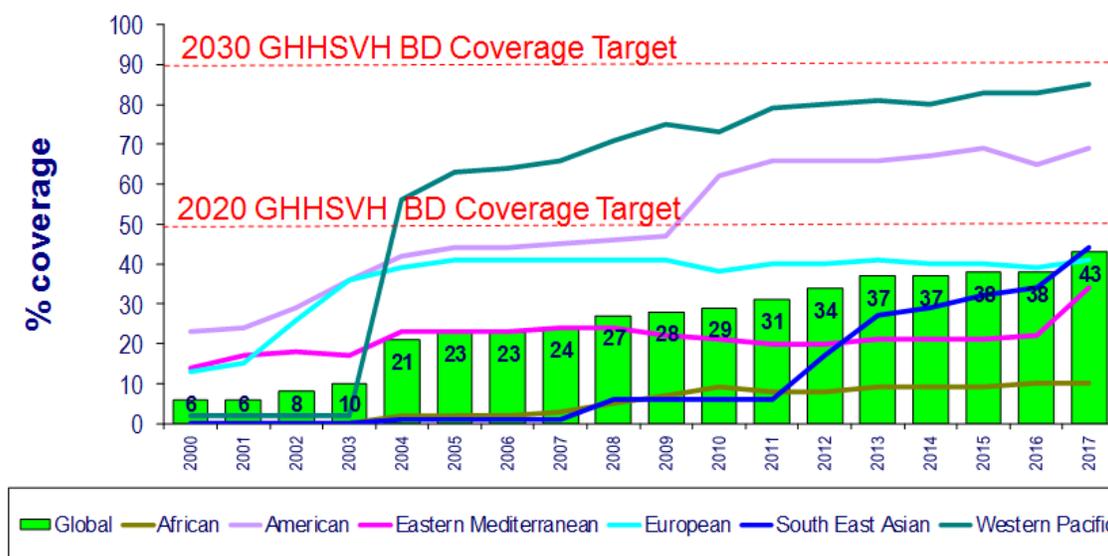
Fig. 1. HepB3 coverage among infants, globally and among regions, 1980-2017, and projections to reach 2020 Global Vaccine Action Plan HepB3 coverage goal



GHHSVH: Global Health Sector Strategy for Viral Hepatitis 2016-2021; HepB3: third-dose of hepatitis B containing vaccine.

Source: WHO/UNICEF coverage estimates 2017 revision, July 2018. Immunization Vaccines and Biologicals, (IVB), World Health Organization. Date of slide: 15 July 2018.

Fig 2. HepB-BD coverage, globally and by region, 2000-2017



Key: GHHSVH: Global Health Sector Strategy for Viral Hepatitis 2016-2021; BD: hepatitis B birth dose.

Source: WHO/UNICEF coverage estimates 2017 revision, July 2018. Immunization Vaccines and Biologicals, (IVB), World Health Organization. Date of slide: 15 July 2018.

Dr Joseph Woodring discussed the use of the heat-stable HepB-BD OCC in areas which may be hard to reach and or have limited cold chain capacity. He surmised that the global 2030 target of reaching 0.1% HBsAg prevalence among 5-year-old children will require hepatitis B interventions beyond high immunization coverage, such as antiviral treatment for mothers with high viral loads and hepatitis B immunoglobulin and post-vaccination serologic testing (PVST) to assess the outcome of these interventions on exposed newborns. These additional hepatitis B interventions require coordination across other programmes such as Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH) and HSI. The Regional Committee’s 2017 endorsement of the *Regional Framework for the Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B and Syphilis in Asia and the Pacific 2018–2030* looks to use the shared RMNCH platform to coordinate and efficiently enable EMTCT of these three infections.

2.3.2 Regional Action Plan for Viral Hepatitis in the Western Pacific 2016-2020 implementation progress

Dr Po-Lin Chan presented the implementation progress of the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020*. The Region shoulders 40% of the global burden of people living with HBV and HCV, and one third of the global viral hepatitis-related death. She noted the success and high coverage of prevention interventions to date, noting that while the regional coverage for timely birth dose far exceeds any other region, many countries remain below the 95% target for 2017. Harm reduction among people who inject drugs also has fallen short of the 2017 milestone.

Opportunities exist to leverage the synergies of integrated service delivery such as through triple EMTCT. Countries are now working on strengthening their comprehensive response on hepatitis prevention and treatment, and 21 countries have developed or are developing national action plans. HBV and HCV treatment are being financed through health insurance and government financing in 11 countries. In 2016, testing coverage for HBV and HCV were 17% and 21%, respectively; however,

treatment access was low. Scaling up testing and linkage to care and ensuring affordable treatment access remains a challenge. There are opportunities to reduce prices of medicines through use of lower-cost generic medicines. Barriers to access for hepatitis care such as stigma and discrimination are poorly understood in most countries.

2.3.3 EMTCT of HIV, hepatitis B and syphilis: an opportunity to further advance accelerated hepatitis B control

Dr Naoko Ishikawa provided an overview of the *Regional Framework for Triple Elimination of Mother-to-Child Transmission of HIV, Hepatitis B and Syphilis in Asia and the Pacific 2018–2030* endorsed by Member States in October 2017. With benefits to individuals and their families, the Framework calls for high-level commitment on quality maternal, newborn and child health services, building more efficient and sustainable mechanisms for service delivery as well as preventing other perinatally transmitted infections such as hepatitis C. It draws upon the experience of dual EMTCT of HIV and syphilis, and includes impact indicators for EMTCT of HBV, which are in line with the 2030 global target of at least 0.1% HBsAg seroprevalence among children.

EMTCT of HBV builds on the foundation of a strong HBV vaccination programme, with an incremental approach to offering additional hepatitis B interventions and services. These include universal antenatal screening of HBV, use of antiviral drugs by mothers, hepatitis B immunoglobulin (HBIG) for their exposed babies, PVST to determine the outcome of babies, as well as opportunities for identifying and linking pregnant women and their family members with chronic HBV infection to necessary services. In 2017, activities included pilot projects in China, cost-effective analysis in Cambodia and developing joint action plans in other countries. Consultations in China and Malaysia noted that there is need for new and combined approaches for validation, and the accumulating implementation experience in countries will provide evidence towards developing WHO guidance on the additional interventions and validation approaches. Triple elimination is a strong mechanism to facilitate the move towards hepatitis elimination.

2.4 Country experiences: eliminating viral hepatitis

2.4.1 China: EMTCT of HBV

Dr Hui Zheng presented China's progress on HBV prevention and EMTCT towards "finishing the last mile". The country has adopted an increasingly rigorous approach to HBV policy since 1985, with introduction of universal antenatal HBV screening among pregnant women and HBIG to HBV-exposed babies in 2011. China also updated its HBV vaccination schedule in 2016 and began piloting the feasibility of PVST for HBV-exposed children in 2017. The country remains focused on ensuring universal timely birth dose in hospitals and using community-based approaches for home deliveries, provision of free HBV testing among pregnant women and free HBIG for HBV-exposed babies. Catch-up vaccination among 68 million children and adolescents less than 15 years of age in 2009-2011 added to the success of prevention. National programme data indicate 99.5% coverage with HepB3, 96% timely birth dose, 99% testing of HBV among pregnant women, and 99.5% of HBV-exposed babies being provided HBIG.

Dr Zheng presented lessons learnt from the PVST feasibility pilot, noting that 2.6% of HBV-exposed infants remain susceptible after vaccination and will need revaccination. Operational challenges in ensuring adherence to blood testing for PVST among infants were also discussed, with 44% of caregivers (parents or grandparents) refusing blood sampling or failing to obtain blood from the infant. The implementation of the PVST service would need to be supported by a strong multisectoral

integrated information platform and ensuring that the mother's HBV status is also included within the children's vaccination information system.

China has established triple elimination as a national commitment and priority under the 13th five-year plan for EMTCT (2016–2020) with establishment of demonstration pilots, development of validation guidelines, subnational preparation, and resourcing and readiness for validation of EMTCT at the national level. The SHIELD project of zero transmission of HBV from mother to child involves selective use of antivirals to further reduce transmission, and it networks 100 hospitals in providing this service. Dr Zheng surmised that the next steps would be to: strengthen timely birth dose implementation in areas which are weaker; improve the prevention of mother-to-child transmission strategy by ensuring screening of those infected for HBV seromarkers such as hepatitis B e-antigen (HBeAg) and maternal viral load; promote selective use of antiviral drugs; strengthen monitoring and evaluation; and promote multisectoral collaboration among the national immunization programme, maternal and child health services, hospital services and policy think tanks on immunization.

2.4.2 Malaysia: hepatitis B and C elimination

Dr Anita Suleiman presented Malaysia's progress on HBV and HCV elimination. Malaysia started its hepatitis B programme in 1974 with blood donor screening, surveillance in 1988, health-care worker vaccination in 1989 and screening high-risk women during antenatal care in 2000. Malaysia achieved a national seroprevalence of 0.3% among children in 2011, and began acute and chronic hepatitis surveillance in 2012. In 2013, antenatal HBV screening in Sabah was established as HBV prevalence was high particularly among ethnic groups and migrant populations. High-risk groups for vaccination and screening include health care workers, police, prison and drug rehabilitation centres. Programmatic data from 2009 showed birth dose coverage was 96%, which dropped to 87% in 2013 and then gradually climbed to 90% in 2017. Malaysia was validated as having achieved the WHO HBV control target of less than 1% in 2009.

There is no requirement to report screening among women attending antenatal care, but a few states are conducting surveys showing HBsAg prevalence at 2.6% in 2018 among pregnant women. Saba province, with the highest national HBV burden, had 64% antenatal HBV screening coverage. HBV case notification has been gradually increasing. Dr Suleiman surmised that to achieve HBV elimination, policy changes need to align with the Regional Framework for Triple Elimination, including the development of guidelines for EMTCT of HBV and training of health-care providers, as well as demand creation and public awareness. There are plans to pilot EMTCT of HBV in three states to generate evidence for policy-making.

