A joint national/international review was conducted in 15 provinces in Indonesia on 10–18 February 2020 to assess the national immunization programme and share lessons learnt for preventing and controlling vaccine preventable diseases. This report summarizes the findings and recommendations made during the review.
Joint national/international expanded programme on immunization and vaccine preventable disease surveillance review

Indonesia, 10–18 February 2020
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- DI Yogyakarta PHO
- DKI Jakarta PHO
- East Java PHO
- East Kalimantan PHO
- East Nusa Tenggara PHO
- Expert Committee of Polio Eradication
- Field Epidemiology Training Programme
- Gavi, the Vaccine Alliance
- Gorontalo PHO
- Indonesian Pediatric Society
- Indonesian Technical Advisory Group on Immunization
- Jambi PHO
- Kepulauan Riau PHO
- Lampung PHO
- National Certification Committee for Polio Eradication
- National Committee – Adverse Event Following Immunization
- National Committee - Diphtheria
- National Verification Committee for Measles and Rubella Elimination
- North Kalimantan PHO
- North Maluku PHO
- North Sulawesi PHO
- North Sumatera PHO
➢ Maluku PHO
➢ Ministry of Health Indonesia
➢ Public Health Emergency Operating Centre
➢ Papua Barat PHO
➢ Riau PHO
➢ South Sumatera PHO
➢ South Sulawesi PHO
➢ South East Sulawesi PHO
➢ West Java PHO
➢ West Kalimantan PHO
➢ West Nusa Tenggara PHO
➢ West Sumatera PHO
➢ West Sulawesi PHO
➢ UNICEF
# Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADS</td>
<td>anti-diptheria serum</td>
</tr>
<tr>
<td>AEFI</td>
<td>adverse event following immunization</td>
</tr>
<tr>
<td>AES</td>
<td>acute encephalitis syndrome</td>
</tr>
<tr>
<td>AFP</td>
<td>acute flaccid paralysis</td>
</tr>
<tr>
<td>ANC</td>
<td>antenatal care</td>
</tr>
<tr>
<td>BCG</td>
<td>Bacille Calmette-Guerin</td>
</tr>
<tr>
<td>BIAS</td>
<td><em>Bulan Imunisasi Anak Sekolah</em> (Indonesia’s school-based immunization programme)</td>
</tr>
<tr>
<td>bOPV</td>
<td>bivalent oral poliovirus vaccine</td>
</tr>
<tr>
<td>cMYP</td>
<td>comprehensive multi-year plan</td>
</tr>
<tr>
<td>CRS</td>
<td>congenital rubella syndrome</td>
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<tr>
<td>cVDPV1</td>
<td>circulating vaccine derived poliovirus type 1</td>
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<tr>
<td>cVDPV2</td>
<td>circulating vaccine derived poliovirus type 2</td>
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<tr>
<td>DAT</td>
<td>diphtheria anti-toxin</td>
</tr>
<tr>
<td>DHO</td>
<td>District Health Office</td>
</tr>
<tr>
<td>DHOs</td>
<td>District Health Offices</td>
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<tr>
<td>DT</td>
<td>diphtheria tetanus vaccine</td>
</tr>
<tr>
<td>DTP</td>
<td>diphtheria-tetanus-pertussis vaccine</td>
</tr>
<tr>
<td>DTP1</td>
<td>first dose of DTP</td>
</tr>
<tr>
<td>DTP3</td>
<td>third dose of DTP</td>
</tr>
<tr>
<td>DTP4</td>
<td>fourth dose of DTP</td>
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<tr>
<td>DQR</td>
<td>Data Quality Review</td>
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<tr>
<td>EPI</td>
<td>Expanded Programme on Immunization</td>
</tr>
<tr>
<td>EVMA</td>
<td>Effective Vaccine Management Assessment</td>
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<tr>
<td>EWARS</td>
<td>Emergency Warning, Alert and Response System</td>
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<td>Gavi</td>
<td>Gavi, The Vaccine Alliance</td>
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<tr>
<td>HBIG</td>
<td>hepatitis B immunoglobulin</td>
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<tr>
<td>HbsAg</td>
<td>hepatitis B surface antigen</td>
</tr>
<tr>
<td>HBV</td>
<td>hepatitis B virus</td>
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<tr>
<td>HCD</td>
<td>human centred design</td>
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<td>HCW</td>
<td>health care worker</td>
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<tr>
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<td>health care workers</td>
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<td>HepB</td>
<td>hepatitis B vaccine</td>
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<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
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<tr>
<td>HepB3</td>
<td>the third dose of HepB</td>
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<td>HepB-BD</td>
<td>HepB birth dose</td>
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<td>HPV</td>
<td>human papilloma virus</td>
</tr>
<tr>
<td>HR</td>
<td>human resources</td>
</tr>
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<td>HRH</td>
<td>human resources for health</td>
</tr>
<tr>
<td>IBDs</td>
<td>invasive bacterial diseases</td>
</tr>
<tr>
<td>IPV</td>
<td>inactivated polio vaccine</td>
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<tr>
<td>ITAGI</td>
<td>Indonesia Technical Advisory Group on Immunization</td>
</tr>
<tr>
<td>JA</td>
<td>Joint Appraisal</td>
</tr>
<tr>
<td>JE</td>
<td>Japanese encephalitis</td>
</tr>
<tr>
<td>JEV</td>
<td>JE vaccine</td>
</tr>
<tr>
<td>JKN</td>
<td><em>Jaminan Kesehatan Nasional</em> (Indonesia’s national health insurance scheme)</td>
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<td>MCH</td>
<td>mother child health</td>
</tr>
<tr>
<td>MCV</td>
<td>measles-containing vaccine</td>
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<tr>
<td>MCV1</td>
<td>first dose of MCV</td>
</tr>
<tr>
<td>MCV2</td>
<td>second dose of MCV</td>
</tr>
<tr>
<td>MNT</td>
<td>maternal and neonatal tetanus</td>
</tr>
<tr>
<td>MNTE</td>
<td>maternal and neonatal tetanus elimination</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MOV</td>
<td>missed opportunities for vaccination</td>
</tr>
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<td>MR</td>
<td>measles-rubella vaccine</td>
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<td>second dose of MR</td>
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<td>NC AEFI</td>
<td>National Committee of Adverse Events Following Immunization</td>
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<tr>
<td>NIHRD</td>
<td>National Institute of Health Research and Development</td>
</tr>
<tr>
<td>NITAGs</td>
<td>National Immunization Technical Advisory Groups</td>
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<td>NIP</td>
<td>National Immunization Program (of Indonesia)</td>
</tr>
<tr>
<td>NRA</td>
<td>National Regulatory Authority</td>
</tr>
<tr>
<td>NT</td>
<td>neonatal tetanus</td>
</tr>
<tr>
<td>NVC MR</td>
<td>National Verification Committee for Measles and Rubella</td>
</tr>
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<td>PAB</td>
<td>protection at birth</td>
</tr>
<tr>
<td>PCs-AEFI</td>
<td>provincial AEFI committees</td>
</tr>
<tr>
<td>PCV</td>
<td>pneumococcal vaccine</td>
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<tr>
<td>PHC</td>
<td>Primary Health Care</td>
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<td>PHO</td>
<td>Provincial Health Office</td>
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<td>PHOs</td>
<td>Provincial Health Offices</td>
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<td>PIE</td>
<td>post introduction evaluation</td>
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<tr>
<td>PVA</td>
<td>post validation assessment</td>
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<tr>
<td>Acronym</td>
<td>Definition</td>
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<td>-----------</td>
<td>-------------------------------------------------------------</td>
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<tr>
<td>RISKESDAS</td>
<td><em>Riset Kesehatan Dasar</em> (a national health survey)</td>
</tr>
<tr>
<td>SBA</td>
<td>skilled birth attendance</td>
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<tr>
<td>SEAR</td>
<td>South-East Asia Region</td>
</tr>
<tr>
<td>SIA</td>
<td>supplementary immunization activity</td>
</tr>
<tr>
<td>SIAs</td>
<td>supplementary immunization activities</td>
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<tr>
<td>SOPs</td>
<td>standard operating procedures</td>
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<tr>
<td>Td</td>
<td>tetanus-diphtheria vaccine formulation for those aged &gt;7 years</td>
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<td>Td2+</td>
<td>two or more doses of Td</td>
</tr>
<tr>
<td>TT</td>
<td>tetanus toxoid</td>
</tr>
<tr>
<td>TT2+</td>
<td>two or more doses of tetanus toxoid</td>
</tr>
<tr>
<td>TTCV</td>
<td>tetanus-toxoid—containing vaccine</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>VAP</td>
<td>Vaccine Action Plan</td>
</tr>
<tr>
<td>VDPV</td>
<td>vaccine derived poliovirus</td>
</tr>
<tr>
<td>VPD</td>
<td>vaccine preventable disease</td>
</tr>
<tr>
<td>VPDs</td>
<td>vaccine preventable diseases</td>
</tr>
<tr>
<td>VPDS</td>
<td>vaccine preventable disease surveillance</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WRA</td>
<td>women of reproductive age</td>
</tr>
<tr>
<td>WUENIC</td>
<td>WHO UNICEF estimates of immunization coverage</td>
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</table>
Executive summary

This Review took place immediately before the Covid-19 pandemic. The report reflects the findings and recommendations from the Review. It is likely that the pandemic has resulted in missed vaccinations, a situation which would particularly impact reaching disease eradication, elimination and accelerated control goals. Recommendations to specifically address how to reach children missed as a result of the pandemic are beyond the purview of this report.

Background and methodology

The World Health Organization’s South-East Asia Regional (SEAR) Technical Advisory Group on Immunization recommends that each country conduct periodic joint national/international programme reviews. The following objectives were developed for the review of Indonesia’s Expanded Programme on Immunization (EPI) and Vaccine-Preventable Disease Surveillance (VPDS):

- In what ways can equity of immunization coverage be further promoted?
- Review the current status of human resources (HR) to support the EPI.
- Assess extent of vaccine hesitancy and actions taken to address the situation.
- Assess injection safety and management of adverse events following immunization (AEFI).
- Review the functioning, guidance and oversight provided by advisory bodies.
- Assess the adequacy of the VPDS system to detect and respond to disease outbreaks.
- Assess the current status of the diphtheria outbreak and the actions needed to control the outbreak.
- Assess the current status of and make recommendations regarding reaching and/or maintaining elimination or control of targeted diseases at national and sub-national levels, including conducting a post validation assessment of maternal and neonatal tetanus elimination (MNTE).
- Assess the current status of new vaccine introductions and the priority activities needed to develop an initial roadmap for the further introduction of new vaccines.

Fifteen teams visited 2 districts in each of 15 provinces and met with government officials at national level. Districts were selected to represent rural and urban settings and well and less well performing districts and facilities, and to allow the objectives of the Review to be met.
Key findings

➢ Indonesia’s EPI has historically achieved considerable success. However, immunization coverage has remained stagnant over the past five years, resulting in approximately one million children annually - or 20% of the birth cohort - being un- or under-vaccinated.

➢ Indonesia has a strong legal and regulatory framework supporting immunization. Nonetheless, a recent policy review noted some regulatory contradictions and areas requiring strengthening, while the EPI and VPDS Review team noted that certain policies or health care workers’ (HCWs’) understanding of these policies may contribute to missed opportunities for vaccination.

➢ Historically, the Indonesian Technical Advisory Group on Immunization (ITAGI) has been highly active in reviewing new vaccines for introduction, however it is looking for ways to more actively provide oversight to and support programme implementation, in line with regional guidelines. In addition, the Review noted that the ITAGI is not fully independent, as the Chair is nominated by the Ministry of Health (MoH).

➢ Indonesia is largely self-sufficient for EPI vaccines. Nonetheless, the Review team noted stock outs of Japanese Encephalitis (JE) and human papilloma virus (HPV) vaccines, as well as inactivated poliovirus vaccine (IPV), pneumococcal vaccine (PCV) and diphtheria tetanus pertussis vaccine (DTP) related to procurement difficulties. Current stock outs of vaccines can be expected to reduce coverage with these vaccines and negatively influence demand generation, as children who present for vaccination may not be able to be vaccinated.

➢ Reaching the 20% of the Indonesian birth cohort which remains un- and under-vaccinated will require a multi-pronged approach. Key components are revision of policies aimed at improving access and reducing missed opportunities for vaccination, as well as improving local ability to identify unreached populations and develop and implement appropriately tailored micro plans.

➢ Immunization and VPDS HR is a major focus of attention of the Indonesian government and several regulations have been put in place to address barriers to optimizing HR. However, the Review noted ongoing gaps, such as lack of data analysis capacity, especially in conducting comprehensive analysis of immunization coverage and VPDS, as well as lack of compliance with existing immunization programme standard operating procedures (e.g., recapping of needles).

➢ Review findings highlight the need for improved training of health workers in interpersonal communication for immunization, greater support and motivation for community mobilizers and mobilization efforts, the need for increased involvement of religious leaders and household-level decision-makers, and more flexibility of vaccination session hours to increase accessibility of services.

➢ The EPI and VPDS Review team corroborated findings from previous reviews indicating that data quality and use remains an area of programmatic weakness and should be an important area of focus in order to support sustainable programme improvement.
➢ Indonesia has a longstanding history of AEFI surveillance and has an established structure for AEFI surveillance at central level and in many, although perhaps not all, sub-national levels. Nonetheless, Review team findings indicate that some health staff still require additional training. The contribution of AEFI to vaccine hesitancy in Indonesia should be further investigated.

➢ Indonesia continues to see circulation of diphtheria, with index cases in 2019 primarily reported from areas with low routine immunization coverage. Challenges in sample collection remain and there are indications that lack of or incomplete vaccination plays an important role in disease transmission. Treatment options for cases are limited by lack of availability of diphtheria anti-toxin, appropriate antibiotics, disease-specific clinical expertise and isolation facilities.

➢ Many provinces of Indonesia are consistently found to be high-risk of vaccine derived poliovirus emergence and transmission in terms of surveillance and population susceptibility. This is of particular concern as several neighbouring countries have recently experienced outbreaks.

➢ Although Indonesia has completed a draft roadmap to reach measles, rubella and congenital rubella syndrome (CRS) elimination by 2023, the country faces serious challenges in terms of vaccine coverage, demand generation and surveillance in order to meet this goal.

➢ Core and surrogate indicators show that MNTE was most likely sustained in the four highest-risk districts and, by extension, in all other districts in Indonesia with the exception of the districts in Papua province. Given security and travel logistics constraints, the Review teams were unable to visit districts in Papua province.

➢ Indonesia has a high-intermediate endemicity of chronic hepatitis B virus infection. Coverage with the third dose of hepatitis B vaccine has been stagnant since 2007 and timely (i.e., given within 24 hours of birth) coverage with the hepatitis B vaccine birth dose (HepB-BD) has remained <60%. The comprehensive multiyear plan (cMYP) 2020–2024 does not reflect the weight given by the SEAR Vaccine Action Plan (VAP) to hepatitis B control and eventual elimination.

➢ Several different sources indicate that JE transmission in Indonesia is nationwide. At present, surveillance is only conducted sub-nationally and JE vaccine (JEV) has only been introduced in one province and coverage lags substantially behind coverage for the first dose of measles rubella vaccine (MR), which is administered at a comparatively similar age.

➢ Indonesia has clearly articulated plans and budget commitment to realize the phased introduction of PCV through to nationwide coverage by 2024. Plans for the scale up or demonstration of other antigens – rotavirus, HPV and JE – appear less certain and longer-term decision making is hampered by a lack of surveillance data.
Recommendations

Policy and funding, national advisory and regulatory bodies, vaccine procurement and licensing

Policy and funding

➢ Revise any regulations limiting the vaccination of children aged 3 years to age of school entry to encourage vaccination of children in this age group who are not up to date with vaccinations.

➢ Implement the recommendations from the recent policy review, including open vial policy for one child. This is particularly important in outreach/posyandu sessions and in remote areas.

➢ Ensure that policies support ALL residents of Indonesia accessing immunization services.

➢ Recommend that the ITAGI consider the challenges facing Indonesia in terms of vaccination of foreign resident children, and make recommendations to address these challenges.

➢ Reduce missed opportunities for vaccination by ensuring that public immunization clinics are required to offer the full range of EPI vaccines at every session.

➢ Develop clear policies for health workers and communication around providing multiple injections.

➢ Reduce childhood tuberculosis by revising the national immunization schedule to deliver Bacille-Calmette-Guerin vaccine at birth, as recommended by global policy.

ITAGI

➢ Complete already-scheduled training for all ITAGI members. If, following this, there remains lack of clarity as to how the ITAGI should provide oversight to and engage with the immunization programme, seek guidance from the World Health Organization’s Regional Office for South-East Asia.

➢ Increase frequency of declarations of conflicts of interest for members to at least annually, but ideally before every meeting.

➢ Consideration should be given to ensuring the independence of the ITAGI, in accordance with 2018 SEAR Technical Advisory Group on Immunization recommendations.

Vaccine procurement

➢ Urgently resolve procurement challenges resulting in stock outs of JE and HPV vaccines, as well as IPV, PCV and DTP.

➢ Implement any forthcoming recommendations from the Effective Vaccine Management Assessment on vaccine forecasting.

1 “Short-term” refers to a time frame from the present to approximately one year from now, “medium-term” to one to five years from now, and “long-term” to five to ten years from now.
Increasing equity, improving service delivery, and reaching the hard-to-reach

Short-term

➢ Document and continue the multiple innovative interventions currently in existence to reach un- and under-vaccinated children.

➢ Complete, as needed, the government review of the recently developed strategy to reach the urban poor, and, as appropriate, implement.

➢ Focusing initially on lowest coverage and highly populated districts, conduct training on identifying hard-to-reach populations, mapping health posts and outreach sessions to the populations, and developing micro plans which include specific plans to reach these populations.

➢ Ensure optimal implementation of the defaulter tracking system that Indonesia has initiated through regular monitoring and supervision.

➢ Ensure that visits from national level to sub-national levels include supervision of micro planning and implementation of micro plans.

➢ Implement recommendations from the recent Effective Vaccine Management Assessment.

Medium-term

➢ Recognize the additional costs associated with reaching remote populations, and advocate that funds to cover these costs be allocated.

➢ Advocate with cross-programme and cross-sectoral parties to gain support for more flexible vaccination post/clinic (posyandu) service hours to allow better access by working caregivers.

HR

Short-term

➢ The provincial programme, with the support of the national programme, should improve supportive supervision at district and health facility levels and use the opportunities of supportive supervision visits to conduct cascaded on-the-job training/refresher training for all newly recruited EPI and surveillance focal persons at provincial, district and health facility levels.

➢ Provincial and district teams should develop job aids using relevant pages of the existing EPI and surveillance guides to facilitate the tasks of EPI and surveillance focal persons at provincial, district and health facility levels.

➢ Provincial and district teams should include, in their annual plans, an adequate number of supportive supervision visits, and adequately fund visits from one level to the other, using various supervision options including technologies (phone, Skype, video calls).

➢ Evaluate the impact of recently-conducted immunization trainings on health workers: what information has been retained, and how knowledge and skills taught in the trainings have been disseminated and implemented.
Medium-term

➢ The national programme, with the support of partner agencies, should conduct an assessment to identify the training needs of the various aspects of the programme at each level.

➢ The national programme, with the support of partner agencies, should organize training for EPI and surveillance focal persons at provincial, district and health facility levels using appropriate training modules (Mid-Level Managers and Immunization in Practice).

➢ The national programme should include periodic training needs assessments and periodic refresher training in annual work and long-term strategic plans.

Long-term

➢ Appropriate administrative departments should develop (or review existing) and implement HR plans for health policy, to address existing gaps (high turnover/attrition, prolonged temporary appointments, non-remunerated working conditions, etc.).

➢ MoH should, with the Ministry of Education and relevant departments, review and/or implement training curricula to provide pre-service training for health workers on immunization, disease surveillance, antenatal care and skilled birth attendance during their formal training in health institutions.

Vaccine hesitancy and demand promotion

Short-term

➢ Information, education and communication materials need to be updated and efforts made to increase their use, especially at the community level.

➢ Human centred design and data collection activities should continue as planned as strategies to better understand demand and to develop innovative solutions.

➢ Continue to involve religious leaders and authorities at every level in high priority provinces and districts, including the following priorities:

➢ Advocacy forums should be established at each level.

➢ Efforts should be implemented to build the capacity of religious leaders to tackle halal/haram issues in an organized way.

➢ Existing fatwa should be disseminated to local religious leaders.

➢ Good relationships and communication with religious leaders should be maintained through quarterly scheduled meetings and regular involvement in immunization reviews, especially to highlight risk of vaccine preventable disease outbreaks.

➢ Conduct training of vaccinators in interpersonal communication for immunization. This training could be implemented using a training of trainer’s approach.
Medium-term

➢ Strengthen community mobilization for vaccination sessions.
➢ Engage more with Pemberdayaan Kesejahteraan Keluarga (Family Welfare Movement), religious groups and other community organizations on activities related to social mobilization for vaccination.
➢ If staffing permits, offer more flexible opening hours for vaccination services.
➢ Communication strategies should be tailored to include messages for decision-makers including husbands and mothers-in-law, as appropriate to the context, in the local language.

Long-term

➢ Conduct regular data collection activities on vaccine demand to monitor trends over time.

**Immunization coverage data, VPDS, and laboratory support**

Short-term

➢ Forms and formats related to EPI data collection at the grass-root level should be made uniform across the country and each antigen should have a separate column.
➢ A one pager guideline should be issued to puskesmas on how to compile, on a daily basis, the coverage data from each of the posyandu.
➢ Puskesmas should have village-specific as well as posyandu-specific coverage data to allow puskesmas staff to target low-coverage populations as necessary.
➢ Immunization coverage data should be triangulated with the VPDS data to highlight geographic areas or populations requiring additional focus.
➢ Monthly or bi-monthly review and data sharing meetings (combining coverage and surveillance data) at all levels (province, district and puskesmas) should be initiated to facilitate coordination and initiate corrective actions.
➢ Medical officers at puskesmas and district hospitals should be consulted by Emergency Warning, Alert and Response System staff before sharing the Emergency Warning, Alert and Response System data from puskesmas to the District Health Office in order to ensure that the medical officers are up to date and to allow consolidation of additional data.
➢ Epidemiological data analysis for acute flaccid paralysis, measles and rubella, diphtheria and other vaccine preventable disease cases should be done and shared across the health facilities and partners.
➢ Selected laboratory reports should be tracked from laboratory to facility of origin to determine and address bottlenecks in feedback of results. To the extent that internet access permits, consider electronic parallel feedback from central level to all relevant administrative levels and the facility of origin.
➢ Implement recommendations from the recent Data Quality Review.
Medium-term

➢ Establish an online nationwide data collection system for immunization and surveillance.
➢ Ensure surveillance feedback from national level through a real-time actionable dashboard.
➢ Incorporate VPDS information into all training of trainers, refresher, pre-service and in-service trainings (including training on a VPDS accountability framework).
➢ Consider using Field Epidemiology Training Programme interns for outbreak investigations.
➢ Fast-track the Special Access Scheme released by the Pharmaceutical department and customs clearance for proficiency-test sample transport, shipment related to quality assurance samples, test kits and laboratory supplies.
➢ Establish sentinel site surveillance for invasive bacterial diseases, rotavirus and typhoid.

Long-term

➢ Pilot and institutionalize point of care tests to enhance timeliness of surveillance.
➢ Integrate surveillance for diseases that currently fall under different groups within the MoH into a single VPDS platform.

**AEFI surveillance and response**

Short-term

➢ Ensure that AEFI guidelines and reporting forms are available in all health centres and during immunization sessions.
➢ Ensure that AEFI risk communication plans are in place at all levels and adapted to the local context. Parents and communities should be given education and information on AEFI prevention, detection and treatment.
➢ Health workers and immunization officers should be encouraged to report both mild and serious AEFI regularly using standard AEFI forms from the guidelines. This should include zero reporting when there are no AEFIs. Communities should also be encouraged to report to immunization officers or health centers about AEFI cases.
➢ Ensure that AEFI kits are available with standard operating procedures for management of AEFI in every immunization session. Kits should be kept in appropriate containers.

Medium-term

➢ Continue training on technical issues and communication skills for HCWs regarding AEFI and conduct post-training evaluations for provinces.
➢ Develop mechanisms to monitor implementation of AEFI counselling skills in immunization clinics and at community visits.
**Diphtheria**

**Short-term**
- Identify and procure diphtheria anti-toxin for use in country as soon as possible
- Assess and address the reason for high rates of suspected cases versus laboratory confirmed cases.
- Build data analysis and interpretation capacity among District Health Office staff to enable and improve the use of surveillance data to inform public health response activities.
- Ensure that all Provincial Health Offices and District Health Offices conduct thorough contact tracing and prophylaxis treatment of contacts.

**Medium-term**
- Work with Provincial Health Offices and District Health Offices, particularly in areas reporting high numbers of diphtheria cases, to close immunity gaps in infants and children.
- Increase laboratory diagnosis of cases by building capacity of HCWs to collect specimens and of provincial laboratories to do confirmatory testing.

**Progress in meeting global and regional goals**

**Polio eradication**

**Short-term**
- Procure IPV as soon as possible to meet national demand.
- Undertake a more detailed and comprehensive mapping of high-risk cross border movements between Malaysia, Philippines and Indonesia to better understand the risks, particularly those posed by upcoming monovalent oral polio vaccine type 2 rounds in border districts of Malaysia.
- Consider ensuring IPV and bivalent oral polio vaccine supply for Port Health Offices on borders with Malaysia and Philippines.
- Consider ways to promote information sharing on polio risk management with Malaysia and Philippines, including cross border meetings and teleconferences.
- A sustained programme of improving both acute flaccid paralysis and environmental surveillance is urgently needed in 2020, as the poor surveillance is a chronic problem.
- Prioritize attendance at polio outbreak preparedness and response planning workshops in the South East Asia Region.
- Consider conducting a bivalent oral polio vaccine National Immunization Day in 2020 as recommended in the Global Polio Eradication Initiative Supplementary Immunization Activity calendar to address gaps in population immunity.
Measles, rubella and CRS elimination

Short-term

➢ Finalize the “Measles, Rubella and CRS Elimination. National Strategic Plan for Indonesia 2020–24”.
➢ Intensify efforts to improve coverage with the second dose of measles-containing vaccine, by tailored demand generation and addressing causes of missed opportunities for vaccination.
➢ Provide clear policy recommendation for missed MR doses in children and clear guidance on MR vaccination in women aged >15 years. Provide operational guidance to support implementation of these recommendations.
➢ Finalize the revised nationally-recommended definition of a fully immunized child, as has been proposed, to include MR2 (and DTP4), and operationalize this definition in all provinces.
➢ Accelerate the use of the revised measles case definition (fever and rash), active case finding and testing of suspected cases.
➢ Develop province- and district-owned and appropriate sub-national plans for measles, rubella and CRS elimination and surveillance in line with the national road map.
➢ The national level should assess the need to expand the capacity of provincial labs to conduct measles rubella serology and virology to support the elimination goal.

Medium-term

➢ Implement and evaluate efforts to screen vaccination status at early childhood development centres and primary school in order to vaccinate children who have missed doses of vaccines.
➢ Coordinate with the pharmaceutical group in the MoH to purchase additional reagents and collaboratively plan to secure sufficient annual supply, including buffer stock.
➢ Create the opportunity for younger professionals with relevant expertise, including with international experience with vaccine preventable diseases, to join the National Verification Committee for Measles and Rubella as shadow members.

Long-term

➢ Data and surveillance quality and use need to be improved to better identify immunity gaps, focus routine immunization-strengthening activities, and demonstrate interruption of measles and rubella virus transmission.
➢ If concerns exist about the immunity profile of the population, a sero-survey for measles and rubella, using existing samples, could be considered.
MNTE post validation assessment

➢ Develop, implement and monitor a plan for sustaining MNTE.
➢ Conduct neonatal tetanus risk assessment, assess the MNTE sustainability status in the Papua province and take necessary corrective actions.
➢ Address the current gaps in correctly vaccinating pregnant women and correctly documenting previously administered tetanus toxoid containing vaccine doses.
➢ Provide information, during antenatal care visits, to communities about proper cord care and the risks of use of traditional substance application on the umbilical cord of babies.
➢ Implement the recommendations of the recent Data Quality Review report on improving data completeness, availability and quality, including data on core and surrogate maternal and neonatal tetanus indicators.
➢ Strengthen the already existing platforms for delivering tetanus toxoid containing vaccine along the life-course (infant vaccination, booster doses during the second year of life, the school health programme, antenatal care, periodic intensification of routine immunization).
➢ Consider introducing the monitoring, during visits for the first dose of DTP, of protection at birth.
➢ Improve the coverage, quality and information sharing related to all MNTE services delivered through EPI, Reproductive, Maternal, Neonatal, Child and Adolescent Health and School Health programmes – Bulan Imunisasi Anak Sekolah -- by improving collaboration between the programmes.

Hepatitis B control and eventual elimination

Short-term

➢ Ensure each level uses a revised reporting tools to differentiate between timely and non-timely HepB-BD
➢ Consider revising the policy on weight restrictions for HepB-BD vaccination if the baby is stable, especially if the mother is hepatitis B surface antigen (HbsAg) positive.
➢ Conduct vaccine storage management and supervisory visits to ensure the quality of vaccines is maintained in the cold chain and enough vaccines are available.
➢ Hepatitis B control should be listed as a separate target in the cMYP to be in line with SEAR VAP (Goal 6).
➢ Identify an advocate for Hepatitis B control to be a member of the SEAR Regional Expert Panel.

Medium-term

➢ Emphasize the need to improve timely HepB-BD coverage to reach >80%.
➢ Test specimens from the 2019 Survey for HBsAg to assess current prevalence, especially in children.
➢ Compile evidence to submit to SEAR Regional Expert Panel for verification of achievement of hepatitis B control (HBsAg <1% among children)

➢ Long-term

➢ Track percentage of pregnant women who are HBsAg positive by creating a reporting system, in cooperation with other related programmes.

➢ Work towards elimination of hepatitis B as a public health threat as per global target (HBsAg <0.1% by 2030).

Control of JE is accelerated

Short-term

➢ Analyze existing acute encephalitis syndrome (AES) surveillance and JE surveillance data to better describe JE epidemiology in Indonesia.

➢ Reinforce efforts to increase JEV coverage in line with the other vaccines (pentavalent vaccine, measles-containing vaccine) given at/or around the same time as JEV.

➢ Consider listing accelerating control of Japanese encephalitis as a separate goal in the cMYP, in line with the SEAR VAP (Goal 5).

Medium-term

➢ Expand surveillance through:

➢ Initiating AES surveillance in provinces and districts adjoining current surveillance sites to facilitate the use of existing JE testing laboratories to test specimens.

➢ Establishing pan country surveillance to monitor epidemiology and trends in JE transmission.

➢ Expanding availability of laboratory testing for JE through adding five additional laboratories capable of testing for JE, backed by a national capacity building workshop.

➢ Based on AES surveillance results, conduct a phased scale up of JEV to high burden provinces, conducting a need based wide age range supplementary immunization activity before introducing the vaccine in the routine immunization programme.

➢ Identify an appropriate vaccine preparation from the several now-available pre-qualified JEV products.

New vaccine introduction

Short-term

➢ Finalize a comprehensive plan for phased introduction of PCV during 2020–2024.

➢ Develop a of more comprehensive introduction roadmap by vaccine for JEV, HPV and rotavirus vaccine.
➢ Identify required technical assistance needs to support national vaccine introductions.

➢ The lack of baseline data to generate evidence for vaccine introductions and/or expansions of new vaccines (JE, rotavirus, PCV) is noted; recommend strengthening surveillance for new-vaccine–associated vaccine preventable diseases, for example expanding JE surveillance and establishing rotavirus sentinel surveillance.

For immediate action
Immediate priorities are to identify districts with a high number of children who drop out from immunization and to improve coverage in these districts through intensifying defaulter tracking and backlog fighting, updating micro plans, and developing tailored demand generation strategies. The MoH and partners should collaborate to ensure that there is dedicated technical assistance to the programme, at minimum one medical epidemiologist/public health expert in all provinces. A monthly coordination meeting should be established between surveillance and immunization teams at national, provincial and district levels to implement agreed-upon actions. It is critical to ensure an adequate supply of IPV, PCV, JEV and HPV through avoiding procurement barriers, and to ensure adequate and timely laboratory supplies.