In subsequent discussions during the meeting, it was pointed out that the other viral hepatitises such as hepatitis E (HEV) did not feature strongly in the agenda. It would be important to include in the future since two candidate vaccines are in development. Participants discussed triple elimination and the accumulating evidence on the effectiveness of antivirals for EMTCT, noting the need for WHO guidance development in this area and inclusion in discussions of the Strategic Advisory Group of Experts (SAGE). The triple elimination approach should be part of the broader hepatitis elimination approach articulated by the Regional Action Plan, and positioned within universal health coverage and health systems strengthening.

2.5 Regional Expanded Programme on Immunization (EPI) update (ERP members only)

Dr Yoshihiro Takashima discussed the progress toward regional immunization goals, including the *Regional Framework for Implementation of the Global Vaccine Action Plan in the Western Pacific*,

2014–2020. After outlining the eight regional immunization goals for the Western Pacific, Dr Takashima discussed current or recent challenges, which for poliomyelitis (polio) include significant immunity or surveillance gaps at subnational levels and outbreaks of circulating vaccine-derived polio virus in the Lao People’s Democratic Republic in 2015 and in Papua New Guinea in 2018. An increased risk of large-scale measles resurgence and outbreaks exists, with ongoing measles virus transmission in some countries and an increased risk of congenital rubella syndrome.

With the Philippines recently validated as having achieved maternal and neonatal tetanus elimination, the sustainability of maternal and neonatal tetanus elimination will require sustained attention. For hepatitis B accelerated control, interventions to achieve the global elimination target by 2030 need to be established and post-2017 regional control targets adopted. Dr Takashima also discussed planning for the post-Global Vaccine Action Plan era from 2021–2030, which includes eliminating and accelerating the control of prioritized vaccine-preventable diseases, including hepatitis B. The EPI office is currently working with WHO headquarters to develop a high-level immunization strategy for 2019–2023 that is aligned with WHO’s new five-year General Programme of Work and its related transformative vision for the Organization.

2.6 Review of previous ERP recommendations

Dr James Heffelfinger reviewed the progress made on the recommendation from the 5th ERP meeting in January 2017, as well as the accelerated hepatitis B control recommendations made during the 27th Technical Advisory Group (TAG) on Immunization and Vaccine-Preventable Diseases in the Western Pacific Region meeting in July 2018. General recommendations made during the 2017 5th ERP meeting to adopt the prior proposed regional HBsAg prevalence target of 0.5% by 2025 and for all Member States to reduce HBsAg prevalence to less than 1% by 2025. These proposals were not considered at the 2017 session of the Regional Committee and are not proposed for the October 2018 session. Having written to Japan and New Zealand to consider universal HepB-BD, the ERP has not received a response from either country on the effectiveness of their selective HepB-BD vaccination programmes. Dr Heffelfinger summarized country-level responses to prior ERP recommendations, noting the advances in Solomon Islands to scale up the use of HepB-BD OCC to other provinces. The controlled temperature chain (CTC) working group at WHO headquarters is following up with the prior ERP recommendation to synthesize findings and conclusions of available thermostability data for hepatitis B vaccines that could potentially be used in CTC.

During the 2018 TAG meeting, the TAG recommended that the ERP develop and prioritize recommendations for additional interventions to incorporate into perinatal programmes to achieve proposed post-2017 hepatitis B goals. TAG members also recommended to share best practices employed and lessons learnt by Cambodia, which, after being identified as one of five priority countries in 2012 to develop a national HepB-BD plan, was recently verified as having achieved HBsAg prevalence of less than 1% in 5-year-olds.

2.7 Sustaining the progress among verified countries

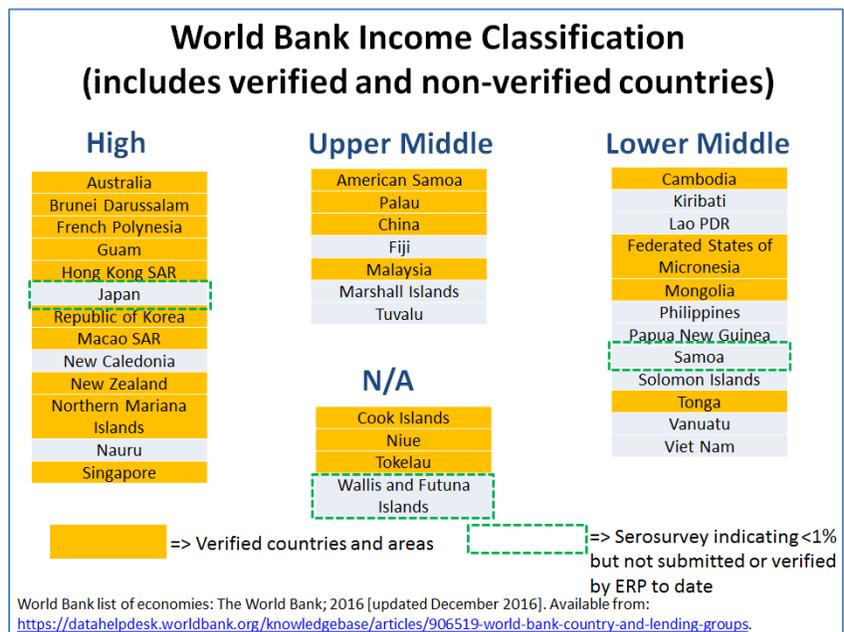
As of September 2018, 21 countries and areas in the Western Pacific Region have been verified by the ERP to have reached a hepatitis B prevalence of less than 1% among those aged 5 years and above. These include (year of verification): Republic of Korea (2008), Macao SAR (China) (2008), Hong Kong SAR (China) (2011), Malaysia (2011), Australia (2012), China (2012), Mongolia (2012), New Zealand (2012), Tonga (2012), Palau (2013), Brunei Darussalam (2013), Cook Islands (2013), American Samoa (2014), Singapore (2015), Tokelau (2016), Guam (2016), French Polynesia (2016),

Niue (2017), Commonwealth of Northern Mariana Islands (2017), Federated States of Micronesia (2018) and Cambodia (2018). Japan, Wallis and Futuna and Samoa have conducted serosurveys indicating less than 1% seroprevalence among children at least 5 years of age but have not submitted their verification packages to the ERP to date.

Dr Joseph Woodring presented data for these 21 verified countries and areas on timely birth dose, any HepB-BD and HepB3 coverage, as well as district-level coverage of timely birth dose and HepB3 coverage, when countries had submitted this information in the 2017 WHO/UNICEF Joint Reporting Form.

Using the World Bank’s income classification based on its Atlas method,¹ countries and areas in the Western Pacific Region were divided into low-income, lower middle-income, upper middle-income and high-income economies according to their gross national index (or GNI).² Fig. 3 shows the status of verified countries and areas by income classification. Before 2017, Mongolia and Tonga were the only low middle-income countries to have been verified as having met the less than 1% target. Since this time, the Federated States of Micronesia and Cambodia have also been verified as having met this target.

Fig. 3. Status of verified countries and areas in the WHO Western Pacific Region by World Bank income classification in 2015



Among verified countries and areas, high vaccine coverage has largely been maintained. However, there are insufficient data from coverage surveys to validate administratively reported coverage. Discussion centred on indicating the total number of districts in each country into future editions of the Hepatitis B Control: Country Profile. This will allow reviewers to more readily ascertain the representativeness of reported district timely birth dose and HepB3 coverage.

¹ World Bank country and lending groups [online database]. Washington, DC: World Bank; 2016.

² GNI per capita is the dollar value of a country’s financial income in a year, divided by its population, reflecting the average income of a country’s citizens. Low-income economies have a GNI per capita of US\$ 1025 or less; lower middle-income economies have a GNI per capita of US\$ 1026–US\$ 4035; upper middle-income economies have a GNI per capita of US\$ 4036–US\$ 12 475; and high-income economies have a GNI per capita of US\$ 12 476 or more.

District-level data represent the third-level subnational unit, with the first level being the national level and the second being the provincial level. ERP members also requested that further instructions on reporting immunization coverage levels be provided to countries to help standardize this information to be annually reported in the WHO/UNICEF Joint Reporting Form. The current reporting of information precludes the ability to compare hepatitis B coverage levels between countries. Anticipated issues that may continue to preclude this comparison include: some countries being too small to report third-level data and only reporting second-level data; countries not having a reporting system that can capture data to the third level; and the authority responsible for compiling data for WHO/UNICEF Joint Reporting Form data submission only having access to second- and not third-level aggregated data.

2.8 Countries with recently completed or planned serosurveys

Dr Rania Tohme presented results from recently completed serosurveys and highlighted countries that could potentially be implementing hepatitis B serosurveys in 2019. The Philippines conducted a three-stage household survey from June to August 2018 in 25 provinces, sampling 12 barangays per province and 50 households per barangay. Having tested 2182 of the required 2283 (95.6%) children aged 5–6 years with SD Bioline[®] HBsAg rapid test, the provisional unweighted HBsAg prevalence was 0.7% (95% CI: 0.4%–1.2%). Among 15 HBsAg-positive children, only two (13%) had completed their hepatitis B vaccination series, while three (20%) children had received a birth dose.

Cambodia completed their two-stage cluster serosurvey, sampling 2520 children and 2028 (80%) of these children's mothers. Overall HBsAg seroprevalence was 0.56% (95% CI: 0.27%–0.85%) among children and 4.39% (95% CI: 3.50%–5.29%) among the mothers. This integrated serosurvey will also analyze ELISA HBsAg, anti-HBs, anti-HBc, anti-HCV, anti-HAV and anti-HEV. In addition, dried blood spots were collected from all participants with a subsample having serum analysis to ascertain the utility of using dried blood samples for hepatitis B and C testing in the field.

The Federated States of Micronesia completed a school-based census hepatitis B serosurvey in 2017 among 2472 children in the first grade. The overall prevalence of HBsAg was 0.3% (95% CI: 0.1%–0.5%). The Marshall Islands also completed a serosurvey among 1148 first-grade students. The overall HBsAg prevalence was 1.2% (95% CI: 0.6%–1.9%). Prevalence was higher in the outer islands while the main island had a HBsAg prevalence of less than 1%.

Planned serosurveys in 2019 include China, Fiji, Malaysia and Mongolia. Dr Tohme concluded her presentation by summarizing the total number of serosurveys completed for the following thresholds: 8 countries and areas have serosurveys indicating HBsAg prevalence of less than 0.1% among children; 12 countries and areas with HBsAg prevalence ranging from 0.1% to less than 0.5%; 4 countries and areas with HBsAg prevalence ranging from 0.5% to less than 1%; and 6 countries and areas with HBsAg prevalence of more than 1%. Fig. 4 displays the HBsAg prevalence of the last serosurvey of countries and areas and the verification status of as having met the 2017 regional target of less than 1% HBsAg prevalence among children at least 5 years of age as of September 2018.

Fig. 4. HBsAg prevalence of completed serosurveys by country or area and by status of meeting the 2017 verification goal

Country	Year of last survey	HBsAg prevalence	Year of 2017 goal verification
Macao (China, SAR)	2003	0.00%	2008
Palau	2008	0.00%	2013
Cook Island	2012	0.00%	2013
C. of Northern Mariana Islands	2014	0.00%	2017
French Polynesia	2014	0.00%	2016
Tokelau	2014	0.00%	2016
Guam	2015	0.00%	2016
Niue	2015	0.00%	2017
Japan	2009	0.00%	not submitted to date
Brunei Darassalam	2011	0.10%	2013
Republic of Korea	2014	0.10%	2008
Samoa	2014	0.10%	not submitted to date
American Samoa	2011	0.20%	2014
New Zealand	2009	0.20%	2012
Fed. States of Micronesia	2016	0.28%	2018
Singapore	2010	0.30%	2015
Mongolia	2009	0.30%	2012
China	2014	0.30%	2012
Australia	2002	0.40%	2012
Malaysia	2009	0.40%	2011
Cambodia	2017	0.55%	2018
Tonga	2005	0.80%	2012
Hong Kong (China, SAR)	2009	0.80%	2011
Wallis and Futuna	2012	0.90%	not submitted to date
Rep. of Marshall Islands	2017	1.20%	under review
Lao PDR	2012	1.70%	not submitted to date
Viet Nam	2011	2.20%	not submitted to date
Papua New Guinea	2012	2.30%	not submitted to date
Solomon Islands	2016	3.10%	not submitted to date
Kiribati	2014	3.30%	not submitted to date
Philippines	2018 (pending results)	N/A	not submitted to date
Fiji	Q4 of 2018	N/A	not submitted to date
Nauru	Q4 of 2018	N/A	not submitted to date
New Caledonia	-	N/A	not submitted to date
Tuvalu	1976	N/A	not submitted to date
Vanuatu	1998	N/A	not submitted to date

2.9 Utilizing templated protocols for biomarker serosurveys

Dr Mark Bulterys discussed the WHO headquarters project to develop and promulgate templated protocols for biomarker serosurveys. Given that protocol writing can be quite time-consuming and technically demanding, two-day workshops held in Bhutan and Morocco in October 2016 helped to develop a generic protocol in which countries can include descriptive and analytical epidemiology, budgets, job aids and other specialized information to add into a more generic protocol which has typical components such as objectives, safety and monitoring, human subjects protection, and roles and responsibilities. While this templated protocol project has not yet been finalized, plans are to publish this work by the end of 2018. To date, much progress has been made, including that the templated protocol was approved by the WHO Research Ethics Review Committee in July 2018. This

project serves to save countries major time and resources to develop a hepatitis B seroprevalence study protocol and allows countries to further design the purpose of their work and potentially work with other services to perform multiple disease surveillance through one approved protocol.

2.10 Progress of sampling in low seroprevalence target groups

Dr Tohme shared potential methods that could be used to verify the achievement of low HBsAg seroprevalence targets. Traditionally, nationally representative multi-stage cluster serosurveys have been used to verify achievement of hepatitis B control targets. In addition to seroprevalence, those surveys offer the advantage of assessing vaccination coverage levels to validate country-reported coverage estimates. The effective sample size required to verify the achievement of 0.5% or less HBsAg prevalence (precision: $\pm 0.25\%$) using the Wilson score interval is about 3600 children, while the estimated sample size required for less than 0.1% HBsAg prevalence (precision: $\pm 0.05\%$) would be more than 18 000 children. Therefore, use of traditional methods is still the optimal method for verification of HBsAg targets that are 0.5% or higher.

One alternative method for sampling in low seroprevalence target groups is the use of classification serosurveys based on the updated WHO vaccination cluster survey guidelines. Classification serosurveys can be conducted either at the national or lower levels to classify seroprevalence as very likely below “pass” or as above a “fail” target rather than having a precise estimate of seroprevalence. These classification serosurveys require a smaller sample size than traditional serosurveys (for less than 0.5% HBsAg prevalence about 2000 children and for less than 0.1% HBsAg prevalence about 10 000 children), are less costly and require fewer clusters per strata (typically a minimum of 15) compared to traditional serosurveys (typically a minimum of 30). In addition, when classification surveys are implemented in more than one district, it is possible to combine data from the lowest levels to estimate point seroprevalence at the higher level. Classification serosurveys are useful for countries to ensure an already attained target is maintained or is below a certain threshold. Countries can also use classification serosurveys to monitor prevalence in high-risk areas or populations.

Another method for verification of low HBsAg targets is to implement a two-step approach similar to the verification process of maternal and neonatal tetanus elimination. In the first step, the lowest administrative level in a country is classified as high, medium or low risk for HBV infection based on preset criteria such as HepB-BD and HepB3 coverage, chronic HBV prevalence among women of childbearing age/pregnant women, HBeAg prevalence, proportion of high-risk groups and proportion of home births with skilled birth attendants (SBAs). In the second step, an HBsAg classification serosurvey is conducted in only high-risk areas. If those high-risk areas “pass” (by achieving an HBsAg prevalence less than a specified target), it is assumed that the whole country or area has passed and can be verified as having met a specific target. This two-step approach can also be used in countries and areas that already have low HBsAg prevalence but want or need to track progress in underperforming areas. Dr Tohme shared Columbia’s experience using this two-step approach. With high-quality data reaching down to district levels to categorize highest-risk departments, these high-risk areas represented only 6% of the total population. Colombian health officials decided to use the classification method to sample only in these high-risk areas due to funding availability. The two-step approach might not be applicable everywhere as it relies on availability of good quality data at the lowest administrative level.

Dr Tohme discussed the cost-effective strength of using modelling to determine the hepatitis B burden, noting that quality nationally representative data on immunization, care and treatment are required over multiple years. Reliance solely on modelling may be inappropriate when a nationally

representative serosurvey is not available. Dr Tohme also noted the benefits that triangulation of data serves by aggregating data from serosurveys to be combined with laboratory testing data, mother-to-child transmission of HBV estimates, and programmatic data on antenatal HBsAg screening, antenatal care access and PVST data. Data triangulation has already been used for EMTCT of HIV and syphilis, and hepatitis B could be added to the process of verification of triple elimination using the same process.

Dr Tohme concluded her talk by summarizing that traditional serosurvey methods should be the priority for countries not verifying elimination, while other methods are needed to verify elimination of HBV. Global guidance on the verification of hepatitis B elimination is needed, and providing multiple options that could be selected based on country context would be optimal.

2.11 Report from the Informal Consultation on the Quality Improvement of Laboratory Services for Viral Hepatitis

Dr Donghyok Kwon provided an overview of recommendations from the Informal Consultation on the Quality Improvement of Laboratory Service for Viral Hepatitis, which included the results of the gap analysis on laboratory systems in eight countries.³ The gap analysis found that fewer laboratory systems are in place for hepatitis compared to HIV. In at least half of the laboratories surveyed, no systems existed for licensing of laboratories, registration/qualification of test kits and stock-out of test kits, and quality management and accreditation systems for laboratories. Discussion included the need for increased investment in laboratory systems for hepatitis in low- and middle-income countries in the Region.

Main recommendations to Member States from this meeting were to: consider developing national strategic plans on strengthening laboratory services for both clinical and public health (surveillance) purposes; establish and support development of in-country quality assurance systems; identify key national laboratories that can facilitate external quality assurance in-country; use external quality assurance as an opportunity to improve services by providing feedback and refresher courses to laboratories; learn from the experiences of HIV testing services; adapt and implement WHO testing guidelines for viral hepatitis B and C; and ensure the availability of human resources for quality management. Main recommendations for WHO included: advocate investing in quality laboratory services through domestic financing; improve partnership and collaboration among laboratories in the region; make quality assurance systems more efficient and sustainable by reducing duplication; and strengthen dissemination of information and provide support to countries with interested diagnostics manufacturers to enhance applications for the WHO prequalification programme. Next steps include establishing effective communications channels among WHO, country laboratories and partners, as well as creating an informal technical working group for hepatitis testing.