Conclusions
Although the EPI and VPDS are reinforced by strong regulatory, legal and advisory frameworks, programme implementation is challenged by a highly decentralized structure, and gaps in human resources, vaccine demand, and data quality, use, and local ownership. These gaps directly impact the programme’s ability to reach unreached populations and maintain or attain targeted disease goals, and will require a sustained effort to address.
Introduction

This Review took place immediately before the Covid-19 pandemic and the report reflects the findings and recommendations from the Review. It is likely that the pandemic has resulted in missed vaccinations, a situation which would particularly impact reaching disease eradication, elimination and accelerated control goals. Recommendations to specifically address how to reach children missed as a result of the pandemic are beyond the purview of this report.

The Expanded Programme on Immunization (EPI) in Indonesia has achieved considerable success. The National Immunization Program (NIP) finances nearly all EPI-related costs; the country is, to a large extent, self-sufficient for vaccines; and the country was declared to have eradicated poliomyelitis (polio) in 2014 and was verified to have reached maternal and neonatal tetanus elimination (MNTE) in 2016. Recent years have seen the introduction of pneumococcal vaccine (PCV), human papilloma virus (HPV) vaccine and Japanese encephalitis vaccine (JEV). Reporting of the EPI target diseases (polio, measles, rubella, diphtheria, pertussis, neonatal tetanus (NT)) is mandatory and based on clinical and/or laboratory evidence. Nonetheless, the country has also seen ongoing challenges to its EPI, with coverage with the third dose of diphtheria tetanus pertussis vaccine (DTP3) hovering around 80% for the past decade, ongoing transmission of diphtheria over the past twenty years, and repeated outbreaks of measles.2

Indonesia subscribes to the key strategic objectives of the Global Vaccine Action Plan and the global goals of the Decade of Vaccines (2011–2020)3: (1) achieve a world free of polio, (2) meet vaccination coverage targets, (3) reduce child mortality, (4) meet global and regional elimination targets, and (5) develop and introduce new vaccines. The country also subscribes to the regional goals of eliminating measles, rubella and congenital rubella syndrome (CRS) by 2023, as well as accelerating the control of hepatitis B. In line with the World Health Organization’s (WHO’s) South-East Asia Region (SEAR) Vaccine Action Plan (VAP), the country also seeks to strengthen routine immunization systems and services and accelerate the introduction of new vaccines.4

The SEAR Technical Advisory Group on Immunization recommends that each country conduct periodic joint national/international programme reviews in addition to its own regular internal programme monitoring.

Joint national/international EPI reviews conducted in SEAR, including this one, have three broad objectives:

- To provide a snapshot to public health programme directors and public health policy makers on the status of the EPI and vaccine-preventable disease surveillance (VPDS).

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2 http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B5D%5D=IDN.
➢ To assess progress in meeting key national, regional and global goals, and
➢ To provide an opportunity to share lessons learned with other countries sharing
the same goals for preventing and controlling vaccine preventable diseases
(VPDs).

This document reports on the findings and recommendations of the Joint
National/International Expanded Programme on Immunization and Vaccine Preventable
Disease Surveillance Review held in Indonesia during 10–18 February 2020.

General
Indonesia, a highly diverse South-East Asia archipelago nation, is home to more than 300
ethnic groups. With an estimated 2018 population of more than 267 million individuals and
an annual birth cohort of almost 5 million infants, it is the fourth most populous country in the
world. Indonesia has seen rapid economic growth with its gross domestic product per capita
rising from US$ 823 in 2000 to US$ 3923 in 2018. Today, Indonesia is among the world’s
10 largest economies in terms of purchasing power parity and a member of the G-20; nonetheless,
more than 26 million Indonesians still live below the national poverty line of
US$ 1.90 per day. Furthermore, substantial disparity exists at sub-national levels, with the
highest levels of poverty found in the provinces of Papua, West Papua, East Nusa
Tenggara, Maluku and Gorontalo.

Figure 1: Map of Indonesia

Indonesia is divided into 34 provinces, under which sit (in descending administrative
order), districts (416) and cities (98), followed by sub-districts (8479) and then villages.
(74 957); slightly over half of the total population lives on the island of Java. The country is a
highly decentralized democracy, with powers for executing health programmes and primary
and mid-level education residing at the regency or municipality level. In the 2010 census,
87% of the population self-declared as Muslim.

In 2016, life expectancy at birth was 69.3 years. During 2016–2018, 93.6% of all births
were attended by skilled health personnel. In 2018, the neonatal mortality rate was 12.7 per

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7 http://worldpopulationreview.com/countries/indonesia-population/
1000 live births, while the under-five mortality rate was 25 per 1000 live births. During 2007 – 2012, 93% of the population aged ≥15 years was considered literate. Education is compulsory for ages 7–15 years, with primary school attendance estimated at 99.4%.

Health services and EPI in Indonesia

Policy and implementation frameworks

Multiple laws, regulations and policies frame Indonesia’s immunization programme. These include: Law No. 36/2009, concerning health; Law No. 23/2002, concerning child protection and the right of children to be immunized; Law No 9/2015 concerning local government; Law No. 33/2004, concerning fiscal balance between local and central government; Presidential Regulation No. 27/2012 concerning the National Health System; Presidential Regulation No. 82/2018 concerning Health Insurance and Government Regulation 38/2007 regarding allocation of government matters among different levels of government. Minister of Health Regulation No. 4 of 2019 sets forth the Minimal Services Standard for Health. The main guideline pertaining to EPI is Minister of Health Regulation No. 12 of 2017, which regulates the important components of immunization. Relevant regulations may also exist at provincial or district levels. A Memorandum of Understanding regarding immunization exists among the Ministry of Health (MoH), Ministry of Education, Ministry of the Interior, and Ministry of Religious Affairs for school-based immunization programme implementation (Bulan Imunisasi Anak Sekolah (BIAS)).

Indonesia’s current Long-Term Development Plan (2005–2025) provides the mandate for strengthening health development systems. The 2020 – 2024 Medium-Term Development Plan, representing the fourth phase of the Long-Term Development Plan, has recently been released.

Leadership, management and planning

The Immunization and Surveillance Section of Sub-Directorate both sit within the Directorate of Surveillance and Health Quarantine (Figure 2), under the Directorate General of Disease Prevention and Control within the MoH. The central government provides vaccine and logistics to the immunization programme, as well as developing guidelines and standards, providing monitoring and evaluation, and being responsible for quality control and capacity building for health care workers (HCWs). Local governments are responsible for programme implementation, including transportation, operational and maintenance costs and budget for any incentives offered, as well as micro planning, communications and social mobilization.

Medium-term planning for EPI is done on a five-year cycle, while Short-term planning is on a one-year cycle. Coordination with provinces is ensured through annual or bi-annual meetings with Provincial Health Offices (PHOs).

Figure 2: Organogram of Directorate of Surveillance and Health Quarantine, MoH, Indonesia, 2020.

Organogram:
Directorate of Surveillance and Health Quarantine

Source: MOH

Health care financing

President Widodo’s administration has increased spending for the health sector by 54% during 2014–2017. For the first time, public expenditure on health has reached 5% of the total state budget, the minimum health share expenditure mandated by Law 36/2009 (in contrast, legislation mandates education expenditure at 20% of the state budget and infrastructure in 2016 accounted for 15% of the state budget). Ninety percent of total expenses on vaccines and 89% of total expenses for routine immunization are financed by the government.\(^\text{10}\)

Domestic government financing for health has increased significantly in recent years, although it is still well below the mean of 2% for the region (measured as a share of gross domestic product). Out-of-pocket expenses have fallen from 53% of current health expenditure in 2012 to 37% in 2016, reflecting increased government contributions to health via social insurance programmes (and despite decreases in external support).

The higher level of health expenditure is needed to support the national health insurance programme or Jaminan Kesehatan Nasional (JKN) which was launched in January 2014. The JKN is a national health insurance system aimed at providing universal access to healthcare by 2019. Despite concerns around the fiscal sustainability of the scheme, it is successfully extending insurance to the entire population, including large swathes of the population previously not covered by any public insurance schemes. Challenges for JKN include: a focus on health care spending on curative care rather than prevention, complex payment system and difficulties in covering informal workers and those in remote regions.

While such budget increases have strengthened efforts to improve basic public services, the quality of health clinics remains uneven by middle income standards,

\(^{10}\) WHO and UNICEF. Joint Reporting Form. Indonesia, 2016.
contributing to some alarming health indicators. For example, one in three Indonesian children under the age of five years suffers from stunting, which may reflect impaired brain development.

**Service delivery**

Division of responsibility within the MoH for provision of health services is described above, as is the division of responsibility between central and peripheral levels. The structure of the health system is summarized in Figure 3. While *puskesmas* are open on a daily basis, *posyandu* may be open as little as once a month.

*Figure 3: Curative and preventive health service delivery, Indonesia.*

**EPI**

Indonesia’s immunization programme began with the introduction of smallpox vaccine in 1956 and measles vaccine in 1963. The EPI was officially launched in 1977, and now targets children from birth through school age, as well as women of reproductive age (WRA). Children in 1st, 2nd and 5th grades receive immunization through Indonesia’s BIAS, which began in 1998.

A comprehensive multiyear plan (cMYP) 2020–2024 is being finalized. The objectives of the cMYP are to:

- Sustain polio free status;
- Achieve measles, rubella and CRS elimination by 2023;
- Sustain MNTE status;
- Control diphtheria;
- Increase routine immunization coverage; and
- Introduce new vaccines.
The last national/international EPI and VPDS Review was conducted in 2013. Key recommendations of this Review were to:

- Promote greater strategic planning and/or innovative thinking to achieve national goals;
- Establish a clear delineation of roles and responsibilities at different levels and a monitoring and accountability framework for regular review of performance at all levels;
- Strengthen interdepartmental coordination mechanisms with Mother Child Health (MCH) and other related government departments and development partners;
- Formulate clear policies/guidelines to reduce missed opportunities for vaccination;
- Review and improve the contracting process to facilitate timely vaccine procurement;
- Improve technical expertise and skills of management staff at all levels;
- Establish strategies to improve the quality of immunization coverage monitoring; and
- Address the issue of vaccine refusals and low general vaccine demand.

Although no comprehensive review has been held since that time, multiple components of the EPI and VPDS have been reviewed through post-introduction evaluations conducted in 2018 (HPV vaccine) and 2019 (inactivated polio vaccine (IPV), JEV, PCV), a 2019 data quality review (DQR), 2017 and 2018 Gavi Joint Appraisals, as well as an immunization policy and health sector reviews.  

**National EPI schedule**

The current EPI schedule is below.

**Table 1: EPI schedule, Indonesia, 2020***

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age of administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>Birth</td>
</tr>
<tr>
<td>HepB</td>
<td>Birth 0 – 24 hours</td>
</tr>
<tr>
<td>DTP-Hib-HepB</td>
<td>2 months, 3 months, 4 months and 18 months</td>
</tr>
<tr>
<td>DT</td>
<td>6 to 7 years</td>
</tr>
</tbody>
</table>

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11 Government of Indonesia, Report of the joint national/international mission Indonesia on Post -Introduction Evaluation (PIE) of Inactivated Polio Vaccine, Pneumococcal Conjugate Vaccine and Japanese Encephalitis Vaccine, 18–30 September, 2019, Jakarta, Indonesia


13 Ministry of Health of Indonesia, Expanded Programme on Immunization, Data Quality Review of Immunization Monitoring and Vaccine Preventable Diseases Surveillance System, 2019


16 Sari, JFK. EPI Policy Review. WHO Registration 2019/927959-0

**Joint national/international expanded programme on immunization and vaccine preventable disease surveillance review**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age of administration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Td</td>
<td>7 to 8 years, 8 to 9 years, 15 to 39 years (Child bearing women)</td>
</tr>
<tr>
<td>OPV</td>
<td>1 month, 2 months, 3 months and 4 months</td>
</tr>
<tr>
<td>IPV</td>
<td>4 months</td>
</tr>
<tr>
<td>Measles</td>
<td>9 months, 24 months and 7 years</td>
</tr>
<tr>
<td>MR</td>
<td>9 months, 18–24 months, 7 years (Java island)</td>
</tr>
<tr>
<td>HPV</td>
<td>11 year, 12 year (Jakarta Province, 2 districts of Yogyakarta and one district of East Java province)</td>
</tr>
<tr>
<td>PCV</td>
<td>2 month, 3 month, 12 month (3 districts and Mataram city of Nusa Tenggara Timur province)</td>
</tr>
<tr>
<td>JE_LiveAtd</td>
<td>10 months (Bali province)</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>6–59 months</td>
</tr>
</tbody>
</table>

BCG: Bacille Calmette-Guerin; DT: diphtheria pertussis vaccine; DTP: diphtheria tetanus pertussis vaccine; EPI: Expanded Programme on Immunization; Hep B: hepatitis B vaccine; Hib: Haemophilus influenzae b vaccine; HPV: human papilloma virus; IPV: inactivated polio vaccine; JE_LiveAtd: Japanese encephalitis live attenuated vaccine; OPV: oral polio vaccine; MR: measles rubella vaccine; PCV: pneumococcal vaccine; Td: tetanus diphtheria vaccine for those aged ≥7 years; the numeral following the vaccine name indicates the dose number.

Source: WHO and UNICEF. Joint Reporting Form. Indonesia. 2018

**EPI service delivery**

In the public system, *puskesmas* (sub-district) and *posyandus* (village level) offer vaccination. *Kader* volunteer within communities, mobilizing caregivers to bring children for vaccination and reporting cases of VPDs. In hard-to-reach areas, vaccination is offered through outreach sessions, the frequency of which depends on location. Vaccination is also offered at private clinics and hospitals which receive EPI vaccines free of charge from the government but may charge additional costs, and may also provide non-EPI vaccines to clients (i.e., both vaccines which are not included in the national immunization schedule, and vaccines included in the national schedule but from a different manufacturer than that which the national programme purchases from). Approximately five percent of all vaccinations are estimated to be given through the private system. Vaccination is free of charge at *puskesmas* and *posyandu*, including for non-insured individuals (i.e., non-Indonesians or those too poor to afford insurance premiums. However, an administration fee may be charged by hospitals administering EPI vaccines.

**Financing of immunization programme**

Financial indicators reported to WHO for years 2015, 2016 and 2017 are below:
Table 2: Financial indicators of immunization financing reported to WHO, Indonesia, 2014–2017

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2018</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are there line items in the national budget specifically for the purchase of vaccines used in routine immunizations?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>What amount of government funds are spent on vaccines, INR</td>
<td>1 916 432 887 858</td>
<td>1 916 432 887 858</td>
<td>510 198 968 686</td>
</tr>
<tr>
<td>What is the total expenditure (from all sources) on vaccines used in routine immunization in US $</td>
<td>2 055 580 942 886</td>
<td>688 628 749 375</td>
<td>613 381 648 686</td>
</tr>
<tr>
<td>Percentage of total expenditure on vaccines financed by government funds</td>
<td>93</td>
<td>90</td>
<td>83</td>
</tr>
<tr>
<td>What amount of government funds are spent on routine immunization in US $?</td>
<td>--</td>
<td>1 045 560 484 075</td>
<td>754 521 438 686</td>
</tr>
<tr>
<td>What is the total expenditure (from all sources) on routine immunization in US $?</td>
<td>--</td>
<td>1 186 385 276 075</td>
<td>998 277 086 031</td>
</tr>
<tr>
<td>Percentage of total expenditure on routine immunization financed by government funds?</td>
<td>--</td>
<td>88</td>
<td>76</td>
</tr>
</tbody>
</table>

Source: [http://apps.who.int/immunization_monitoring/globalsummary/indicators?ir%5Bc%5D%5B%5D=IDN&ir%5B5%5D%5B%5D=NATBUDG&ir%5B5%5D%5B%5D=NATBUDG_AMOUNT&ir%5B5%5D%5B%5D=NATBUDG_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC_CRCY&ir%5B5%5D%5B%5D=GOVERNMENT&ir%5B5%5D%5B%5D=NATBUDGINJCT_AMOUNT&ir%5B5%5D%5B%5D=NATBUDGINJCT_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI_CRCY&ir%5B5%5D%5B%5D=FINTTLIMUNSPND&commit=Ok+with+the+selection](http://apps.who.int/immunization_monitoring/globalsummary/indicators?ir%5Bc%5D%5B%5D=IDN&ir%5B5%5D%5B%5D=NATBUDG&ir%5B5%5D%5B%5D=NATBUDG_AMOUNT&ir%5B5%5D%5B%5D=NATBUDG_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC_CRCY&ir%5B5%5D%5B%5D=GOVERNMENT&ir%5B5%5D%5B%5D=NATBUDGINJCT_AMOUNT&ir%5B5%5D%5B%5D=NATBUDGINJCT_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI_CRCY&ir%5B5%5D%5B%5D=FINTTLIMUNSPND&commit=Ok+with+the+selection).