2.12 Findings from the Viral Hepatitis Prevention Board Asia meeting

Dr John Ward reviewed major findings from the Viral Hepatitis Prevention Board Asia meeting in July 2018 entitled *Prevention and Control of Hepatitis B with Combined Vaccines and Timely Birth Dose Vaccination*. Information on the use and acceptance of administering hexavalent (DTap-HBV-IPV-Hib) vaccine was reviewed, noting the current lack of long-term protection but with comparable immunogenicity, clinical efficacy, tolerability and safety to single antigen vaccines. Recommendations from this meeting included using HepB-BD as part of a “birth-bundle-approach”

³ China, Brunei Darussalam, Lao People’s Democratic Republic, Mongolia, Papua New Guinea, Philippines, Singapore and Viet Nam

with other early newborn care to create ownership and target hospital leadership. This should include revising and developing written hospital policy and guidelines on HepB-BD, including standing orders on its administration and updating the list of known contraindications. In addition, the use of OCC to increase HepB-BD was discussed, with noted challenges including reluctance to scale up successful pilots in the Western Pacific Region and lack of manufacturer interest to relabel for CTC. Finally, the meeting discussed that monitoring and research is currently missing to evaluate the long-term impact of HBV immunization programmes globally, regionally and even nationally at times. A global plan for data monitoring as part of health systems strengthening with standardized protocols for monitoring and coverage is needed to monitor and evaluate the impact of immunization and track progress towards elimination of HBV.

2.13 Regional progress in health-care worker programmes for hepatitis B vaccination

According to the *Regional Action Plan for Viral Hepatitis in the Western Pacific Region 2016–2020*, 80% of countries should develop a national policy to vaccinate health-care workers against HBV by 2017, and all countries should have this policy by 2020. Dr Joseph Woodring presented 2017 WHO/UNICEF Joint Reporting Form data that showed only 42% of countries had indicated such a policy existed.

After attempting to contact health ministry staff that had submitted the 2017 Joint Reporting Form data and performing a web search for these policies, six countries had reviewable policies that were compared to examine three components: 1) the policy clearly defines what comprises the category of health-care workers; 2) vaccination schedules and testing guidelines were clearly described; and 3) health-care workers who are exposed to or chronically infected with hepatitis B were being properly managed. A comparison among these policies and guidelines revealed that documented vaccinations should be considered for evidence of immunity. Clear screening and vaccination guidance should be provided to students and trainees as this group represents younger populations who are more inclined to learn about hepatitis B transmission earlier in their health careers and will likely have a greater vaccine seroprotective response compared with populations over 40 years of age.⁴ Best practices and well-written policies look to be shared among countries and areas that have denied having any such policy for vaccinating this high-risk hepatitis B transmission group of health-care workers.

2.14 Scaling up OCC activities in Solomon Islands

Dr Joseph Woodring described the HepB-BD OCC pilot conducted in Solomon Islands in 2016, which, after seven months of replenishing HepB-BD with new doses every month, increased timely birth dose coverage from 30% during the pre-project period to 68% during the project period ($p=0.0005$). Among home births, timely HepB-BD coverage increased from 4% pre-project to 24% during the project period.

With the support of WHO, United States Centers for Disease Control and Prevention and a Cold Chain Equipment Optimization Plan grant from Gavi, the Vaccine Alliance, the country recently began scaling up OCC programming in 14 clinics located in two provinces. There, cold chain officers are delivering monthly supplies to trained health-care providers whose clinics lack any cold chain capacity. Oversight and quarterly reporting of OCC activities will be performed with potential

⁴ Hepatitis B vaccines: WHO position paper – July 2017. *Weekly Epidemiologic Record*. 2017;92:369–92.

addition of provinces and clinics in 2019. Solomon Islands is the first of six countries in the Region to scale up what was a successful OCC pilot.

2.15 Birth dose improvement activities in Viet Nam

Dr Joseph Woodring spoke about Viet Nam's improvement of its timely hepatitis B birth dose coverage (77% in 2017) after several interventions to overcome the negative impact of adverse events following immunization. Challenges have included: vaccine hesitancy and false contraindications; high rates of delivery at home, in commune health centres or in polyclinics in mountainous areas where HepB-BD service has not been set up; and under-reporting of HepB-BD administration by hospitals. Current strategies to improve HepB-BD coverage include: updating national guidelines to remove false contraindications to be in line with the few contraindications listed in the 2017 WHO position paper on hepatitis B vaccines; promoting health facility-based delivery; improving communications; increasing vaccine access and community demands in remote and hard-to-reach areas; advocating the local health authority for clear direction; and training health workers to properly report birth registrations at hospitals. All supported provinces in 2016–2017 with current strategies showed improvement. To achieve the coverage goal of timely HepB-BD, the following approaches are needed: a new approach in mountainous areas as well as continuous implementation of current strategies; policy changes to revise the current screening system; demonstration of house-to-house vaccination; and tailored communications for hard-to-reach populations.

2.16 China's work towards EMTCT of HBV

Dr Fuqiang Cui presented China's three decades of work towards elimination of HBV through escalating vaccine policy and programming. Data taken from the country's 2006 and 2014 national serosurveys and surveillance data from the Chinese Center for Disease Control and Prevention show that China has maintained over 95% HepB3 coverage since 2008 and over 95% HepB-BD coverage since 2014. In addition, over 99% of babies born to HBsAg-positive mothers receive HBIG. With 459 blood centres nationwide in 2010, all donated blood is screened for transfusion-transmissible infections, including HIV, HBV, HCV and syphilis. However, the demand for blood outstrips supply, with 0.84% of the national population donating blood in 2010 and 0.92% in 2011. Reported hepatitis B cases have decreased since 2009 from 1.15 million cases to 900 000 cases in 2016. In 2017, the reported incidence of HBV in the general population was 5.4%. With 28 million chronically infected people, China has treated 2.4 million people from 2015 to 2018 and are projecting to treat 1.63 million each year starting in 2019.

Dr Cui discussed challenges that China is facing with EMTCT of HBV, including infections among high-risk populations and limited public awareness to HBV with social discrimination still in existence. Future considerations include the need to have a unified and coordinated government HBV prevention and control mechanism. In addition, modelling has shown the importance of maintaining high timely birth dose coverage with additional interventions like HBIG and antivirals serving to further prevent mother-to-child transmission. The availability of antivirals and reducing the cost of HBV treatment are other areas that require attention, including public awareness, notably for high-risk populations such as health-care workers who may face discrimination if screening policies do not proactively incorporate social discrimination into their plans.

2.17 Priority activities for 2018–2030

Proposed actions for 2018–2020 include adoption of the 2018–2025 regional targets, including: 1) to reduce HBsAg prevalence to less than 1% in 5-year-old children in all countries and areas by 2025; and 2) in countries and areas that already have less than 1% HBsAg prevalence in 5-year-olds, to further reduce HBsAg prevalence to less than 0.3% by 2025. Partnerships with other programmes (for example, RMNCH and HSI) at both regional and national levels will be strengthened to support implementation of the Regional Framework for Triple Elimination. WHO will also support Member States in gaining experience with new survey and cost-effectiveness methodologies to document EMTCT of HBV efforts. Some ERP members were planning to attend the EMTCT of HBV consultation on 19–20 September where the development of metrics to quantify country progress in EMTCT of HBV and a regional information guide are anticipated.

Eliminating HBV transmission by 2030 will require partnerships with programmes such as RMNCH and HSI for administration of hepatitis B interventions outside of immunization, such as antenatal screening, antiviral treatment and HBIG administration. Also, a regional viral hepatitis laboratory network will need to be created and sustained to ensure that quality assurance and quality control mechanisms are in place. The elimination of HBV transmission serves to further strengthen immunization programmes, such as improvement of HepB-BD coverage, immunization safety and management of adverse events following immunization, immunization communications, promotion of occupational vaccination including health-care workers and high-risk adult catch-up vaccination.

2.18 Formulation of ERP recommendations and next steps

Dr Eric Mast led a discussion on the next possible steps for the ERP in the coming years. Questions for discussion included: Does the ERP still endorse the proposed 2018–2025 regional hepatitis B targets or should these be amended? What verification methods would be appropriate for lower seroprevalence targets, to possibly include serosurveys, classification serosurveys, multi-step approach, modelling using programmatic data, and integration with verification of EMTCT of HIV and syphilis? How can the ERP support countries that have not yet achieved either the previous 2% or 1% HBsAg seroprevalence targets? How should the ERP support assessment of country readiness and implementation of HBsAg screening of pregnant women with additional measures to prevent perinatal hepatitis B transmission? What are areas of overlap that the ERP should collaborate with the STAC?

Participants deliberated the above topics. For verification purposes of the proposed 0.3% seroprevalence target for 2025, countries should be given the liberty to decide what methodology or combination of methodologies to support their low prevalence verification packages. Modelling data may accompany a prior serosurvey to demonstrate the prevalence among 5-year-olds to be less than 1% and to discern the mother-to-child HBV transmission rate. Discussion on the maximum time interval between serosurveys did not yield a finalized decision, but this decision could be incorporated into anticipated changes to the verification process for EMTCT of HBV.

2.19 Maternal, newborn and child health and viral hepatitis (ERP and STAC Joint Session)

2.19.1 Fostering collaborations among RMNCH, EPI and HSI

Dr Fuqiang Cui presented the approach of cooperation between the different health departments in China and its experience. The Chinese Center for Disease Control and Prevention, maternal and child health (MCH), and the general and infectious disease hospitals are three systems that interact and differ in the roles they play in EMTCT of HBV with synergistic impact to improve the health of

mothers and children. The national immunization and MCH programmes have an agreed strategy to improve HBV timely birth dose using the principle of “whoever delivers the baby is responsible for birth dose vaccination”. The subsequent second and third HBV dose is the responsibility of the immunization programme, which has undertaken further programmatic strengthening including improving vaccine availability in all hospitals and township health facilities, supervision of the operational principle as above, education for parents and health-care providers on the need for timely birth dose, as well as intensifying training, supervision and monitoring of county, township and village health-care workers.

Collaborations between EPI and MCH include the SHIELD zero transmission of HBV project, which networks 107 hospitals across the country to deliver antivirals to a subset of HBV-infected pregnant women with high maternal viral loads. The National Immunization Advisory Committee is a high-level policy think tank for immunization and advises the government on vaccine-based prevention and control. A working group on HBV has been established whose members are clinicians, the national immunization programme and MCH, which work together on EMTCT of HBV policies based on pragmatic field experience of integrated delivery through triple elimination. Through the MCH national plan, demonstration pilots in three provinces were launched and will contribute to evidence building on EMTCT of HBV in China.

2.19.2 EMTCT of HBV modelling in China

Dr Tim Hallett presented the results of modelling EMTCT of HBV in China, which look to answer questions on: the current and future projected burden of HBV; whether China can achieve the target of 0.1% among children by 2030; which strategies can bring forward the date of EMTCT; how to measure where the country is on course for success; and creating the case for treatment expansions and using modelling to formulate economic arguments for policy-making. The model projects that around 2027, China could achieve the global target of 0.1% based on current intervention activity levels. Catch-up campaigns and targeted vaccination among health-care providers and haemodialysis recipients according to the model will have little appreciable effects on population-level HBV epidemiology but will afford individual-based protection. The model estimates that addition of antiviral drugs use for HBeAg-positive pregnant women leads to substantial gains in reducing new infections, and the country could reach the 0.1% target by 2023. Achievement of the target by 2025 would be predicted by a mother-to-child transmission rate of HBsAg-positive mothers of less than 2.25% and of HBeAg-positive mothers of less than 6.5% in 2020. Dr Hallett noted that access to treatment must be increased concomitantly to prevent deaths of the large number of adults already infected, and this has a strongly positive return on investment.

2.19.3 Cost-effective analysis of triple elimination in Cambodia

Dr Lei Zhang presented an economic evaluation tool to assess the cost-effectiveness of the integrated approach to triple elimination. The tool evaluates the potential reduction in the investment of the integrated approach as a result of resource pooling and improvements in service coverage and coordination, using a decision tree analysis to assess the cost required to avert one infection in exposed infants. The tool was constructed using Microsoft Excel and ratified on simulated epidemiological data that resemble epidemics in countries in Asia and the Pacific. He presented results of the modelling conducted in Cambodia, which showed that the integrated approach using antenatal, perinatal and postnatal care as a platform in Cambodia for triple EMTCT of HIV, HBV and syphilis is highly cost-effective and efficient. More specifically, preliminary analysis suggests that offering this coordinated package of services will reduce mother-to-child transmission of hepatitis B

from 14.1% to 3.4% (76% reduction), syphilis from 9.4% to 4.6% (51% reduction) and HIV from 6.6% to 6.1% (8% reduction) at an estimated US\$ 114 per disability-adjusted life year.

2.20 Communication activities for hepatitis

Dr Samuel So provided an overview of communications activities for hepatitis. The Asian Liver Center at Stanford University was founded in 1996 to address the disproportionately high prevalence of chronic HBV and liver cancer in Asians and Asian Americans and the gaps in hepatitis B and liver cancer awareness, research and national policies. The Center has a branch in China working on year-round activities to educate the public on HBV. The Jade Ribbon Campaign, initiated by the Stanford University Asian Liver Center, is an international movement to help spread awareness about hepatitis and liver cancer. The Center designs campaigns and education activities to promote awareness and eliminate stigma and discrimination through social media and events, including key outreach events on World Hepatitis Day. It has engaged with 31 multinational corporations to participate in World Hepatitis Day education in Asia and the Pacific. Community programmes bring young people from universities to educate schools in different parts of China on HBV knowledge and prevention. The programme has reached over 30 000 people. Dr So noted that more is needed to promote public awareness and education in order to break the cycle of stigma and discrimination.

2.21 Health-care-associated infections

2.21.1 Developing a health-care worker vaccination programme in China

Dr Fuqiang Cui outlined the experience of developing a health-care worker vaccination programme in China. The São Paulo Declaration on Viral Hepatitis during the World Hepatitis Summit 2017 called upon governments to include hepatitis B vaccines for health-care workers in national immunization programmes. HBV vaccination is now mandatory for all health-care workers in Australia, Austria, Belgium, Canada, the Czech Republic, Germany, Greece, Holland, Ireland, Italy, Poland, Slovakia, Sweden and the United States of America as well as for specific health-care workers in direct contact with patients or body fluids in France.

In China, the national action plan for viral hepatitis 2017 encourages provincial authorities to provide vaccination for health-care workers; however, there is no national vaccination policy to date. Limited data on coverage of vaccination presents a challenge for policy-making. Dr Cui presented results of the multi-province survey among 4168 health-care providers, which showed that at least one-dose vaccine coverage was high (86%), although only 60% reported having completed the three-dose schedule. Low vaccination coverage was noted among health-care providers aged over 40 years. Interestingly, one fifth of health-care providers refused vaccination due to concerns about safety and efficacy of vaccines. He surmised that in order to develop a national policy, it is necessary to define which health-care worker should receive vaccination and awareness and education of health-care providers.

2.21.2 Preventing health-care-associated infections and vaccination for health-care workers

Dr Ben Cowie presented an overview of WHO guidance on preventing health-care-associated infections and vaccination for health-care workers. The *Global Health Strategy on Viral Hepatitis 2016–2021* states priority actions for countries and actions for WHO to strengthen implementation of occupational health measures that address the risk of viral hepatitis transmission within health-care settings and address the needs of health workers living with viral hepatitis. The *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020* has regional milestones on national policies for

vaccinating health-care workers and health students. Current WHO guidelines for HBV include special considerations for screening, vaccination and treatment of health-care workers.

Dr Cowie outlined implementation considerations, including those that are considered essential such as universal precautions/injection safety/infection control, vaccination of susceptible health-care providers and students, as well as the need for booster vaccination. Aspects that require discussion include pre-vaccination and post-vaccination testing, approach to previous vaccination, and management of HBV-infected health-care workers including confidentiality, prevention of discrimination and protection of work rights. He noted that consideration should be given to developing a health-care provider testing/vaccination/management implementation guide for countries to discuss options, advantages and disadvantages, emphasizing the option of an incremental approach depending on resources and capacity. He noted the growing consensus that HBV is not an isolated issue for health-care providers and bloodborne infections. Additional considerations should include HCV testing and cure, HIV testing and antiretroviral treatment and protecting the health workforce as part of strengthening health systems resilience and delivery of safe care to patients.

2.22 Report back from ERP and STAC chairs

The chairs of the ERP and STAC reported their group's preliminary recommendations. Joint recommendations are summarized in the section below. (Refer to recommendations from the STAC in the STAC meeting report.)

2.23 Joint recommendations

Following the recommendation, the chairs of the ERP and STAC gave presentations and led discussions centred upon the need to develop health-care worker vaccination programming. ERP and STAC members ultimately decided to forgo having joint recommendations to avoid the perception that only these overlapping joint recommendations were important. Meeting participants agreed that ERP and STAC conclusions and recommendations could be presented separately with acknowledgement of overlapping issues and subject areas affecting both ERP and STAC members. Meeting participants also acknowledged that coordination between both groups was important, especially considering EMTCT of HBV and the upcoming meeting on 19–20 September 2018 involving STAC and ERP members. The objectives of this consultation are: to discuss additional interventions to EMTCT of HBV, building upon high vaccination coverage; to develop recommendations for the global criteria and process for validating EMTCT of HBV; and to discuss the ERP and STAC's involvement in this process. Findings from this EMTCT of HBV consultation will be presented separately in the Third Strategic and Technical Advisory Committee for Viral Hepatitis meeting report.

2.24 Closing remarks

Participants thanked the ERP members and temporary advisers for their valuable input, which will contribute to the regional outcomes. Thanks were also given to the country representatives for their reports and feedback that were useful in driving efforts to improve coverage in all countries. WHO regional and country staff were also acknowledged, and a call for increased presence in countries was made.

ERP members were also planning to participate in the EMTCT of HBV consultation scheduled on 19-20 September 2018. WHO remains committed to providing the necessary assistance for countries

to reach the shared hepatitis control and elimination goals, with millions depending on the implementation of associated activities to achieve these ends.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Conclusions

The ERP acknowledges the tremendous efforts led by several countries in the Region to improve timely birth dose vaccination and prevention of mother-to-child transmission of HBV through implementation of specific targeted interventions.

With 24 of 37 countries and areas indicating less than 1% HBsAg-positive seroprevalence among 5-year-olds by 2017 through nationally representative serosurveys, the Western Pacific Region has impressively reached a regional prevalence of 0.93% among 5-year-olds in 2017, despite having over 45% of the global burden of people living with hepatitis B. Per the 2017 WHO/UNICEF Joint Reporting Form, 20 of 35 countries and areas⁵ reported having achieved 95% or greater HepB-BD coverage and 18 of 35 countries and areas⁶ have achieved 95% or greater HepB3 coverage as established in the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020*. In addition, 20 countries and areas have serosurvey evidence of having reached less than 0.50% HBsAg-positive seroprevalence among 5-year-olds. To encourage countries and areas to reach the global elimination target of 0.1% or less among 5-year-olds by 2030, the ERP endorses the following interim targets for 2025:

1. All countries and areas in the Region should reduce HBsAg prevalence among 5-year-olds to less than 1% by 2025.
2. Countries and areas within the Region that have reduced HBsAg prevalence to less than 1% among 5-year-olds should further reduce HBsAg prevalence to less than 0.3% among 5-year-olds by 2025.

The ERP affirms that operational research is needed to help document whether a country has reached these proposed regional targets. The ERP also emphasizes that high coverage levels of hepatitis B vaccination of newborns and young children remain the cornerstone of prevention in all countries, and hepatitis B vaccination programmes should be strengthened for all infants, regardless of the HBsAg status of their mothers, with the aim of achieving the coverage target of 95% or greater for both HepB-BD and HepB3.

Concerted effort and/or direct assistance will likely be necessary to assist countries and areas that have not reached 2012 and/or 2017 prevalence targets (2% and 1%, respectively) or the 2017 vaccination coverage milestones (95% for Hep-BD and 95% for HepB3).

For countries with high vaccination coverage, additional stepwise hepatitis B interventions such as HBIG and antivirals will likely be necessary to further progress countries towards EMTCT of HBV.