**EPI performance**

WHO and United Nations Children’s Fund (UNICEF) best estimates for vaccine coverage (WUENIC) in Indonesia for the past five years is shown below (Table 3). These estimates taken into account both reported administrative coverage and survey coverage.

Table 3: WHO and UNICEF best estimates of vaccine coverage, Indonesia, 2014–2018*

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG</td>
<td>82</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>81</td>
</tr>
<tr>
<td>DTP1</td>
<td>84</td>
<td>85</td>
<td>85</td>
<td>86</td>
<td>85</td>
</tr>
<tr>
<td>DTP3</td>
<td>78</td>
<td>78</td>
<td>79</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>HepB3</td>
<td>78</td>
<td>78</td>
<td>79</td>
<td>79</td>
<td>79</td>
</tr>
<tr>
<td>HepB-BD</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>32</td>
<td>54</td>
</tr>
<tr>
<td>Hib3</td>
<td>30</td>
<td>78</td>
<td>79</td>
<td>79</td>
<td>79</td>
</tr>
</tbody>
</table>

*Source: [http://apps.who.int/immunization_monitoring/globalsummary/indicators?ir%5Bc%5D%5B%5D=IDN&ir%5B5%5D%5B%5D=NATBUDG&ir%5B5%5D%5B%5D=NATBUDG_AMOUNT&ir%5B5%5D%5B%5D=NATBUDG_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC_CRCY&ir%5B5%5D%5B%5D=GOVERNMENT&ir%5B5%5D%5B%5D=NATBUDGINJCT_AMOUNT&ir%5B5%5D%5B%5D=NATBUDGINJCT_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI_CRCY&ir%5B5%5D%5B%5D=FINTTLIMUNSPND&commit=Ok+with+the+selection](http://apps.who.int/immunization_monitoring/globalsummary/indicators?ir%5Bc%5D%5B%5D=IDN&ir%5B5%5D%5B%5D=NATBUDG&ir%5B5%5D%5B%5D=NATBUDG_AMOUNT&ir%5B5%5D%5B%5D=NATBUDG_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC&ir%5B5%5D%5B%5D=NATBUDG_EXP_VAC_CRCY&ir%5B5%5D%5B%5D=GOVERNMENT&ir%5B5%5D%5B%5D=NATBUDGINJCT_AMOUNT&ir%5B5%5D%5B%5D=NATBUDGINJCT_CURRENCY&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI&ir%5B5%5D%5B%5D=NATBUDG_EXP_RI_CRCY&ir%5B5%5D%5B%5D=FINTTLIMUNSPND&commit=Ok+with+the+selection).
Vaccination coverage throughout the country is also highly heterogeneous (Figure 4).

* BC**: Bacille Calmette-Guerin; **DTP**: first dose of diphtheria-tetanus-pertussis vaccine; **DTP3**: third dose of diphtheria-tetanus-pertussis vaccine; **HepB**: third dose of hepatitis B vaccine; **HepB-BD**: hepatitis B vaccine birth dose; **Hib**: third dose of Haemophilus influenzae b vaccine; **IPV**: first dose of inactivated poliovirus vaccine; **MCV**: first dose of measles containing vaccine; **Pol**: third dose of poliovirus vaccine; **RCV**: first dose of rubella-containing vaccine; **TT2+**: proportion of pregnant women in one year who have received two doses or more of tetanus toxoid.

** TT2+ estimates are from official country estimates

Source: http://apps.who.int/immunization_monitoring/global_summary/countries?countrycriteria%5Bcountry%5D%5B5B%5D=IDN#

**VPDS**

Indonesia’s VPDS has two major components: the VPDs routine reporting system and the Emergency Warning, Alert and Response System (EWARS). Both the routine reporting system and EWARS require laboratory testing to confirm or discard suspected cases of disease.
**Status of VPDs**

VPDs reported by Indonesia to WHO for 2014–2018 are summarized below.

Table 4: VPDs reported by Indonesia to WHO, 2014–2018

<table>
<thead>
<tr>
<th>Disease</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diphtheria</td>
<td>430</td>
<td>--</td>
<td>342</td>
<td>954</td>
<td>1026</td>
</tr>
<tr>
<td>Japanese Encephalitis</td>
<td>72</td>
<td>40</td>
<td>43</td>
<td>281</td>
<td>--</td>
</tr>
<tr>
<td>Measles</td>
<td>12 943</td>
<td>15 099</td>
<td>6962</td>
<td>9035</td>
<td>5300</td>
</tr>
<tr>
<td>Mumps</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Pertussis</td>
<td>2082</td>
<td>--</td>
<td>826</td>
<td>1043</td>
<td>40</td>
</tr>
<tr>
<td>Polio*</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Rubella</td>
<td>3542</td>
<td>2156</td>
<td>1238</td>
<td>1264</td>
<td>1787</td>
</tr>
<tr>
<td>Congenital rubella syndrome</td>
<td>--</td>
<td>44</td>
<td>174</td>
<td>532</td>
<td>188</td>
</tr>
<tr>
<td>Neonatal tetanus</td>
<td>75</td>
<td>79</td>
<td>33</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td>Tetanus (total)</td>
<td>1032</td>
<td>--</td>
<td>522</td>
<td>506</td>
<td>--</td>
</tr>
</tbody>
</table>

*Polio refers to all polio cases (indigenous or imported), including polio cases caused by vaccine derived polio viruses, but does not include cases of vaccine-associated paralytic polio and cases of non-polio acute flaccid paralysis.

Source: http://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D=IDN#

**Review objectives**

- After desk review of relevant data and consultation with the Government of Indonesia and the WHO Country and Regional Offices, and in consideration the objectives of the SEAR VAP, the following objectives were agreed upon for the review: In what ways can equity of immunization coverage be further promoted? Of particular interest are:
  - The urban poor: What are the coordinated actions required from MoH, local government and partners to reach this population?
  - The hard-to-reach (geographically or socially);
  - The status of demand generation;
  - The availability of vaccines, logistics and operational funds at sub-national levels for immunization and VPDS.
- Review the current status of human resources to support the EPI, taking into account number, distribution and supervision of staff, as well as capacity and refresher training, and make recommendations as necessary.
- Assess extent of vaccine hesitancy and actions taken to address the situation and recommend further mitigating actions that could be taken by the National Immunization Program.
Assess the injection safety and management of adverse events following immunization (AEFI) and ascertain any effect on vaccine hesitancy due to injection practices and reported and investigated adverse events.

Review the functioning, guidance and oversight provided by advisory bodies (National Immunization Technical Advisory Group, National Verification Committee Measles Rubella Elimination, National Certification Committee for Polio Eradication, National Committee of Adverse Events Following Immunization (NC AEFI), National Containment Taskforce, National Authority for Containment, etc.); with particular attention to promoting equity of coverage and provide recommendations as necessary.

Assess the adequacy of the VPDS system to detect and respond to disease outbreaks in a timely fashion and make recommendations as appropriate.

Assess the current status of the diphtheria outbreak and the actions needed to control the outbreak.

Reaching and/or maintaining elimination or control of targeted diseases at national and sub-national levels

Polio

Assess the status of implementation of recommendations made by the Regional Certification Commission for Polio Eradication and outbreak response readiness; make recommendations as necessary to maintain polio-free status.

Measles, rubella and CRS elimination

Assess the status of implementation of the 2019 Measles Rubella CRS Elimination National Strategic Plan and make recommendations as necessary;

Review and provide input on the updated national strategies plan for measles rubella and CRS elimination to ensure that the strategies are sufficient and adequate to meet the elimination goal;

Assess the status of and provide recommendations to overcome issues and challenges to immediately roll out laboratory supported case-based fever and rash surveillance all over the country;

Review the current measles rubella laboratory structure and provide input on the adequacy/relevance of the laboratories and if there are needs to expand the laboratories network (also considering cost and challenges on cost of shipment of specimen for laboratory testing);

Assess the status of implementation of recommendations made by the 4th SEAR Verification Commission and 10th SEAR Technical Advisory Group on Immunization meeting to Indonesia to accelerate progress towards measles rubella and CRS elimination.

Maternal and neonatal tetanus elimination (MNTE)

Assess the current status of MNTE (this assessment will be backed by an initial desk review of district level data) and make recommendations as necessary to maintain elimination status.

Hepatitis B
➢ Assess status and challenges in timely birth dose delivery and make recommendations towards the 2020 control goal of \( \leq 1\% \) hepatitis B surface antigen in children aged 5 years old.

➢ Japanese encephalitis (JE)

➢ Assess the current epidemiology of JE and identify the actions needed to strengthen the laboratory supported surveillance and expansion of the areas where JE vaccination is conducted.

➢ Assess the current status of new vaccine introductions and the priority activities needed to develop an initial roadmap for the further introduction of new vaccines.

➢ Assess the critical actions needed to implement above mentioned activities within the decentralized health system.

Due to the EVMA which immediately preceded this review, the EPI and VPDS Review Team did not systematically evaluate vaccine management.

**Methodology**

**Team composition**

The MoH, the WHO Regional Office for South-East Asia and the WHO Country Office collaborated to assemble a Review team of nationals and internationals. This included representatives from the MoH, selected Provincial Health Offices (PHOs), and District Health Offices (DHOs) in the districts visited. International team members included representatives from WHO and UNICEF Headquarters, Regional and Indonesia Country Offices, WHO’s India Country Office, Gavi, The Vaccine Alliance (Gavi), US Centers for Disease Control and Prevention, and representatives from Thailand, Nepal and Myanmar. The team addressed the core questions through a desk review of relevant policies and guidelines; secondary analysis of available data; interviews with key stakeholders, policy makers, and programme staff; visits to PHOs and DHOS, clinics and hospitals, and direct observation of programme implementation at field sites. A particular focus of this Review was a post validation assessment (PVA) of MNTE; this assessment is summarized briefly in this report and at greater length in an independent document.

During 10–18 February 2020, 15 joint field teams, most with one international, one or more national staff, and provincial, district and local staff conducted field visits and reviewed national functions.

**Site selection**

A total of 30 districts in 15 provinces representing Indonesia’s 4 regions\(^\text{18}\) were selected. Four of these 30 districts were selected because they were high-risk for maternal and neonatal tetanus (MNT), forming the basis of the PVA. One team stayed at national level to meet with national level committee members, the national laboratory, and relevant figures in the national government.

\(^{18}\) Region 1: Java and Bali; Region 2: Sumatera; Region 3: Kalimantan, Sulawesi, East and West Nusa Tenggara; Region 4: Papua, West Papua, Maluku and North Maluku
Provinces and, subsequently, districts were selected following discussion and consensus among staff from MoH, the WHO Headquarters, Regional and Country Offices, and UNICEF Headquarters, with technical input from PVA experts. The selection process took into account the objectives of the review, and the need to visit locations which would allow adequate information to be collected to meet these objectives. Fifteen of 34 provinces were selected to be included in the review. Selection criteria for the provinces were:

- Population size, with preference for larger population;
- Administrative coverage (DTP3 2018 (WHO SEAR Office’s Annual EPI Reporting Forms) <80%);
- Drop-out rates (i.e., first dose of diphtheria tetanus pertussis vaccine DTP1) – DTP3 (2018 WHO SEAR Office’s Annual EPI Reporting Forms) >5%;
- Occurrence of VPDs, in particular cases of diphtheria and measles;
- Transport connections/geographical vicinity to 2019–2020 polio outbreak affected areas in Philippines and Malaysia;
- Representation of all four regions of the country.

Twenty-six of the districts to be visited were selected in the following way:

- Districts that were not accessible to internationals due to security concerns were removed, with the exception of Aceh (the team visiting Aceh was led by international staff based in Indonesia);
- Districts too geographically distant for teams to visit (given the need to visit two districts per team) were removed;
- Remaining districts were stratified as “well performing” (DTP3 ≥80%) and “less well performing” (DTP3 <80%);
- Within each group, rural and urban districts were identified;
- Districts were ranked by population size;
- For each district, information was sought on diphtheria transmission, reported measles cases, and consideration was given to polio re-introduction risk;
- Within each province, a well performing and a less well performing district were identified to be visited by the same team; both districts needed to be accessible to the field team within the allotted field visit period.

A separate assessment was done to identify districts at high-risk for MNT, from which four could be selected for the PVA to focus on (i.e., in addition to the 26 districts selected above). For a description of the selection of these districts, please see the section below on the MNTE PVA. The inclusion of four PVA districts resulted in a final distribution of 13 urban and 17 rural districts.

Within each of the 30 districts, a well-performing and a less-well performing health facility were selected to be visited, including 2 outreach/immunization sessions in each health centre. Hospitals and private immunization clinics were also be visited.
Figure 5: Locations visited by field teams, Indonesia EPI and VPDS Review, 2020.

Development of tools

An aide-memoire based upon those used in EPI and VPDS Reviews in multiple other South-East Asian countries was revised to reflect the particular objectives of this Review. This aide-memoire covered quantitative and qualitative information to be gathered from desk reviews, interviews and observations. On the basis of this aide memoire, the MoH and the WHO Country Office developed a more structured questionnaire in Bahasa to be used by the national teams. These documents were supplemented by a tool for observation of immunization sessions, and another for interviews with caregivers. PVA-specific tools were used by teams in the four districts selected for PVA; further details on these tools are found in the section reporting on the MNTE PVA. Teams assessed performance on: planning, monitoring and data use; human resources and capacity; immunization service delivery; vaccine, supply stock and VPDS.
Consolidation of findings and development of recommendations

Upon returning to Jakarta, the field teams presented their findings and assessments relative to the core topic areas to each other through extensive discussions on 17 February. Conclusions and recommendations were reviewed on 18 February at a forum attended by representatives of the MoH and PHOs. On 19 February, PHOs developed province-specific work plans.

Limitations

A 10-day review can only reveal a relatively limited view of a country’s EPI and VPDS systems; this is particularly true in a country as vast and diverse as Indonesia. Sites visited during the EPI and VPDS Review may not have represented remote sites which the team could not access. In such a short period of time, international reviewers cannot hope to fully appreciate the subtleties of Indonesia’s approach to public health and immunization, particularly in light of language barriers. In addition, specific topics may require more analysis than is possible given the breadth of the Review. Interviews with caregivers were biased to those who accept and comply with accessing health services and vaccination. Despite these limitations, such a review can provide assistance in identifying programme gaps, bring new perspectives and experience from other settings, and identify topics that merit more in-depth follow up.

Findings and recommendations

General

The EPI has been a successful programme in Indonesia’s primary care system, vaccinating approximately four million children annually despite the significant challenges presented by the country’s geography and ethnic diversity. Indonesia is largely self-financing in terms of both routine immunization and vaccine costs and is self-sufficient for most EPI vaccines. In the past five years, it has introduced rubella vaccine and IPV nationally, as well as HPV vaccine, JEV and PCV sub-nationally. The country has also reached global goals of being polio-free (2014) and eliminating MNT (2016).

Nonetheless, the country’s programme confronts a number of challenges, many of which have been identified in the previous reviews cited above. At present, nearly one fifth of the annual birth cohort (i.e., approximately one million children) remain un- or under-vaccinated, leading to a large pool of individuals susceptible to disease – manifested in ongoing diphtheria transmission and repeated measles outbreaks, and placing much of the country at high-risk for polio importation. Challenges in achieving uniformly high vaccine coverage threaten the country’s ability to reach and maintain measles, rubella and CRS elimination by the regional goal of 2023. Indonesia’s highly decentralized immunization programme relies heavily on sub-national administrative levels to assure the quality of programme implementation. However, implementation is constrained by human resource gaps as well as limitations on the quality, availability and use of data, resulting in missed opportunities to identify and target un- and under-vaccinated children. Anti-vaccine

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19 In terms of recommendations, “Short-term” refers to a time frame from the present to approximately one year from now, “medium-term” to one to five years from now, and “long-term” to five to ten years from now.
sentiment has increased in recent years. In the months prior to the review, difficulties with vaccine procurement have led to stock outs of HPV vaccine, IPV, JEV and PCV.

Review findings and key recommendations are outlined below.

**Policy and governance, funding, national regulatory and advisory bodies, vaccine procurement**

*Background and findings*

**Policy and regulation**

*Background*

Policy and regulations are critical elements of a well-functioning immunization and VPDS system. Within Indonesia’s highly decentralized Primary Health Care (PHC) system, they provide important ways in which the national government can provide guidance to the overall immunization and VPDS programme.

*Findings*

Indonesia’s EPI and VPDS sit within a comprehensive policy and regulatory framework, as outlined in the Introduction to this report. In order to identify gaps, conflicts between policies, or the need for updates, a policy review was conducted in 2019. This recommended specific detailed updates to Minister of Health Regulation No. 12 of 2017, encouraged the development of sub-national immunization-focused policies and regulations, strengthening cross programme/sector coordination, developing expanded policies and regulations on communication strategies, developing guidelines for immunization of adults traveling abroad, and considering mandatory immunization of children with priority vaccines.20

During field visits, the Review team noted missed opportunities for immunization linked to aspects of, gaps in, or mis-understandings of, national policies and regulations. Review teams also noted that, in the field, some immunization clinics offered antigen-specific sessions – for example, only providing pentavalent vaccine or measles rubella vaccine (MR) at a specific immunization session. Review team members also found a lack of clear understanding of policies and guidelines by HCWs on:

- Catch up vaccination beyond the first year of life;
- Providing multiple injections at the same visit;
- Not opening vials for few children due to wastage concerns.

The Review team also heard of challenges in ensuring that foreign children resident in Indonesia complied with the national EPI schedule.

In addition, the Review team noted that, although controlling tuberculosis is a national priority, according to the national EPI schedule, the Bacille Calmette Guerin (BCG) vaccine is to be given at one month of age, as opposed to at birth, as recommended by global guidelines21—thus increasing the vulnerability of children aged <1 month to tuberculosis.

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20 Sari, JFK. EPI Policy Review. WHO Registration 2019/927959-0

National advisory and regulatory bodies

National advisory and regulatory bodies include the Indonesia Technical Advisory Group on Immunization (ITAGI), the National Verification Committee for Measles, Rubella and CRS Elimination (NVC MR), National Certification Committee for Polio Eradication, NC AEFI, National Containment Taskforce, National Authority for Containment, and the NRA. Unfortunately, due to scheduling conflicts, it was only possible to meet the Chairs of the ITAGI, the NC AEFI, and the NRA. The NC AEFI is considered in the context of the AEFI surveillance system overall.

ITAGI

Background

National immunization technical advisory groups (NITAGs) play a critical role in providing independent, evidence-informed advice to health authorities on all policy-related issues for all vaccines across all populations. Six process indicators for functionality are

- Legislative or administrative basis for the advisory group;
- Formal written terms of reference;
- Diverse expertise/representation among core members;
- Number of meetings per year;
- Circulation of the agenda and background documents at least one week prior to meetings; and
- Mandatory disclosure of any conflict of interest.\(^2\)

The 2018 SEAR Immunization Technical Advisory Group also made the following specific recommendations for NITAGs:

- The composition of NITAGs should be reviewed to ensure their independent advisory and monitoring role;
- WHO should continue to build the capacity of NITAGs, including considering an orientation workshop for NITAGs;
- The NITAGs should intensively monitor the achievements of goals of the SEAR VAP and progress against recommendations of the SEAR Immunization Technical Advisory Group;
- NITAGs should continue to share their findings with national programmes and policy makers for appropriate actions; and monitor follow up actions being taken;
- NITAGs should continue to report to the SEAR Immunization Technical Advisory Group on an annual basis.

Findings

The ITAGI was established in 2007 by Ministerial Decree, reiterated by Ministerial Decree HK.01.07/MENKES/384/2019. The ITAGI has 17 members with the core group including pediatricians, internists, microbiologists, virologists, epidemiologists, public health practitioners, health economists (a recent addition), and the National EPI Manager. Core members are (with the exception of the EPI Manager) from academic and professional organizations and hold three year terms which can theoretically be renewed only once, although the realities of finding suitable replacements may lead to extension of terms. The Chair is appointed by the Director General of Communicable Diseases Control for a term of three years, which can be renewed once. Core members declare conflicts of interest at the start of every term. Liaison members include representatives of the Indonesian Pediatric Society, the Internal Medicine Association, and the key technical partners of WHO and UNICEF. In addition, there are ex officio members from the NRA, the Immunization Unit of the Directorate General of Disease Control and Prevention, the National Institute of Health and Research Development, and the Finance and Planning Bureau of the MoH. The ITAGI has written terms of reference, and conflicts of interest are declared at the beginning of each term. There is a standing secretariat. Meeting agendas and relevant materials are usually, but not always, distributed in advance. The agenda is set in collaboration with the MoH. Meetings are held three to four times annually. The last training for ITAGI members was held in 2010; approximately 50% of the members have joined the ITAGI since that time. Currently, there is no ongoing way of providing professional development to members, although training for all members is scheduled in March 2020.

The ITAGI has reviewed and made recommendations about all new vaccine introductions since 2008, following a standard protocol which starts with assessing burden of disease, reviewing existing Strategic Advisory Group of Experts on Immunization guidance and WHO position papers, conducting a pilot project, and finally making a recommendation. Most ITAGI recommendations are eventually accepted and implemented. However, the time between initial licensing of the vaccine in Indonesia, review by the ITAGI and nationwide introduction can be long. For example, the Haemophilus influenzae b vaccine was approved by the NRA in 2000, reviewed by the ITAGI in 2010, and finally introduced nationwide in 2014. The ITAGI expressed a need for guidance on how best to provide oversight to the EPI’s progress toward regional goals. The advisory group underwent an in-depth review by WHO’s Regional Office for South-East Asia in late 2019; results and recommendations are pending.

NRA

Indonesia’s NRA, (Badan Pengawas Obat & Makanan) has three important roles: legislation, standardization, and regulation of food and drug products. More concretely, the Badan Pengawas Obat dan Makanan oversees National Regulatory Systems; Registration and Marketing Authorization; Vigilance; Market Surveillance and Control; Licensing Premises; Regulation Inspection; Laboratory Access and Testing; Clinical Trials Oversight; and Lot Release.

Registration and Marketing Authorization is done on the basis of document review for vaccine quality, safety and efficacy. Lot release approval is performed for 10% of batches. Two percent of vaccine batches are sampled for post-marketing surveillance testing. NRA assessments were performed in 2011, 2012 and 2018 by WHO, resulting in the Badan Pengawas Obat & Makanan being considered functional by WHO.
Vaccine procurement

Findings

Vaccines are financed and procured by the MoH and distributed to provinces – which redistribute these to districts. To ensure transparency in the procurement of medicines (including vaccines) in the public sector, the government of Indonesia has developed an electronic catalogue which includes the name, technical specifications, lowest unit price, and provider factory prices of all items listed. All public health facilities buy medicines and consumable medical materials (including vaccines and reagents for the public health laboratories) through the electronic catalogue. In the private sector, vaccines can be supplied and priced according to the market and purchased by the client using out of pocket funding.

The 2018 Health Sector Review notes that “much of the planning for medicines, vaccines and medical equipment takes place using the [Drug Planning Form], which is based solely on the prior consumption/usage and fails to anticipate the dynamic needs associated with changing patterns of disease or improvements of the program coverage. Coordinated planning from national, provincial and district levels often lead to a mismatch between supply and demand. Going forward, the process of distributing drugs and vaccines from the district/city pharmacy warehouses to the health care facilities that they supply must be taken more seriously.”

Most vaccines in Indonesia’s EPI are procured from the state-owned manufacturer, Biofarma. Exceptions include HPV vaccine, IPV JEV and PCV and and the rubella component of MR. Review teams visiting health care facilities noted stock outs of diphtheria tetanus pertussis vaccine (DTP), HPV vaccine, PCV, and IPV. Stock outs of JEV were also reported, but, as no teams visited Bali, this was not confirmed during field visits.

Conclusions

Indonesia has a strong legal and regulatory framework supporting immunization. Nonetheless, a recent policy review noted some contradictions and areas requiring strengthening, while the Review team noted that certain policies or HCWs’ understanding of these policies may contribute to missed opportunities for vaccination (MOV).

Historically, the ITAGI has been highly active in reviewing new vaccines for introduction and occasionally lending expertise to resolve programmatic challenges such as ongoing diphtheria transmission; however it is looking for ways in which it might more actively provide oversight to and support programme implementation, in line with regional guidelines. In addition, the Review noted that the ITAGI is not fully independent, as the Chair is nominated by the MoH.

Indonesia is to be congratulated on being largely self-sufficient for EPI vaccines. Nonetheless, as noted in the Health Sector Review, there is work to be done to improve the supply/demand match. Current stock outs of vaccines can be expected to reduce coverage with these vaccines and negatively influence demand generation as children who present for vaccination may not be able to be vaccinated.

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Recommendations

Policy and funding

➢ Revise any regulations limiting the vaccination of children aged 3 years to age of school entry to encourage vaccination of children in this age group who are not up to date with vaccinations.

➢ Implement the recommendations from the recent policy review, including open vial policy for one child. This is particularly important in outreach/posyandu sessions and in remote areas to avoid MOV.

➢ Ensure that policies support ALL residents of Indonesia accessing immunization services.

➢ Recommend that the ITAGI consider the challenges facing Indonesia in terms of vaccination of foreign resident children, and make recommendations to address these challenges.

➢ Reduce MOV by ensuring that public immunization clinics are required to offer the full range of EPI vaccines at every session.

➢ Develop clear policies for health workers and communication around providing multiple injections.

➢ Reduce childhood tuberculosis by revising the national immunization schedule to deliver Bacille-Calmette-Guerin vaccine at birth, as recommended by global policy.

National advisory and regulatory bodies

➢ Complete already-scheduled training for all ITAGI members. If, following this, there remains lack of clarity as to how the ITAGI should provide oversight to and engage with the immunization programme, seek guidance from WHO’s Regional Office for South-East Asia.

➢ Increase frequency of declarations of conflicts of interest for members to at least annually, ideally before every meeting.

➢ Consideration should be given to ensuring the independence of the ITAGI, in accordance with 2018 SEAR Technical Advisory Group on Immunization recommendations.

Vaccine procurement

➢ Urgently resolve procurement challenges resulting in stock outs of DTP, HPV vaccine, IPV and JEV.

➢ Implement any forthcoming recommendations from the EVMA on vaccine forecasting.
Improving service delivery, reaching the hard-to-reach, and increasing equity

Background

Health is an important objective in the Indonesian constitution, and achieving the highest possible level of health, for all, remains a major priority of national development plans and international commitments. As noted above, a social health insurance programme is available, which is meant to facilitate greater access to health services and vaccination is mandatory and freely available.

Following efforts made by the government to reduce poverty in Indonesia, the proportion of people living below the national poverty line in 2017 was 10.6%. Yet, disadvantaged groups exist with inequalities in health service coverage, access to health care, and health-related behaviours, conditions and outcomes. This is particularly evident in the five provinces with highest poverty levels in the country (Papua, West Papua, East Nusa Tenggara, Maluku, and Gorontalo). Inequalities are also found across subgroups with different socioeconomic status, education, occupation, age and sex.

Coverage of DTP3 has remained around 80% (Figure 66) for the past decade. Indonesia now ranks fourth in the world in terms of the largest number of un-immunized children. In addressing ways to reduce inequity and improve immunization coverage, focus must be made on identifying those that are unreached, creating demand for vaccination, ensuring there is sufficient capacity to meet demand, and that there are clear policies in place to ensure that there is access to vaccines, and supply of vaccines. Many of these topics have their own sections within this report and are not addressed further here.

Service delivery of vaccinations for children is primarily operated through the PHC system, comprising puskesmas, posyandu and pos kesehatan desa. Most immunization services are provided on a monthly basis in posyandu. In remote areas, sustainable outreach services are conducted 3–4 times a year. Medical doctors, midwives and nurses can deliver vaccines. Although vaccines are offered through the PHC, in some provinces as many as 50% of vaccines are delivered through the private sector. School children receive vaccines (MR, diphtheria tetanus, and tetanus diphtheria (Td)) through visits from PHC health workers at the same time as BIAS implementation. WRA receive vaccination during antenatal care (ANC) visits through PHC, private providers or midwives.

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**Figure 6: Trends in primary series vaccination coverage for selected vaccines, Indonesia, 1980–2018.**

<table>
<thead>
<tr>
<th>Year</th>
<th>BCG</th>
<th>DTP3</th>
<th>OPV3</th>
<th>MCV1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>61</td>
<td>27</td>
<td>13</td>
<td>26</td>
</tr>
<tr>
<td>1985</td>
<td>65</td>
<td>60</td>
<td>60</td>
<td>58</td>
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<tr>
<td>1990</td>
<td>74</td>
<td>69</td>
<td>71</td>
<td>63</td>
</tr>
<tr>
<td>1995</td>
<td>77</td>
<td>75</td>
<td>72</td>
<td>76</td>
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<tr>
<td>2000</td>
<td>81</td>
<td>72</td>
<td>79</td>
<td>77</td>
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<tr>
<td>2005</td>
<td>86</td>
<td>81</td>
<td>82</td>
<td>78</td>
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<tr>
<td>2010</td>
<td>88</td>
<td>81</td>
<td>80</td>
<td>76</td>
</tr>
<tr>
<td>2015</td>
<td>81</td>
<td>79</td>
<td>80</td>
<td>75</td>
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<tr>
<td>2016</td>
<td>81</td>
<td>79</td>
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<td>75</td>
</tr>
<tr>
<td>2017</td>
<td>82</td>
<td>79</td>
<td>80</td>
<td>75</td>
</tr>
<tr>
<td>2018</td>
<td>81</td>
<td>79</td>
<td>80</td>
<td>75</td>
</tr>
</tbody>
</table>


Source: WHO and UNICEF estimates of immunization coverage, July 2019 revision.
https://apps.who.int/immunization_monitoring/globalsummary/countries?countrycriteria%5Bcountry%5D%5B%5D =IDN#.

In 2018, 66% of districts attained >80% coverage with the third dose of pentavalent vaccine, while only 17% of districts attained >90% coverage with the second dose of measles containing vaccine (OPV3). Only 11 (32%) of 34 provinces had more than 95% fully immunized children (Figure 7). There are also inequities according to wealth quintile (Figure 8). As noted in the 2018 Joint Assessment Report, “While geographical inaccessibility remains a key driver to immunity gaps, multiple other health systems and socio-cultural determinants influence coverage, including a rapid pace of urbanization with concurrent overlapping vulnerabilities and emerging issues related to religious beliefs and vaccine hesitancy.”

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29 At present the definition of the fully immunized child in Indonesia does not include the second dose of MR or the fourth dose of DTP. However, a revised definition which would require the second dose of MR and the fourth dose of DTP has been proposed and is awaiting finalization.

Joint national/international expanded programme on immunization and vaccine preventable disease surveillance review

**Figure 7:** Percentage of Fully Immunized Children in Indonesia by Province, 2016–2018.

![Percentage of Fully Immunized Children in Indonesia by Province, 2016–2018.](image)

Source: MoH, Indonesia

**Figure 8:** Percentage of children aged 12–36 months receiving all basic vaccinations prior to survey by wealth quintile, Indonesia, 2017.

![Percentage of children aged 12–36 months receiving all basic vaccinations prior to survey by wealth quintile, Indonesia, 2017.](image)

Source: National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), and ICF. 2018. Indonesia Demographic and Health Survey 2017. Jakarta, Indonesia: BKKBN, BPS, Kemenkes, and ICF.

Hard-to-reach areas include not only the remote and geographically hard-to-reach but also urban and peri-urban areas with slums, as well as areas with nomadic or seasonally mobile populations who live far from health infrastructure. Indonesia’s geographically difficult to access populations and rapid rate of urbanization each pose unique challenges in terms of reaching high vaccination coverage. To increase access to health services in hard-to-reach areas, a family-based approach and Sustainable Outreach Services strategy has been used targeting specific low coverage districts. With support from UNICEF, the immunization programme is piloting the Reaching Every Community strategy in Daerah Khusus Ibukota Jakarta, and RapidPro (a short-message-service--based reminder for immunization) to reach un-vaccinated children within high-risk communities in urban slum areas. A defaulter tracking
guideline and tools were developed in 2019 and implemented in a number of districts. However, the success of many of these approaches relies upon proper micro planning and mapping of hard-to-reach populations which in turn requires local community involvement.

The Universitas Indonesia in collaboration with the research and training institute John Snow Inc. has developed a strategic action plan to address the challenge of low immunization coverage in urban settings of Indonesia. However, this plan has not yet been implemented.