⁵ Brunei Darussalam, China, Commonwealth of the Northern Mariana Islands, Cook Islands, Fiji, French Polynesia, Hong Kong SAR (China), Macao SAR (China), Marshall Islands, Mongolia, New Caledonia, Niue, Palau, Republic of Korea, Samoa, Singapore, Tokelau, Tonga, Tuvalu, and Wallis and Futuna.

⁶ Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, French Polynesia, Hong Kong SAR (China), Macao SAR (China), Malaysia, Mongolia, New Caledonia, Niue, Palau, Republic of Korea, Singapore, Tonga, Tuvalu, and Wallis and Futuna.

Thresholds and indicators for tracking the impact of using these additional interventions should be developed by WHO with support of the ERP and STAC.

Efforts to reach EMTCT of HBV will require coordinated programming among EPI, HSI and RMNCH. Triple elimination serves as a mechanism to efficiently and cost-effectively enhance service delivery using the shared maternal, newborn and child health platform to reach the global target of 0.1% HBsAg prevalence in 5-year-olds by 2030. The ERP is encouraged by this coordinated work led by the WHO Secretariat to ensure coordination among traditionally vertical programmes. To further the elimination of hepatitis B, the goal should be to safely and efficiently incorporate additional hepatitis B interventions onto the strong foundational support of vaccination programmes which are responsible for decreasing up to 90–95% of HBV transmission.⁴

3.2 ERP recommendations

3.2.1 Recommendations for Member States

The ERP recognizes the great efforts made by high-burden countries to implement national HepB-BD plans that have included encouraging mothers to deliver in health facilities where a newborn is more likely to receive timely birth dose in addition to other services shown to decrease both maternal and newborn morbidity and mortality. Triple elimination serves as a mechanism to not only improve HepB-BD through development of national action plans for triple elimination, but also allow countries to better coordinate EPI, RMNCH and HSI programming to ensure HBsAg-exposed newborns receive timely HepB-BD and HBIG interventions.

Discrepancies remain in reaching national 2012 and 2017 vaccination control targets in the Region. The ERP encourages all countries and areas to continue efforts to improve HepB-BD coverage targets in order to eventually reach elimination goals nationally and to better ensure that these national targets are attained at subnational levels.

The ERP reaffirms the need for countries and areas to develop health-care worker policies for hepatitis B vaccination, acknowledging that the Region has not met the 2017 milestone to establish a policy for vaccinating this at-risk population in 80% of countries. Additional efforts are needed to meet the 2020 milestone from the *Regional Action Plan for Viral Hepatitis in the Western Pacific 2016–2020* that all countries develop such a national policy by 2020.

Given the high cost and large sampling size needed to conduct traditional nationally representative serosurveys in 5-year-olds for seroprevalence targets below 1%, countries should work with WHO and with the support of the ERP to determine whether alternative sampling methods or a combination of measure indicators taken from current mother-to-child transmission rates and other programmatic data can be used to determine whether countries can be verified as having achieved EMTCT of HBV.

Specific country recommendations include the following:

Australia

- 1) The ERP requests that Australia report national timely HepB-BD and any HepB-BD coverage.
- 2) The latest hepatitis B serosurvey results that were used to verify Australia as having achieved the 2017 HBsAg target date back to 2002, relying on a hospital-based serosurvey of 249 children aged 1–9 years. The serosurvey results also showed a wide 95% confidence

interval with the upper bound of 2.2%. Therefore, the ERP recommends that Australia implement a more nationally representative serosurvey to demonstrate maintenance of hepatitis B control and progress towards EMTCT of HBV. Consideration should be given to document vaccination coverage levels among Aboriginal and growing migrant populations generally with higher baseline hepatitis B prevalence and for whom challenges in consistently accessing timely health care pose risks for transmission.

Cambodia

- 1) The ERP congratulates Cambodia on successfully increasing their HepB-BD and HepB3 coverage over the past five years and on achieving the 2017 regional hepatitis B control target of less than 1%, with their 2017 serosurvey showing 0.6% prevalence among children aged 5-7 years. However, without maintaining high coverage levels, Cambodia risks losing its validation for the 2017 target and will not achieve further hepatitis control nor EMTCT, especially considering that the 95% confidence interval from their recent serosurvey was 1%.
- 2) The ERP recommends that the Ministry of Health take necessary steps to assure a consistent supply of all national immunization programme vaccines and prevent HepB-BD stock-outs that have occurred in 2016, 2017 and 2018. Catch-up campaigns should be conducted to ensure affected children have properly received necessary hepatitis B vaccinations, as well as any other missing immunizations.
- 3) The ERP recommends that Cambodia continue to strongly advocate health facility births through outreach and incentives for health-care providers and families to bring newborns to health facilities.

China

- 1) The ERP commends China's leading efforts in implementing interventions for EMTCT of HBV. With 96% timely birth dose coverage, 99% antenatal screening and 99% HBIG use for exposed newborns among a 17 million annual birth cohort in 2017, the country is to be commended for their wide-scale, integrated and well-coordinated hepatitis B and triple EMTCT programming, and continuous efforts in suboptimal areas.
- 2) The ERP looks forward to supporting China and WHO for the anticipated hepatitis B serosurvey regarding research questions and sample size, including possibly pairing HBsAg-positive 5-year-old children with the status of their mother, to evaluate the improved outcomes of current interventions and track national progress towards elimination.

Japan

- 1) The ERP looks forward to learning Japan's response to considering WHO's long-standing recommendation to administer universal HepB-BD, regardless of the mother's HBsAg status. In their letter to Japan in 2017, the ERP recommended evaluation of the HBsAg screening programme to ensure children of HBsAg-positive mothers are given timely HepB-BD and HBIG.
- 2) The ERP again encourages Japan to submit their most recent hepatitis B serosurvey results to verify achievement of the hepatitis B control target of less than 1% among 5-year-olds.

Lao People's Democratic Republic

- 1) The ERP encourages the Lao People's Democratic Republic to further improve their birth dose coverage throughout provinces by encouraging health facility births and increasing EPI-RMNCH partnering.
- 2) The ERP recommends that the Lao People's Democratic Republic implement interventions to improve timely HepB-BD vaccination, using evidence from the pilot interventions that were recently implemented, such as scaling up use of HepB-BD outside the cold chain (OCC) and training village health volunteers to notify health-care workers of births in their communities.

Malaysia

- 1) The ERP commends Malaysia on prioritizing hepatitis B vaccination and hepatitis B and C diagnosis as well as linkage to care and treatment activities. In addition, the results of their piloted health-care worker training and catch-up vaccination programme should be shared with other countries.
- 2) With convenience sampling showing HBsAg prevalence of 2.6% in 2018 and with 64% HBsAg antenatal screening coverage in Sabah province, which has the highest HBV burden in the country with a large migrant population, the ERP recommends continuing outreach to improve HepB-BD and HepB3 uptake so that known at-risk populations can freely avail themselves of vaccination and other hepatitis B intervention services.
- 3) WHO and the ERP look forward to supporting Malaysia in the upcoming hepatitis B serosurvey to track national progress towards elimination.

Marshall Islands

- 1) The ERP commends the Marshall Islands for conducting their recent hepatitis B serosurvey among 5-year-old children, which is currently under review for possible verification of meeting the 2017 prevalence target of less than 1% among 5-year-olds.
- 2) The ERP recognizes that reaching outer islands is an ongoing challenge in the Marshall Islands and commits to working with the country to determine methods to improve HepB-BD coverage among people living in these islands.

Federated States of Micronesia

- 1) The ERP commends the Federated States of Micronesia for achieving the 2017 regional target for hepatitis B control and also having a HBsAg-positive seroprevalence below 0.5%, indicating their progress towards EMTCT of HBV.
- 2) The ERP recommends that the Federated States of Micronesia maintain high timely HepB-BD and HepB3 coverage in all areas to sustain control and ultimately achieve HBV elimination.

New Zealand

- 1) Given the increasing migrant populations and foreign-born women of childbearing age, the ERP wrote to New Zealand in 2017 to request that they consider implementing universal HepB-BD immunization. The ERP looks forward to learning the outcome of the New Zealand Pharmaceutical Management Agency immunization subcommittee's decision on whether the country will support universal birth dose administration.
- 2) Given that New Zealand's last hepatitis B serosurvey included only 466 children aged 6 years attending a health facility and the upper 95% confidence interval limit was 1.2%, the ERP recommends that New Zealand implement a nationally representative serosurvey to demonstrate maintenance of hepatitis B control and progress towards EMTCT of HBV.

Papua New Guinea

- 1) The ERP recognizes that reaching remote populations is an ongoing challenge in Papua New Guinea and commits to working with the country to determine and implement methods to improve HepB-BD coverage in these regions.
- 2) The ERP recommends that Papua New Guinea consider scaling up their prior HepB-BD OCC pilot where village health volunteers were trained to administer HepB-BD OCC. Allowing village health volunteers to administer vaccine will likely require changes to national policy. Should WHO prequalify a monovalent hepatitis B birth dose for controlled temperature chain (CTC), this may make administering a CTC-approved HepB-BD more acceptable for Papua New Guinea to consider scaling up their prior very promising HepB-BD OCC pilot.

Philippines

- 1) The ERP commends the collaboration of the Department of Health, WHO and United States Centers for Disease Control and Prevention to successfully implement the 2018 hepatitis B seroprevalence survey among children aged 5–7 years, which shows promising preliminary results.
- 2) The ERP recommends that the Philippines focus on improving timely HepB-BD coverage among all health facility births.
- 3) The ERP recommends that the country improve HepB3 vaccination efforts, acknowledging their recent efforts to prevent stock-outs through improved vaccine procurement and supply chain management, and their work to re-establish national trust in the safety and efficacy of vaccines.