**Findings**

- **Hours of operation**
  - Most *pukkesmas* and *posyandu* are open weekdays 8:30 a.m.-2:00 p.m., which may require caregivers to take time from work to bring children for vaccination. Some *pukkesmas* in Jawa Barat offer vaccines on Saturdays to cater to working urban population

- **Vaccination and cold chain practices suggestive of lack of health care worker (HCW) in-service training and supervision:**
  - Unsafe injection practices (recapping syringes; inability to administer intradermal injection);
  - Intermittent fridge temperature monitoring;
  - Vaccines stored incorrectly in fridges, at times directly on ice blocks;
  - Vials in stages 3 and 4 vaccine vial monitoring.

- **Systematic defaulter tracking**
  - Systematic defaulter tracking was lacking in many of the districts. However, some districts developed their own pocket reminders to keep track of children and provided certificates to caregivers when the child was fully immunized.
  - At the *posyandu* level, health workers are expected to visit homes of children missing doses. However, rather than carrying out routine follow up visits, these seemed to happen on an annual basis, when funds were available for transport.

- **MOV**

- **As noted under the “policy” section of this report:**
  - According to the national EPI schedule, the BCG vaccine is to be given at one month of age, as opposed to at birth, as recommended by global guidelines.  

  https://www.who.int/immunization/policy/position_papers/bcg/en/
− As noted under the “vaccine procurement” section of this report, review team members noted stock outs of DTP, HPV vaccine, IPV and PCV.

− As noted under the “demand generation” section of this report, vaccine hesitancy related to several different concerns further contributes to missed opportunities for vaccination.

➢ Identifying populations requiring special attention

− *Puskesmas* staff were aware of hard-to-reach populations.

− Coverage monitoring charts were not routinely used to monitor progress in vaccinating the target population.

− Few facilities consistently identified and mapped populations requiring specific attention to reach (e.g., elite groups, urban poor, mobile and migrant populations)

➢ Annual plans and micro planning to reach the hard-to-reach

− *Puskesmas* and DHOs had annual work plans.

− Detailed district level micro plans were not observed in many of the districts; fixed and outreach posts were not routinely mapped to target populations.

− Specific strategies and micro plans were not routinely developed for hard-to-reach populations; the same service strategy appeared to be employed in most *posyandu* regardless of context.

− No systematic monitoring and reporting of the implementation of *posyandu*-level plans was observed.

− Some *puskesmas* and DHOs in urban areas advocated with local governments and coordinated with other key stakeholders to reach unvaccinated children.

➢ Additional resources to reach the hard-to-reach

− Review teams did not see evidence of additional resources or incentives to reach remote and hard-to-reach populations. HCWs did not receive incentives to serve in relevant areas.

**Conclusions**

Reaching the 20% of the Indonesian birth cohort which remains un- and under-vaccinated will require a multi-pronged approach, touching upon most aspects of the EPI and VPDS system. Key components are revision of policies aimed at improving access and reducing MOV, as well as improving local ability to identify unreached populations and develop and implement appropriately tailored micro plans.
**Recommendations** *(Recommendations related to MOV found in other sections are not repeated here)*

**Short-term**
- Document and continue the multiple innovative interventions currently in existence to reach un- and under-vaccinated children.
- Complete as needed the government review of the recently developed strategy to reach the urban poor, and, as appropriate, implement.
- Focusing initially on lowest coverage districts, conduct training on identifying hard-to-reach populations, mapping health posts and outreach sessions to the populations, and developing micro plans which include specific plans to reach these populations.
- Ensure that visits from national level to sub-national levels include supervision of micro planning and implementation of micro plans.
- Implement recommendations from the recent EVMA.

**Medium-term**
- Recognize the additional costs associated with reaching remote populations, and advocate that funds to cover these costs be allocated.
- Revise clinic hours to allow better access by working caregivers.

**Human resources**

**Background**

Human resources (HR) constitute one of the major building blocks for immunization systems and, therefore, countries are expected to invest in HR to ensure that they attain their immunization goals and targets. In Indonesia, evidence abounds that strengthened HR for immunization and other public health programmes is a focus of the government. According to the National Director of Family Health in the MoH, the roles and responsibilities of the Health Human Resources is “To ensure quality human resources, infrastructure, facilities and services that are accessible and affordable to the community people. Especially, health services for pregnant women, children until five years old, ANC and school base immunization program implementation at public and private schools”.

As in most countries, the immunization programme in Indonesia has evolved over the decades from one that provided vaccines against a handful of diseases, requiring minimal HR inputs, to one that currently provides vaccines against many more diseases, some of which are up for global eradication, elimination or accelerated control. Achieving high coverage with this number of vaccines requires intense engagement between in-country and external immunization and broader public health stakeholders at all levels. For immunization programmes to meet the demands placed upon them, EPI staff at national and sub-national levels need to acquire strong management and technical skills in immunization planning, advocacy, implementation, monitoring and evaluation.

There is also a growing realization by countries, including Indonesia, that, despite steady improvement in immunization coverage over the last couple of decades, certain segments of their populations do not have ready access to immunization services because
they are remotely located, marginalized or their communities are underserved. Accessing these segments of the population requires that immunization human resources acquire skills necessary for programming in such contexts.

In most countries, the increasing workload for health workers in the immunization programme is not necessarily matched by an increase in the availability and rational distribution of immunization health workers to adequately address the increasing demand on the program. Increasing population growth in most countries is not matched by increasing economic growth, therefore, it is becoming increasingly difficult for countries to adequately remunerate their health workers to keep them motivated, leading to sub-optimal performance and high attrition rates, especially in health facilities located in remote rural areas.

The HR component of the EPI and VPDS Review in Indonesia seeks to assess the adequacy and competencies of immunization HR to deliver immunization services that are human centred, accessible and affordable to all segments of the populations in an equitable manner.

**Findings**

**Previous reviews**

Desk review of available documents shows that previous assessments over the last couple of years have highlighted progress and gaps with the existing immunization HR. These assessments made recommendations to close identified gaps. For example, the EPI policy review conducted in 2019 indicated that, of the 11 regulations governing the management of the EPI, 3 were on HR. According to this report, the Minister of Health Regulation No. 12 of 2017 is the main national regulation governing all aspects of the immunization programme implementation including, among others, the type of HR for immunization. While this regulation regulates the number of immunization staff/officers per population, it is unclear as to the specific criteria to be an “immunization officer”, as well as the duration of immunization officers’ minimum tenure. According to the EPI officers interviewed in some of the provinces and districts visited, this lack of minimum tenure has resulted in a high turnover of staff. This review also identified a lack of policies on mechanisms for capacity building and curriculum review with regards to both pre-service training and in-service training. The 2018 Health Sector Review recommended meeting human resources for health (HRH) needs by strengthening the regulations for and management of development and empowerment of HRH, developing affirmative policies for HRH particularly for remote or underserved areas, improving the quality of HRH planning, and optimizing the HRH quality to meet competence and excellence standards as well as strengthening the HRH information system.

**2020 EPI and VPDS Review**

The 2020 EPI and VPDS Review found a number of strengths in several aspects of the country’s immunization and VPDS HR, while taking note of some worrisome gaps. Positive aspects of the immunization and VPDS HR identified by the Review include strong national government commitment to ensure high quality HR as one of the health system pillars for providing accessible and affordable health care services to the community, which can be

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32 Sari, JFK. EPI Policy Review. WHO Registration 2019/927959-0
33 Kementrian PPN/Bappenas. The Consolidated Report on Indonesia Health Sector Review 2018
seen in the number of highly qualified EPI and surveillance staff at the national level. There a total of 30 EPI staff, including 5 with medical and public health degrees. The current EPI Manager is in this category. The surveillance unit is equally well staffed with a total of 22 officers, including 5 that have medical degrees as well as Master of Public Health (Table 5).

Table 5: Number and educational levels of EPI and surveillance officers at national level, Indonesia, 2020

<table>
<thead>
<tr>
<th></th>
<th>EPI Unit</th>
<th>Surveillance Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Background Education</td>
<td>Background Education</td>
</tr>
<tr>
<td></td>
<td>Number of staff</td>
<td>Number of staff</td>
</tr>
<tr>
<td>Government Employee</td>
<td>Medical doctor and Master</td>
<td>Medical doctor and Master of Public Health</td>
</tr>
<tr>
<td></td>
<td>of Public Health (5)</td>
<td>(including EPI Manager)</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Bachelor of PH and Master of PH</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Bachelor of Public Health (PH)</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Diploma of Health</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Bachelor of administration</td>
</tr>
<tr>
<td></td>
<td>11 (1 salary by state</td>
<td>Contract employee (Public Health Emergency Operation Center - PHEOC) salary by</td>
</tr>
<tr>
<td></td>
<td>budget, 10 salary by Gavi)</td>
<td>state budget</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

Source: MoH, Indonesia

In the Provincial and District Health Offices visited there were at least one EPI and one surveillance officer in each department, with each officer responsible for managing the programme at the respective administrative level. Responsibilities for these officers included providing supportive supervision to other officers according to the cascade of administrative levels.

At the health facility level, trained nurses and midwives are responsible for planning, implementing and monitoring of EPI and VPDS as part of a broader reproductive, maternal, newborn, child and adolescent health package of health services. These nurses and midwives coordinate immunization and other reproductive, maternal, newborn, child and adolescent health programmes through providing services at fixed points (puskesmas) in their facilities. They are also responsible for coordinating outreach sessions conducted at health posts (posyandu). The outreach sessions are heavily supported by un-remunerated community volunteers (fondly called “kader”) who serve as the link between health facilities and community to ensure people centred service provision. The good and cordial interpersonal relationship between health care providers and kader was obvious during outreach sessions (posyandu) in most of the districts visited.

In spite of indications that the programme at the national level has a substantial number of well qualified staff for the EPI and surveillance units (Table 5) and the availability of EPI and surveillance officers at provincial, district and health facility levels, the Review team
noted a limited number of skilled immunization and VPDS HR, especially at district and health facility levels.

While the Review team observed the existence of technical guides, standard operational procedures (SOPs), policy and strategy documents and other relevant tools, immunization and surveillance staff at the district and health facility levels were observed to have limited skill to adequately, plan, implement and monitor the programme at those levels. Skills to develop micro plans, plan and implement active VPDS, analyze immunization and surveillance data to guide corrective actions, manage vaccines and cold chain and report AEFI (among other skills) were found to be limited, particularly at district and health facility levels. In many of the health facilities visited, surveillance officers were unable to adequately define cases of VPDs or describe the procedure for conducting VPDS. In most cases observed, officers manning districts and health facilities have never been trained for the tasks they have been assigned.

Despite the mention in previous assessments of the gaps in health workers’ programmatically-relevant skills, there was no evidence of plans or programmes at any level to systematically train (including pre-service training) and refresh health workers’ knowledge on existing and emerging programme priorities.

Coupled with the limited number of skilled officers is the excess workload for HCWs in most of the districts and health facilities visited. We did not find evidence that HCWs had been provided the skills to deal with multi-tasking challenge they currently face.

In some of the provinces and districts visited there were reports of high HCW turnover, rotation and prolonged temporary appointment of EPI and surveillance focal persons with no training or orientation for the new staff, leaving gaps in knowledge about immunization and disease surveillance. In most of the districts visited there were also reports of low HCW retention rates in health facilities located in remote areas due to poor incentives and motivation, forcing districts and health facilities (puskesmas) to organize occasional outreach sessions (posyandu) to these areas. Unfortunately, resources are usually limited to ensure the required number of such sessions to meet the needs of these remote communities. Skills to adequately plan, implement and monitor immunization services were not evident.

Supportive supervision, a core component of the programme that allows higher administrative levels to supervise, monitor and provide technical and management support to lower administrative levels in conducting their tasks, was found to be limited in almost all provinces and districts visited. While guides, SOPs and checklists for conducting supportive supervision exist, and, in some of the provinces and districts visited, there are plans for supportive supervision, the number of times supervisory visits were conducted was generally far from adequate.

**Conclusions**

Immunization and VPDS HR is a major focus of attention of the Indonesian government and several regulations have been put in place to address barriers to optimizing HR. While attempts are being made to address gaps identified by several assessments, a number of these gaps still exist, hampering the ability of the government to adequately deliver the affordable and accessible immunization and other health care services it seeks for its citizens. The 2020 EPI and VPDS Review found a number of strengths in several aspects of the immunization and VPDS HR in the country, while taking note of some worrisome gaps.
Recommendations

Short-term

➢ The provincial programme, with the support of the national programme, should improve supportive supervision at district and health facility levels and use the opportunities of supportive supervision visits to conduct cascaded on-the-job training/refresher training for all newly recruited EPI and surveillance focal persons at provincial, district and health facility levels.

➢ Provincial and district teams should develop job aids using relevant pages of the existing EPI and surveillance guides to facilitate the tasks of EPI and surveillance focal persons at provincial, district and health facility levels.

➢ Provincial and district teams should include, in their annual plans, an adequate number of supportive supervision visits, and adequately fund visits from one level to the other, using various supervision options including technologies (phone, video calls, etc.).

➢ Evaluate the impact of recently-conducted immunization trainings on health workers: what information has been retained, and how knowledge and skills taught in the trainings have been disseminated and implemented.

Medium-term

➢ The national programme, with the support of partner agencies, should conduct an assessment to identify the training needs of the various aspects of the programme at each level.

➢ The national programme, with the support of partner agencies, should organize training for EPI and surveillance focal persons at provincial, district and health facility levels using appropriate training modules (MLM/Immunization in Practice).

➢ The national programme should include periodic training needs assessments and periodic refresher training in annual work and long-term strategic plans.

Long-term

➢ Appropriate departments of the MoH should develop (or review existing) and implement HRH policy, to address existing gaps (high-turnovers/attrition, prolonged temporary appointments, non-remunerated working conditions).

➢ MoH should, with the Ministry of Education and relevant departments, review and/or implement training curricula to provide pre-service training for health workers on immunization, disease surveillance, ANC and skilled birth attendance (SBA) during their formal training in health institutions.

Demand promotion and vaccine hesitancy

Background

Issues of vaccine demand are an important area of focus in Indonesia. In 2020, many demand generation activities are planned or are currently in progress across the country. EPI will update the National Immunization Communication Strategy this year; this strategy will outline approaches to demand generation over the next five years. UNICEF will support the Ministry of Health’s EPI in this effort.
In addition, a series of human centred design (HCD) activities are in progress. HCD is an approach to demand generation that focuses on locally developed solutions to respond to issues of vaccine hesitancy and refusal. A workshop took place in December 2019 to introduce HCD to representatives from eight provinces. Participants are now practicing HCD approaches to better understand demand issues in their provinces. A follow up workshop is planned for March 2020. This workshop will begin the process of identifying the most promising innovations for demand generation, gathering lessons learned, and developing best practices in HCD.

Another important initiative has been the increased engagement and involvement of religious leaders in support of immunization. This effort has been carried out in collaboration with the Islamic Countries Group and will involve the formation of Advocacy Forums for Immunization.

Finally, data collection efforts will be implemented in 2020 to better understand demand issues across the country. Activities will be conducted to validate the Behavioural and Social Drivers of Vaccination tool; this tool will help to identify and measure demand to inform programme activities in the coming years.

**Findings**

**Previous reviews**

The Consolidated Report on Indonesia Health Sector Review 2018 noted the importance of increasing community participation to raise immunization coverage.

**2020 EPI and VPDS Review**

Interviews with HCWs and caregivers identified the most commonly reported reasons for vaccine refusals as follows: 1) religious concerns related to *halal/haram*; 2) fear of side-effects; and 3) distrust among some ethnic and elite groups towards government services. In addition, there has been a lack of strategic planning around engagement with men and other household-level decision-makers. This is of greatest concern in areas where women report needing their husband’s permission to take their children for vaccination services. Interviews also underscored the limited time that vaccination services are available, especially for working caregivers who cannot attend during usual workday hours.

Observations of vaccination sessions highlighted gaps in interpersonal communication and counselling skills among HCWs during interactions with caregivers. There was inconsistent counselling on types and benefits of immunization, and on common side-effects following vaccination. In addition, HCWs reported that they were unfamiliar with counselling messages to use in communication with caregivers who hesitated or refused to accept vaccination for children in their care.

At the community level, issues of motivation and inadequate support for community mobilizers and mobilization activities were noted. Immunization services were carried out inconsistently in some locations with *kader* cancelling scheduled sessions without re-scheduling these. It was noted that village funds are not being used to support health activities, contributing to a lack of motivation.

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34 Kementrian PPN/Bappenas. The Consolidated Report on Indonesia Health Sector Review 2018
Conclusions
Demand for immunization is and will continue to be a key area of focus to increase immunization uptake for EPI and other vaccine activities. Findings highlight the need for improved training of health workers in interpersonal communication for immunization, greater support and motivation for community mobilizers and mobilization efforts, the need for increased involvement of religious leaders and household-level decision-makers, and more flexibility of vaccination session hours to increase accessibility of services. Data collection activities that focus on identifying key barriers and deterrents to immunization, and measurement of demand, will help to inform communication and demand generation strategies. Collectively, these efforts — in conjunction with implementation of HCD strategies that are innovative and data-driven — offer significant opportunities to improve stagnant vaccine coverage.

Recommendations
Short-term
➢ Information, education and communication materials need to be updated and efforts made to increase their use, especially at the community level.
➢ HCD and data collection activities should continue as planned as strategies to better understand demand and to develop innovative solutions.
➢ Continue to involve religious leaders and authorities at every level in high priority provinces and districts, including the following priorities:
  – Advocacy forums should be established at each level.
  – Efforts should be implemented to build the capacity of religious leaders to tackle halal/haram issues in an organized way.
  – Existing fatwa should be disseminated to local religious leaders.
  – Maintain good relationship and communication with religious leaders through quarterly scheduled meetings and regular involvement in immunization reviews, especially to highlight risk of VPD outbreaks.
➢ Conduct training of vaccinators in interpersonal communication for immunization. This training could be implemented using a training of trainer’s approach that develops provincial and district-level experts in in interpersonal communication for immunization to improve overall sustainability:
  – Level 1 training: Two representatives from each province (Master Trainers) will be trained by country partners, with support from international partners, as needed.
  – Level 2 training: Two representatives from each district (District Champions) will be trained by Master Trainers, with support by Country Partners, as needed.
  – Level 3 training: Vaccinators will be trained by District Champions, with support by province, as needed.
  – District Champions will conduct refresher training and sensitization to new staff and kader, as needed.
Medium-term

➢ Strengthen community mobilization for vaccination sessions through the following efforts:
  - Increase motivation for *kader* through provision of a monthly incentive, but only when vaccination sessions are held.
  - Develop twice-yearly *kader* appreciation events where community members and local/religious leaders are invited, and awards are presented:
    • Certificates of participation
    • *Kader* of the Year award
  - Engage more with *Pemberdayaan Kesejahteraan Keluarga* (PKK – or Family Welfare Movement), religious groups and other community organizations on activities related to social mobilization for vaccination.
  - If staffing permits, offer more flexible opening hours for vaccination services as follows:
    - Offer hours for vaccination sessions on the weekend and/or weekday afternoons/evenings in a way that does not increase overall work hours.
    - Examples include:
      • Shift opening hours from 8:00 a.m. – 12:00 p.m. to 2:00 p.m. – 6:00 p.m. (morning off from work)
      • Shift from Friday 10:00 a.m.-2:00 p.m. to Sunday 10:00 a.m.-2:00 p.m. (Friday off from work, in communication with and as agreed to by the community)
  - Communication strategies should be tailored to include messages for decision-makers including husbands and mothers-in-law, as appropriate to the context.
    - Materials should be in local language and context

Long-term

➢ Conduct regular data collection activities on vaccine demand to monitor trends over time:
  - Social media monitoring before, during, and after campaigns and introduction of new vaccines with development of real-time responses to misinformation.
  - Behavioral and Social Drivers of Vaccination data collection.
  - Community engagement through focused group discussions of caregivers, men and other decision-makers, and in-depth interviews with religious and other local leaders.

Immunization data and VPDS (including laboratory support)

**Background**

**General**

The accuracy and use of immunization and VPDS data are critical to the optimal functioning of an immunization programme. Correct information on immunization target populations is needed for accurate vaccine forecasting; under estimates of
target populations can lead to stock outs of vaccines and logistics, while over estimates can lead to unnecessary purchase of costly vaccines. Analysis of accurate vaccine coverage data can help to identify and target missed populations. Highly sensitive, timely and functional VPDS systems (including timely testing of specimens and feedback of laboratory results) are essential for the immediate detection of VPD outbreaks and can guide the NIP by indicating the location of un-immunized or under-immunized individuals; this information can be used to improve coverage of immunization services. Proof that such surveillance exists is routinely requested by bodies such as the Regional Certification Commission for Polio Eradication and the Regional Verification Commission (for measles, rubella and CRS) in annual reviews of the country’s polio eradication, measles, rubella and CRS elimination status.

Having local immunization programmes analyze and use their own coverage and surveillance data to monitor and inform their programme can not only allow a tailored response to the local context but also play an important role in promoting local ownership — paramount in Indonesia’s decentralized public health structure. The draft cMYP (2020–2024) includes activities to improve the quality and use of coverage and VPDS data.

Information flow, VPDS structure, laboratory support

Immunization data

Immunization data are reported monthly, with reports from the health facilities to the districts due on the 5th of every month, from district to province on the 10th of every month, and from province to central level on the 15th of the month (Figure 9).

Figure 9. Coverage information sources and flow, Indonesia, 2019

![Figure 9. Coverage information sources and flow, Indonesia, 2019](image)

Source: WHO Country Office for Indonesia

At present, there are no standardized procedures for data recording at the sub-district level and below. While, at puskesmas level, a cohort register is maintained to record maternal child health interventions, including immunization, data recording at the actual service point varies and it is not always easy to identify the number of doses of a specific vaccine given or missed doses. Data from these service points are entered into the
puskesmas cohort register, and then aggregated on an Excel spreadsheet and sent by email to the District Health Office (DHO). At district level this information is further aggregated in an Excel spreadsheet and forwarded by e-mail to the PHO and, following further aggregation, to central level. The EPI has been developing a web-based reporting system tailored to immunization needs, including individual vaccine records, stock management data and AEFI information. Transitioning from the use of Excel spreadsheets to the electronic data base is currently being piloted in one district in each of two provinces.

Denominators to calculate coverage are supplied by central level and based upon projections from the national census, with the last census conducted in 2010 and the next due to be conducted in 2020. Provinces and districts have independent population estimates which may vary from the census projections, but the use of these estimates to calculate coverage must be justified to central level. Data Quality Self Assessments are conducted on a rolling basis.

Several surveys are conducted regularly in Indonesia. The Riset Kesehatan Dasar (RISKESDAS), a household survey, is conducted by the National Institute of Health Research and Development every three years; this covers immunization and a number of other topics. The statistics bureau also conducts socioeconomic surveys and collects some immunization-related data. However, close consultation with the NIP does not seem to be integral to these survey activities.

VPDS

Indonesia’s VPDS has two major components: the VPDs routine reporting system and EWARS. The routine system conducts surveillance for 29 communicable diseases, including pertussis, diphtheria, tetanus, measles and poliomyelitis. Most cases are reported in aggregate, but case-based reporting exists for acute flaccid paralysis (AFP) cases, measles, CRS, diphtheria and NT. Reporting is weekly with monthly recapitulation. Reports are sent electronically using disease-specific reporting forms. In principle, both public and private health care facilities are integrated into the VPDS. EWARS reports on diseases of outbreak potential; limited variables are reported within 24 hours and in aggregate by SMS to a central server on a weekly basis. The routine reporting system requires laboratory testing to confirm or discard suspected cases of disease. A suspected cases of disease reported through EWARS requires verification as a suspected VPD case; once verified, the case is reported through the routine reporting system and laboratory tested. (Figure 10)

Syndromic surveillance for acute encephalitis syndrome (AES) exists in all districts, while approximately 85% of districts were reported to have surveillance for pneumonia and meningitis, and laboratory support for JE surveillance at selected sites (see sections on laboratory support and JE below). However, at present there is no ongoing sentinel site surveillance for invasive bacterial diseases (IBDs) or rotavirus, although previously sentinel site surveillance existed for these through Gadjah Mada University with support from WHO. Surveillance for specific diseases may fall under the jurisdiction of different disease-specific groups within the MoH, e.g., JE surveillance falls under the MoH’s Arbovirus Disease Unit while rotavirus surveillance would fall under the Diarrheal Diseases Unit.

Laboratory support

Laboratory support is provided by seven regional reference laboratories. Test results are sent electronically to the national surveillance programme, and then electronically redistributed to the PHO, cascading downward through administrative levels until tests reach the facility of origination.

Three laboratories (Biofarm Bandung, National Institute of Health Research and Development (NIHRD)-Jakarta and Public Health Laboratory-Surabaya) provide support for poliovirus detection from stool samples of AFP cases. All three perform virus isolation and intratypic differentiation; Biofarm can also perform gene sequencing. All three laboratories are WHO-accredited and accreditation visits to Biofarm and NIHRD have been conducted in 2020.

Five laboratories (Biofarm Bandung, NIHRD-Jakarta, Public Health Laboratory-Surabaya, Provincial Lab-Yogyakarta and Balai Besar Laboratorium Kesehatan-Palembang) support the measles elimination programme through detection of measles IgM. Biofarm and NIHRD also provide gene sequencing. All five laboratories are WHO-accredited for measles testing and conducted proficiency testing in 2018. However, these laboratories have faced stock outs of measles testing reagents as well as challenges with importing quality assurance and quality control samples and have therefore not met two key timeliness indicators:

- IgM detection: result reported within 4 days; and
- Genotype data: nucleotides sequence submission to the global Measles Nucleotide Surveillance and Rubella Nucleotide Surveillance systems within two months.

Source: WHO Country Office for Indonesia
The JE laboratory at NIHRD participates in the JE South-East Asia Regional network. This laboratory passed WHO proficiency testing in 2019.

In 2018, the Regional Immunization Technical Advisory Group recommended that Indonesia "considers facilitating fast-track customs clearance for proficiency-test sample transport, shipment related to quality assurance (QA) samples, test kits and laboratory supplies related to VPDS."

**Findings**

**Previous reviews**

Indonesia’s immunization coverage data and/or VPDS have been alluded to in or the focus of several reviews in recent years: the 2018 Consolidated Report on Indonesia Health Sector Review, the 2018 Gavi Joint Appraisal report (JA), the 2019 Post Introduction Evaluation (PIE), and the 2019 Data Quality Review of Immunization Monitoring and Vaccine Preventable Disease Surveillance System (DQR).36,37,38,39

The Health Sector Review noted the importance of improving surveillance and monitoring to identify cases, trends and burdens of disease. The 2018 JA noted challenges in VPD case finding and reporting as well as in funding specimen collection and transport, as these costs are borne by districts and private facilities. The JA recommended public health laboratory network expansion, EWARS and VPDS training and accountability frameworks, fast track customs clearance of certain laboratory supplies linked to VPDS, and establishment of IBDs and rotavirus surveillance.

The 2019 PIE noted difficulties with coordination among health facilities, districts that did not report cases, lack of training of new staff, and lack of feedback from higher to lower administrative levels. This report recommended ensuring better feedback, integration of immunization and surveillance data, and the provision of vaccine preventable disease (VPD) risk assessments and mapping, as well as triangulating data to identify areas which would benefit most from supervisory visits, and develop strategies for high-risk areas and populations.

Key findings on immunization coverage data from the 2019 DQR were that:

- Overall, recording and reporting for DHO and above seemed to be working well.
- Issues existed with recording and reporting by puskesmas/posyandu:
  - The reporting system was complicated, and included a system of cross-notification by posyandu and area/village;
  - No standardized tally sheet was available to compile administered vaccine administered doses;
  - Target populations and denominators were primarily based on information distributed by MCH;

36 Kementarian PPN/Bappenas. The Consolidated Report on Indonesia Health Sector Review 2018
39 Ministry of Health of Indonesia, Expanded Programme on Immunization, Data Quality Review of Immunization Monitoring and Vaccine Preventable Diseases Surveillance System, 2019
There was no existing system to verify the information from MCH with local targets and *kader* records.

- Use of data for decision making was the weakest component at all levels. Review meetings took place, but there was no real evidence that data were used for prioritization or finding un-vaccinated children.

Results from the DQR of the VPDS system were that:

- Overall, HR were weak, even though they varied across provinces and levels of surveillance.
- There were different interpretations and versions of and knowledge about the guidelines.
- Big differences in case counts existed between EWARS and VPDS systems.
- Different standards were used in different provinces.
- There was a lack of formal collaboration with hospitals and private clinics/practitioners.
- There was a lack of understanding of the importance of measles reporting; and hesitance to collect samples.

Recommendations from 2019 DQR related to both coverage monitoring and VPDS were to:

- Create a working group to review and improve monitoring tools and processes.
- Conduct a more in-depth surveillance review.
- Implement effective ways to train and build capacity across various levels using combined approaches such as data review meetings, peer learning networks, e-learning, supportive supervision, etc.
- Establish a weekly report tracking system from *puskesmas* to district level, using some of the best practices identified during the DQR, such as the use of a WhatsApp group.
- Enhance the use of existing data for decision making.
- Improve the quality of denominators.
- Explore the ongoing District Health Information System-*240* implementation as an opportunity to support vaccination and/or VPD reporting with an online platform.
- Continue and optimize data quality self-assessment practices

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40 This refers to the recapitulation of health data from *puskesmas* to district, district to province, and province to national level.
2020 EPI and VPDS Review

Coverage data

Desk review of available data by the EPI and VPDS Review team showed substantial discrepancies between administrative, survey, official and WUENIC vaccination coverage estimates (Figure 11).

Figure 11: Comparison of MCV1 coverage estimates from different sources. Indonesia, 2018.

Key findings from the EPI and VPDS review team were that:

- **Posyandu** had a register of children for vaccination. However, children who drop out are not uniformly tracked and followed up on.

- Staff from posyandu transmitted hard copy information on vaccines administered to puskesmas. However, at the posyandu, immunization registers were not completed in a consistent fashion and did not clearly indicate the antigens administered. Posyandu did not vaccinate children through BIAS.

- Forms compiling data for submission from posyandu to puskesmas lacked adequate detail (e.g., there were no fields for gender, no date of submission, antigens administered were grouped)

- At the puskesmas, the midwife compiled data from posyandu for electronic transmission via Excel spreadsheet to the next administrative level. However, she did not always have information from all posyandu/villages, and was therefore not always able to identify areas with poor coverage.

- Although review meetings were held, they were not structured in such a way to allow identification of coverage gaps and planning to address these gaps.

**MCV1**: First dose of measles-containing vaccine

Source: Ministry of Health, Indonesia, Expanded Programme on Immunization, Data Quality Review of Immunization Monitoring and Vaccine Preventable Diseases Surveillance System, 2019
➢ There was little evidence of coverage data being routinely monitored or used; in one instance a number of charts showing coverage data were displayed, but the data were from several years ago.

➢ Private providers did not routinely report doses of vaccines administered, whether these were publicly-funded EPI vaccines or privately-purchased vaccines.

**VPDS**

Disease-specific surveillance findings are found in disease-specific sections of this report. Overall, the Review team largely corroborated the findings of the 2019 DQR with respect to VPDS, with the following findings highlighted:

- EWARS was considered functional. Private health facilities were noted to also report in EWARS, but timeliness and completeness of data from private facilities was not as high as from public facilities.
- Active surveillance for AFP, measles, rubella and NT was limited.
- Awareness of reporting and response protocols (including case definitions) was sub-optimal and variable among staff at both private and public facilities; no regular training on uniform, updated guidelines was reported.
- Dissemination and display of SOPs and information, education and communication materials were limited.
- Few examples of community outbreak investigations (e.g., line lists, spot maps) were found.
- Vaccination status was often missing from existing case investigation reports.
- Facilities reported extremely long wait times (six months and more) to receive laboratory test results on samples that had been submitted.

**Laboratory**

- Reportedly, certain carriers have experience in rapidly clearing Indonesia customs; laboratory staff suggested attempting to use these carriers when importing laboratory reagents or quality assurance and quality control samples.
- Laboratory staff also noted that, according to Indonesian law, any reagents available must be purchased in Indonesia and would be purchased through the electronic catalogue in the MoH.

**Conclusions**

Reliable, accurate and timely coverage and VPDS data are critical to improving immunization programme performance. The local use of data can also contribute to local programme ownership. The EPI and VPDS Review team corroborated findings from previous reviews indicating that data quality and use remain areas of programmatic weakness. These are important areas of focus in order to support sustainable programme improvement.
Recommendations

To supplement the 2019 DOR recommendations, the EPI and VPDS Review team made the following recommendations

Short-term

➢ Forms and formats related to EPI data collection at the grass root level should be made uniform across the country and each antigen should have a separate column.