Solomon Islands

- 1) The ERP commends the efforts led by Solomon Islands to be the first country in the Region to scale up their HepB-BD OCC programme to improve timely HepB-BD coverage.
- 2) The ERP recognizes that reaching remote populations is an ongoing access challenge in Solomon Islands and commits to working with the country to determine and implement methods to vaccinate children in these hard-to-reach regions.

Viet Nam

- 1) The ERP commends Viet Nam's efforts to improve HepB-BD coverage in seven provinces and their projected efforts to scale up these interventions through training and equipping community health centres and polyclinics with HepB-BD in other provinces.
- 2) The ERP recommends that Viet Nam enhance public worker and health-care worker awareness programmes, using a broad range of communication and outreach strategies coordinated with WHO and UNICEF to provide information about the benefits of the hepatitis B vaccination programme.
- 3) The ERP recommends that Viet Nam enhance community awareness about the importance of timely hepatitis B birth dose vaccination and educate pregnant women during antenatal care visits on the need for vaccination to ensure newborns receive HepB-BD as soon as possible after birth.
- 4) The ERP recommends that WHO continue to assist Viet Nam with plans to reach populations in remote areas, including strategies to provide HepB-BD for home births in remote areas and to encourage district-level clinics to be equipped with vaccine for HepB-BD, and for health-care workers at these levels to gain confidence in safely and effectively providing timely HepB-BD and HepB3.
- 5) The ERP urges Viet Nam to include standing orders to administer HepB-BD and to align their neonatal screening form 2301/QD-BYT with the 2017 WHO position paper for hepatitis B vaccines and remove currently listed false contraindications.
- 6) The ERP recommends that Viet Nam implement a hepatitis B serosurvey among children after HepB-BD and HepB3 coverage levels improve and reach stable levels.

3.2.2 Recommendations for WHO

Hepatitis B vaccination offered through national immunization programmes has been the primary driver to reduce the regional prevalence among 5-year-olds from over 8% in 1995 to less than 1% in 2017.

The ERP recommends that WHO continue to directly support those countries and areas that have yet to reach either the 2012 and 2017 HBsAg prevalence targets among 5-year-olds of 2% and 1%, respectively. This will include assisting these countries and areas with tailored plans on how to improve HepB-BD and HepB3 coverage to reduce vertical and horizontal transmission and move these priority countries towards EMTCT of HBV.

The ERP will work with HSI and RMNCH to further develop indicators to assess countries' ability to prevent and eliminate mother-to-child transmission of HBV. Currently in the Western Pacific Region, 12 countries⁷ have existing recommendations for universal antenatal screening for hepatitis B, covering more than 90% of the Region's population. WHO recommendations state that antenatal HBsAg screening should be offered to all pregnant women in populations with a hepatitis B prevalence of more than 2%, and that HBsAg-positive pregnant women should be linked to

⁷ Australia, China, Cook Islands, Fiji, Japan, Mongolia, Niue, the Philippines, the Republic of Korea, Samoa, Tonga and Viet Nam are currently known to recommend routine testing of pregnant women for HBsAg.

appropriate prevention, care and treatment services.⁸ As part of the Regional Framework for Triple Elimination, Member States unanimously agreed in 2017 to a process target of 95% or greater HBsAg testing coverage of pregnant women, which aligns with globally established process targets of 95% or greater for HIV and syphilis antenatal screening.⁹ WHO is currently working on a metric for verification of EMTCT of HBV, in addition to the overarching population seroprevalence target.

Several challenges exist for countries to achieve high HepB-BD and HepB3 coverage and expand their perinatal programmes to include routine HBsAg screening and offer additional hepatitis B interventions to infected mothers and exposed newborns. To address these challenges, the ERP recommends that the WHO Secretariat consider the following subject areas:

Achieving and maintaining high timely HepB-BD and HepB3 coverage

The ERP congratulates the WHO Secretariat in supporting countries to achieve regional targets. With this success, additional technical assistance may be prioritized to countries that have failed to meet prior regional targets. In-country consultations and planning of future ERP meetings to take place within these priority countries serve to focus national attention on the importance of improving HepB-BD and on the potential for additional control measures once high HepB-BD and HepB3 coverage levels have been achieved and maintained.

The ERP recommends that WHO support ongoing health-care worker training on the importance of hepatitis B vaccination, in particular provision of timely HepB-BD in countries facing challenges with timely HepB-BD coverage.

The ERP recommends that WHO support countries in creating community awareness and demand for hepatitis B vaccination, notably by educating pregnant women during antenatal care visits on the importance of timely HepB-BD vaccination to prevent mother-to-child transmission of HBV.

Elimination of HBV transmission

With the Western Pacific Region as the first to set regional targets for the EMTCT of HBV and the global prevalence target of less than 0.1% among children created for 2030, the ERP affirms the Region's proactive programmatic goal-setting from 2021 to 2030 to include the development and documentation of targets and indicators to demonstrate countries' achievement of EMTCT of HBV, which in turn will greatly advance the Region towards the elimination of HBV transmission. This information should be discussed with EPI managers at the meeting of the Technical Advisory Group on Immunization and Vaccine-Preventable Diseases in the Western Pacific Region in June 2019.

CTC and OCC

With significant regional experience demonstrating that OCC pilots are safe and effective to increase timely birth dose coverage, the ERP reaffirms the importance of using vaccines OCC: in remote and hard-to-reach areas; in regions where inadequate cold chain exists; among countries with a high proportion of home deliveries; and for vaccinating babies born at home, preferably within 24 hours of birth. The ERP is encouraged by the Solomon Islands scale-up of OCC HepB-BD programming.

⁸ World Health Organization. Guidelines on hepatitis B and C testing. <http://www.who.int/hepatitis/publications/guidelines-hepatitis-c-b-testing/en/>.

⁹ Regional framework for the triple elimination of mother-to-child transmission of HIV, hepatitis B and syphilis in Asia and the Pacific, 2018–2030. Manila, Philippines: World Health Organization Regional Office for the Western Pacific; 2018.

Documenting the results of this first scaled-up OCC programming will be important to share among other interested countries.

The ERP advocates the continued sharing of regional OCC HepB-BD experience with the CTC Working Group at WHO headquarters. Ensuring timely sharing of resources will become important as a number of monovalent HepB-BD manufacturers are undergoing review for potential CTC endorsement. This includes the current scale-up of OCC programming currently under way in Solomon Islands, where activities and monitoring for this scale-up work have been purposefully developed to be consistent with the WHO Immunization Practices Advisory Committee (IPAC) OCC and CTC guidelines.

Vaccination of health-care workers

The ERP requests that WHO consider providing general information to countries on the importance of providing hepatitis B vaccination to health-care workers. Sharing of best practice programmes or health-care worker policies should be considered for countries without these programmes or policies. The ERP recommends that infection control training and the importance of vaccinating health students and new trainees should accompany any hepatitis B catch-up vaccination programme.

Monitoring and evaluation of progress

Given that EMTCT of HBV will likely require programmatic data to model current mother-to-child transmission rates, the ERP requests that WHO work with countries to develop national immunization registries to ensure proper documentation and reporting of hepatitis B vaccination coverage in private and public sectors.

With global goals for the elimination of viral hepatitis as a public health threat by 2030, the ERP recommends that hepatitis B control and elimination be sustained as a top national priority, including the provision of human and financial resources to support the development or finalization of national action plans for viral hepatitis and related viral hepatitis control and elimination activities.

The ERP requests that WHO continue to develop experience in alternative testing mechanisms outside traditional serosurveys for low seroprevalence targets.

The ERP encourages WHO to examine and share lessons learnt from low- and middle-income countries that have successfully reached high HepB-BD coverage levels.

The ERP requests that additional guidance be given to countries when annually submitting information on the Joint Reporting Form to provide subnational immunization coverage levels in a standardized fashion and using the same definitions. The ERP reserves the ability to directly follow up with countries or areas where national or subnational hepatitis B vaccination coverage is dropping or remains low.

A number of ERP members will be attending the upcoming EMTCT of HBV consultation in Manila on 19–20 September 2018. The ERP looks to provide input into clearly defining EMTCT targets and definitions and the need for routine antenatal HBsAg screening in populations with a hepatitis B prevalence of at least 2%.

Communication and advocacy

The ERP encourages WHO to collect data from Member States on legislation against discrimination against persons with viral hepatitis. Proactively addressing discrimination and stigma will become increasingly important for countries that are considering the introduction of routine antenatal screening, targeting high-risk groups including health-care workers and in general.

The ERP suggests that lessons learnt in the programmatic response to discrimination and stigma issues in the context of HIV should be proactively applied to hepatitis B.

The ERP recommends that WHO advocate the addition of EMTCT of HBV in the upcoming SAGE discussion and as an agenda item for the next World Health Assembly. This may help countries to prioritize EMTCT of HBV efforts, including the development of national action plans for EMTCT of HBV and related activities such as triple elimination.

The ERP appreciates the biennial Hepatitis B Control – Country Profile report. Consideration should be given to report the number of districts in the demographics section as this will give a sense of the representativeness of countries' reported district-level coverage. WHO should continue to work to standardize country reporting of vaccination coverage levels to improve the comparability of this information between countries.

Laboratory network

The ERP is encouraged by the continued progress in further delineating current regional status and issues on viral hepatitis laboratory services that were addressed as part of the Informal Consultation on the Quality Improvement of Laboratory Services for Viral Hepatitis in June 2018. The ERP reaffirms recommendations from the Fifth ERP Meeting, including supporting Member States: to ensure the accuracy of test results to enhance viral hepatitis surveillance, diagnosis, treatment monitoring and evaluation; to coordinate and facilitate quality control and quality assurance of laboratories performing viral hepatitis diagnostic testing and carrying out surveillance-related activities; and to develop laboratory capacity within countries to enable gathering of essential strategic information necessary to develop a national hepatitis programme.

Vaccinating and documenting non-citizen populations

The ERP recognizes that large numbers of migrants in the Western Pacific Region are at risk of not having access to services and urges WHO to assist countries and areas to develop plans to ensure that migrant children receive HepB-BD and routine hepatitis B vaccination. This work should incorporate developing national information systems to ensure that proper procedures for recording and following coverage levels of this vulnerable population are being followed. In addition, HBsAg prevalence among non-citizen and immigrant populations should be incorporated into national hepatitis B serosurveys. As the ERP is considering updating their verification criteria for EMTCT of HBV, vaccination coverage or prevalence levels of these at-risk groups should be considered as part of the verification of achievement of future regional targets or EMTCT of HBV criteria.

**WORLD HEALTH
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**REGIONAL OFFICE FOR THE WESTERN PACIFIC
BUREAU REGIONAL DU PACIFIQUE OCCIDENTAL**

**SIXTH HEPATITIS B IMMUNIZATION EXPERT
RESOURCE PANEL CONSULTATION**

**Manila, Philippines
17-18 September 2018**

ENGLISH ONLY

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**THIRD STRATEGIC AND TECHNICAL ADVISORY COMMITTEE (STAC) FOR VIRAL HEPATITIS AND
SIXTH HEPATITIS B IMMUNIZATION EXPERT RESOURCE PANEL (ERP)
JOINT CONSULTATION
Manila, Philippines, 17-20 September 2018**

Meeting agenda

Version 6.5

Day 1: 17 September 2018

Time	STAC and ERP Combined Sessions (in Conference Hall)	Speaker/Moderator
08:30-09:00	Registration	
09:00-09:30	Opening Welcome remarks Opening remarks Self-introduction and objectives of the consultation Administrative announcements	Naoko Ishikawa and Yoshihiro Takashima Mark Jacobs Po-Lin Chan and Joseph Woodring
09:30-10:00	Group photo and coffee break	Moderator: Takaji Wakita/ Rosmawati Mohamed
10:00-10:20	Global overview HBV prevention and progress towards elimination of viral hepatitis (GHP and IVB joint presentation)	Marc Bulterys
10:20-11:00	Regional overview (10 min each) Progress of hepatitis B control through immunization in the Western Pacific <i>Regional Action Plan for Viral Hepatitis in the Western Pacific Region 2016-2020</i> implementation progress EMTCT of HIV, hepatitis B and syphilis: an opportunity to further	Joseph Woodring Po-Lin Chan Naoko Ishikawa

11:00-12:00	<p>advance accelerated hepatitis B control</p> <p>Country experiences – eliminating viral hepatitis (15 min each) China – EMTCT of HBV Malaysia – Hepatitis B and C elimination</p> <p>Discussion</p>	<p>China representative Malaysia representative</p>
12:00-13:00	Lunch	

Time	STAC (in Room 210)	Speaker/ Moderator	Time	ERP (in Room 212)	Speaker/ Moderator
13:00-13:10	Moderator: Rosmawati Mohamed/Henry Chan			Moderator: Takaji Wakita	
	Review of previous STAC recommendations	Naoko Ishikawa	13:00-13:15	Regional EPI update	Yoshihiro Takashima
	Accelerating prevention, testing and treatment		13:15-13:30	Review of previous ERP recommendations	James Heffelfinger
13:10-13:30	Mid-term progress – gaps and opportunities	Po-Lin Chan	13:30-13:45	Sustaining the progress among verified countries	Joseph Woodring
13:30-13:40	Promoting testing: Finding the missing millions	Michael Ninburg	13:45-14:00	Countries with recently completed or planned serosurveys	Rania Tohme
13:40-13:50	Access to hepatitis medicines: update	Giten Khwairakpam	14:00- 14:15	Discussion	
13:50-14:00	Elimination of hepatitis in Japan: prevention and treatment beyond general population to reach the unreached	Tatsuya Kanto	14:15-14:30	Utilizing templated protocols for biomarker serosurveys	Marc Bulterys
			14:30-14:45	Progress of sampling in low	Rania Tohme

14:00-15:00	Discussion: priority actions [Key questions]		14:45-15:00	seroprevalence target groups Discussion	
15:00-15:30	Coffee break				
	Health systems and viral hepatitis				
15:30-15:50	Financing hepatitis services	Peter Cowley	15:30-15:50	Report from the <i>Informal Consultation on the Quality Improvement of Laboratory Service for Viral Hepatitis</i>	Donghyok Kwon
15:50-16:00	Discussion (10 min)				
16:00-16:20	Laboratory services for hepatitis - report from the <i>Informal Consultation on the Quality Improvement of Laboratory Service for Viral Hepatitis</i>	Donghyok Kwon	15:50-16:10	Findings from the Viral Hepatitis Board Meeting	John Ward
16:20-16:30	Discussion (10 min)		16:10-16:30	Regional progress in healthcare workers programmes for hepatitis B vaccination	Joseph Woodring
16:30-16:45	Global reporting and strategic information for viral hepatitis	Linh-Vi Le			
16:45-17:00	Discussion (15 min)		16:30-17:00	Discussion	
17:00-17:30	Secretariat meeting		17:00-17:30	Secretariat meeting	
17:30-19:00	Regional Director's Reception				

Day 2: 18 September 2018

Time	STAC (in Room 210)	Speaker/ Moderator	Time	ERP (in Room 212)	Speaker/ Moderator
09:00-09:30	Estimating burden of disease and cascade of care – modeling and programmatic data	Ben Cowie & Homie Razavi (by teleconference)	09:00-09:15	Scaling up Outside of Cold Chain activities in the Solomon Islands	Joseph Woodring
09:30-10:00	Discussion: priority actions [Key questions]		09:15-09:30	Birth dose improvement activities in Viet Nam	Joseph Woodring
			09:30-09:45	China's work towards elimination of hepatitis B virus	Fuqiang Cui
			09:45-10:00	Discussion	
10:00-10:30	Coffee break				
10:30-11:30	Recommendations and next steps		10:30-11:00	Priority activities for 2018-2020 and 2021-2030	Eric Mast
11:30-12:00	STAC – review of the TOR, election of new chairs and STAC's way of working		11:00-12:00	Formulation of ERP recommendations and next steps	Takaji Wakita
12:00-13:00	Lunch break				

Time	STAC and ERP Combined Sessions (in Conference Hall)	Speaker/Moderator: Takaji Wakita/ Rosmawati Mohammad
13:00-13:15	Maternal, newborn and child health (MNCH) and viral hepatitis Fostering collaborations among MNCH, EPI and HSI	Fuqiang Cui
13:15-13:30	EMTCT HBV modelling in China	Timothy Hallett
13:30-13:45	Cost effective analysis of triple elimination in Cambodia	Lei Zhang
13:45-14:00	Communication activities for hepatitis	Samuel So
14:00-14:15	Healthcare associated infections Developing a healthcare worker vaccination programme in China	Fuqiang Cui
14:15-14:30	Preventing healthcare associated infections and vaccination for healthcare workers	Benjamin Cowie
14:30-15:00	Discussion	
15:00-15:30	Coffee break	
15:30-16:00	Report from ERP and STAC Chairs (15 min each)	Takaji Wakita & Henry Chan
16:00-16:30	Joint recommendations – discussion	Facilitated discussion
16:30-17:00	Closing session	

Adjournment of ERP and STAC Meetings

Elimination of mother-to-child transmission of HBV: interventions, criteria and process of validation

Day 3: 19 September 2018

Time	Topic	Presenter/facilitator
09:00 – 09:10	Opening and objectives of the meeting (in Room 210)	Naoko Ishikawa
09:10 – 10:30	<p>Session 1: Understanding evidence for EMTCT of HBV</p> <p>1) Interventions for EMTCT – antenatal screening and use of HBIG, antivirals and post-vaccination serologic testing (PVST)</p> <ul style="list-style-type: none"> - Current evidence and research findings on EMTCT HBV interventions (15min) - Preliminary findings from ongoing studies (10 min each) <ul style="list-style-type: none"> SHIELD zero transmission HBV EMTCT project, China Pragmatic HBIG-free regimen: ANRS TA PROHM Cambodia Victoria Perinatal HBV prevention project, Australia - Existing guidance for EMTCT interventions of HBV in countries (10 min) <p>Discussion</p>	<p>Marc Bulterys</p> <p>Jin-Lin Hou Olivier Segeral Nicole Romero</p> <p>WPRO</p>
10:30 – 11:00	Tea break	
11:00 -12:30	<p>2) Assessment and validation of EMTCT (15 min each)</p> <ul style="list-style-type: none"> - Lessons learned from validation of HIV and syphilis - Proposed impact and programming metrics in Framework for Triple Elimination and validation of HBV EMTCT <p>Discussion</p>	<p>Nathan Shaffer</p> <p>WPRO</p>

12:30-13:30	Lunch break	
13:30 – 16:30	<p>Session 2: Developing draft regional operational document (group work)</p> <p>Introduction to the group work</p> <p>Group A: Interventions for EMTCT (Room 210)</p> <p>Group B: Monitoring and assessment of EMTCT (Room 212)</p> <p><i>Each group will present group findings on 20 September, including draft operational guidelines.</i></p>	<p>Facilitators:</p> <p>WPRO</p> <p>Benjamin Cowie/ Elizabeth Mason</p> <p>Nathan Shaffer/ Timothy Hallett</p>

Day 4: 20 September 2018

9:00 – 11:30	<p>Session 2: Developing operational document (continued)</p> <p>Group A: Interventions for EMTCT (Room 210)</p> <p>Group B: Monitoring and assessment of EMTCT (Room 212)</p>	<p>Facilitators:</p> <p>Benjamin Cowie/ Elizabeth Mason</p> <p>Nathan Shaffer/ Timothy Hallett</p>
11:30 – 13:00	Lunch break	
13:00 – 15:00	<p>Session 3: summary and recommendations (Room 210)</p> <ul style="list-style-type: none"> - Presentation from group work (15 min each) - Discussion and conclusion 	
15:00	Closing	

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