➢ A one pager guideline should be issued to puskesmas on how to compile the coverage data from each of the posyandu on daily basis.

➢ Puskesmas should have village-specific as well as posyandu-specific coverage data to allow puskesmas staff to target low-coverage populations as necessary.

➢ Immunization coverage data should be triangulated with the VPDS data.

➢ Monthly or bi-monthly review and data sharing meetings (combining coverage and surveillance data) at all levels (province, district and puskesmas) should be initiated to facilitate coordination and initiate corrective actions.

➢ Medical officers at puskesmas and district hospital should be consulted by EWARS staff before sharing the EWARS data from puskesmas to DHO in order to ensure that the medical officers are up to date and to allow consolidation of additional data.

➢ Epidemiological data analysis for AFP, measles and rubella, diphtheria and other VPD cases should be done and shared across the health facilities and partners.

➢ Track selected laboratory reports from laboratory to facility of origin to determine and address bottlenecks in feedback of results. To the extent that internet access permits, consider electronic parallel feedback from central level to all relevant administrative levels and facility of origin.

➢ The provincial and district Surveillance Units, with the support of relevant stakeholders, should map surveillance sites in the districts for active search, investigation and reporting of relevant vaccine-preventable diseases, including NT.

Medium-term

➢ Establish an online nationwide data collection system for immunization and surveillance.

➢ Ensure surveillance feedback from national level through a real-time actionable dashboard.

➢ Incorporate VPDS information into all training of trainers, refresher, pre-service and in-service trainings (including training on an accountability framework).

➢ Consider using Field Epidemiology Training Programme interns for outbreak investigations.
➢ Fast-track the Special Access Scheme released by the Pharmaceutical department and customs clearance for proficiency test sample transport, shipment related to quality assurance samples, test kits and laboratory supplies.

➢ Establish sentinel site surveillance for IBDs, rotavirus and typhoid.

**Long-term**

➢ Pilot and institutionalize point of care tests to enhance timeliness of surveillance.

➢ Integrate surveillance for diseases that currently fall under different groups within the MoH into a single VPDS platform.

### AEFI surveillance and response

**Background**

An AEFI is any untoward medical occurrence which follows immunization. An AEFI does not necessarily have a causal relationship with the usage of the vaccine. If not rapidly and effectively dealt with, AEFI can undermine confidence in a vaccine and ultimately have dramatic consequences for immunization coverage and disease incidence. AEFI surveillance is an important component of pharmacovigilance and is relevant to both the EPI and the NRA.

Indonesia has a long history of AEFI surveillance and management. The NC-AEFI was established in 1997 and its membership is renewed every four years through a MoH decree. This committee is responsible for AEFI surveillance, conducting causality analysis, communicating with relevant expert groups, coordinating with provincial AEFI committees (PCs-AEFI) and AEFI working groups at district level about cases reported and developing an annual report of AEFI cases. There is a clear structure of AEFI reporting for both serious and non-serious cases with linkages to NRA pharmacovigilance. Any serious AEFI cases should be investigated within 24 hours and the investigation reviewed by provincial and national committees. Responsibility for AEFI surveillance rests with the Directorate General Disease Prevention and Control, Sub directorate of Immunization at MOH, while reports on pharmacovigilance are under the responsibility of the National Agency of Drug and Food Control.

Cascade AEFI training has been conducted to strengthen capacity at all levels, i.e., the NC-AEFI, PCs-AEFI and AEFI working groups. The most recent trainings were held in 2015–2016 and focused on new causality assessment and mid-level management for PHO managers, while, in the during 2017–2019 capacity building was undertaken using the WHO module “E-Learning On Vaccine Safety Basics Course” and a workshop “Reporting AEFI with Vaccine Safety Website” held. The national AEFI guidelines are regularly updated with the latest version from 2017.

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[41](https://www.who.int/vaccine_safety/initiative/tech_support/ebasic/en/)

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Findings

Recent Reviews

The 2019 PIE found that AEFI guidelines and reporting forms were available in all PHOs and DHOs visited, but only in 73% of health facilities. No increase of AEFI reports related to PCV and IPV immunization after vaccine introduction was noted. The PIE review found that, if there were AEFI, the health facility that had administered the immunization or the local health office would receive the report and conduct an investigation if necessary. The investigation results would be reported in ascending fashion to the head of the DHO, the head of the PHO, and then to the NC-AEFI, the provincial committee for AEFI, and the working group for assessment and management of AEFI so that field etiology assessment and causality assessment could be conducted. The assessment results would be reported to the Minister of Health through the Director General and feedback sent to the PHO.

2020 EPI and VPDS Review

Through the recent MR campaign, MoH, in collaboration with the NC-AEFI committee, conducted AEFI training for all 28 provinces and all serious AEFI cases were thought to have been reported, immediately investigated and causality assessments completed. A total of 1400 pediatricians/clinicians were trained prior to the campaign.

In the last 15 years a shift has been observed in the causality of the majority of serious AEFI reported, from programmatic error to coincidental causation.

In the provinces and districts visited during the Review, the team noted that, in most cases, only serious AEFI were reported while staff understanding of and capacity to manage AEFI varied. Furthermore, the availability of AEFI kits, SOPs, and reporting forms was also not uniform, although reportedly these forms can be downloaded and this information has been widely shared. Not all provinces had PCs-AEFI in place. Even where knowledge of HCWs about AEFI management and reporting was good, generally only serious AEFI were notified and zero reporting was largely absent. Many interviewees explained, however, that mild AEFI were supposed to be reported once a month using the AEFI form, whereas serious AEFI would be reported 1 to 2 times in a 24-hour period by immunization officers to the DHO or PHO by phone, WhatsApp or hard copy.

In addition to lack of knowledge about AEFI per se, some staff interviewed also lacked knowledge regarding risk communication, and how best to communicate both the benefits of vaccines and reactions that might be expected following immunization.

A final important area linked to AEFI is the need to to better understand the effect of AEFI on vaccine hesitancy in general.

Conclusions

Indonesia has a longstanding history of AEFI surveillance and has an established structure for AEFI surveillance at central level and in many, (although perhaps not all) sub-national levels. Nonetheless, Review team findings indicate that some health staff still require additional training. The contribution of AEFI to vaccine hesitancy in Indonesia should be further investigated.
**Recommendations**

- Ensure that AEFI guidelines and reporting forms are available in all health centres and during immunization sessions.

- Ensure that AEFI risk communication plans are in place at all levels and adapted to the local context. Parents and communities should be given education and information on AEFI prevention, detection and treatment.

- Health workers and immunization officers should be encouraged to report both mild and serious AEFI regularly using standard AEFI forms from the guidelines. This should include zero reporting when there are no AEFIs. Communities should also be encouraged to report to immunization officers or health centers about AEFI cases.

- Ensure that AEFI kits are available with SOPs for management of AEFI in every immunization session. Kits should be kept in appropriate containers.

- Continue training on technical issues and communication skills for HCWs regarding AEFI and conduct post-training evaluations for provinces.

- Develop mechanisms to monitor implementation of AEFI counselling skills in immunization clinics and at community visits.

**Diphtheria**

**Background**

Indonesia introduced the EPI in 1977; diphtheria was one of the original six antigens introduced as part of the programme. To prevent diphtheria infection, Indonesian children are currently recommended to receive 7 doses of diphtheria-containing vaccine, including 3 doses of diphtheria-containing pentavalent vaccine as part of the primary series at 2, 3, and 4 months of age and 4 booster doses: a 4th dose of pentavalent vaccine at 18 months of age, a diphtheria tetanus vaccine (DT) dose at school grade 1, a Td dose at school grade 2, and a Td dose at school grade 5. National administrative coverage in 2018 for the 3 dose primary series of pentavalent vaccine was 93%, 64% (2017 – not reported for 2018) for the 4th pentavalent dose, and around 65% for each of the school booster doses. In contrast, WUENIC DTP3 coverage for 2018 was lower at 79%, the 2017 Demographic and Health Survey reported DTP3 coverage among 12–23 month olds at 77%, and the national coverage estimate for DTP3 from the RISKESDAS 2018 survey was 61%, ranging from 22% in Aceh to 91% in DI Yogyakarta among 12–23 month olds. These community survey estimates highlight the potential for extensive immunity gaps at the provincial level. Most infants (94%-100%) develop protective levels of antibody after completion of the full 3-dose primary series and herd immunity at the population level is believed to be achieved at

42 World Health Organization Regional Office for South-East Asia. Factsheet Indonesia Expanded Programme on Immunization, 2019. New Delhi, India
45 National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), and ICF. 2018. Indonesia Demographic and Health Survey 2017. Jakarta, Indonesia: BKKBN, BPS, Kemenkes, and ICF
around 80%-85% coverage. In the absence of natural boosting, data indicate that immunity following a 3-dose primary vaccination schedule wanes over time, requiring the administration of diphtheria booster doses to ensure long-term protection, as are provided by the Indonesian routine immunization programme.

Figure 12: Number of administered DTP3 doses, and DTP3 administrative and WUENIC coverage by year, Indonesia, 2000–2018.

Source: WHO/IVB database, data reported to WHO by Member States as of 1 July 2019. WUENIC as of 1 July 2019.

Diphtheria cases are reported through multiple surveillance pathways, including event-based surveillance, weekly EWARS, and monthly aggregate case numbers. All suspected cases should be investigated with a naso-pharyngeal specimen collected for laboratory confirmation. In 2012, Indonesia had an outbreak of diphtheria, reporting 1192 cases, and has since experienced high numbers of suspected diphtheria cases annually. In 2017, 170 districts/cities in 30 provinces reported diphtheria outbreaks, totalling 954 diphtheria cases with 44 deaths. Almost half of the cases were among children aged 5 — 14 years and the most affected provinces were East Java, West Java, Banten, Aceh, and West Sumatera. In response, MoH conducted Outbreak Response Immunization (ORI) campaigns with 3 doses of diphtheria-containing vaccine for persons aged <19 years in 80 districts. Overall coverage attained by the outbreak response immunization campaigns was approximately 70%.

As part of the 2020 EPI and VPDS Review, the evaluation team was asked to review the diphtheria situation to provide recommendations to inform the ongoing response to the high number of reported diphtheria cases.

**Findings**

Despite the high reported 3-dose primary series coverage and the moderate booster doses coverage, Indonesia reported 578 suspected diphtheria cases during 2019, with a case fatality proportion of 3.1% (n=18/578). Most suspected cases were reported from Aceh, Banten, East Java, and West Java (Figure 14).

**Figure 13: Number of diphtheria cases reported by Indonesia, 1980–2018.**

Source: WHO/IVB database, data reported to WHO by Member States (http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tsincidencediphtheria.html) as of 10 December 2019.

Of the reported suspected cases, 410 (71%) had throat specimens that were tested, resulting in 50 laboratory confirmed positive cases. Final case classification of all suspected cases is shown in Table 1. The low proportion of laboratory confirmed positives highlights...
ongoing challenges with specimen collection. During 2017 it was noticed that, for many cases, specimens were not being collected until after antibiotics had been administered, reducing the likelihood of the laboratory to be able to culture the specimen.

Table 6: Final surveillance classification of reported suspected diphtheria cases, Indonesia, 2019

<table>
<thead>
<tr>
<th>Case classification</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory confirmed positive</td>
<td>50</td>
<td>9</td>
</tr>
<tr>
<td>Clinically compatible</td>
<td>470</td>
<td>81</td>
</tr>
<tr>
<td>Discarded</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Epidemiologically-linked</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Pending</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Missing</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>578</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: MoH, Indonesia as of 16 June 2020

Excluding the 10 discarded cases, 52% of cases were aged <10 years old and 50% were either un-vaccinated or partially vaccinated (Table 7). Among cases with reported vaccination status, 71% (n=286/403) were either un-vaccinated or partially vaccinated, highlighting gaps in the routine immunization programme. In fact, index cases were mainly reported from areas with low routine immunization coverage. Concerningly, among 1 — 4 and 5 — 9 year olds with reported vaccination history, 46% (n=36/78) and 44% (n=67/151), respectively, were reported to be fully vaccinated, suggesting potential issues with vaccine potency, assuming the vaccination history information provided was valid. Teams also observed insufficient booster dose coverage (<70%), which would permit opportunities for waning immunity and thus increased susceptibility to diphtheria infection.

Table 7: Age distribution and vaccination history of reported suspected diphtheria cases, Indonesia, 2019*

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Un-vaccinated</th>
<th>Partially vaccinated</th>
<th>Fully vaccinated</th>
<th>Unknown vaccination status</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1</td>
<td>1 (13%)</td>
<td>2 (25%)</td>
<td>3 (38%)</td>
<td>2 (25%)</td>
<td>8 (1%)</td>
</tr>
<tr>
<td>1–4</td>
<td>13 (7%)</td>
<td>43 (24%)</td>
<td>63 (36%)</td>
<td>58 (33%)</td>
<td>177 (19%)</td>
</tr>
<tr>
<td>5–9</td>
<td>26 (8%)</td>
<td>92 (29%)</td>
<td>91 (29%)</td>
<td>107 (34%)</td>
<td>316 (34%)</td>
</tr>
<tr>
<td>10–14</td>
<td>3 (3%)</td>
<td>48 (48%)</td>
<td>13 (13%)</td>
<td>37 (37%)</td>
<td>101 (11%)</td>
</tr>
<tr>
<td>15+</td>
<td>29 (9%)</td>
<td>79 (24%)</td>
<td>6 (2%)</td>
<td>209 (65%)</td>
<td>323 (35%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>2 (100%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>2 (0%)</td>
</tr>
<tr>
<td>Total</td>
<td>74 (8%)</td>
<td>264 (28%)</td>
<td>176 (19%)</td>
<td>413 (45%)</td>
<td>927 (100%)</td>
</tr>
</tbody>
</table>

*Excludes 17 discarded cases (see Table 6)
Source: MoH, Indonesia as of 16 June 2020
Evaluation teams found that, among surveillance officers, general knowledge of diphtheria case definitions had improved from previous years – a consequence of the awareness campaigns and training conducted by the MoH in the last few years. However, contact tracing and post-exposure prophylaxis were not widely implemented and the coverage of the ORI varied by area – East Java achieved ORI coverage of 95%-98% but in Sukabumi ORI coverage was insufficient. On the clinical management side, teams found that there was limited availability of diphtheria anti-toxin (DAT)/anti-diphtheria serum (ADS) and that DAT was only provided to severe cases. In fact, the Review team later heard that DAT/ADS is currently not available in Indonesia. Teams also reported that antibiotics (azithromycin and erythromycin) were not available at the district level, that there was a lack of doctors with expertise to treat paediatric diphtheria patients, and that, in general, public hospitals have limited isolation facilities in which to treat diphtheria patients.

Conclusions

Indonesia continues to see circulation of diphtheria, with index cases in 2019 primarily reported from areas with low routine immunization coverage. Although the majority of reported cases in that year had specimens taken for laboratory testing, the low number of positive laboratory tests raises concerns about ongoing challenges with sample collection. Analysis of vaccine histories from cases indicates that lack of vaccination or incomplete vaccination plays an important role in disease transmission; data also indicate that, in those aged 1 – 9 years, decreased vaccine potency may also be a contributor. Treatment options for cases are limited by lack of availability of DAT, ADS, appropriate antibiotics, disease-specific clinical expertise and isolation facilities.

Recommendations

Short-term

- **Identify and procure DAT/ADS for use in country.** As there is a current shortage of DAT/ADS stock in Indonesia, addressing this as soon as possible will be imperative.

- **Assess and address reason for high rates of suspected cases versus laboratory confirmed cases.** Despite a large proportion of suspected cases having specimens available for testing, very few can be laboratory confirmed as diphtheria. This could result from doctors or public health officials collecting the sample after antibiotics have been administered. If this is found to be the reason, it will be important to inform public health staff that the naso-pharyngeal specimens should be collected prior to antibiotic administration.

- **Build data analysis and interpretation capacity among DHO staff to enable and improve the use of surveillance data to inform public health response activities.** We recommend that DHO staff be trained and supported to use their surveillance data to inform their response activities. Information which should be collected on all cases includes: age, location of residence, school, and detailed vaccination history (specifically, which doses have been received). This information could help DHO staff better understand where the immunity gaps are in their communities and enable them to design strategic catch up immunization clinics in selected puskesmas/schools/neighbourhoods.
Ensure all Provincial and District Health Offices conduct thorough contact tracing and prophylaxis treatment of contacts. Evaluation teams observed that, in some areas, insufficient contact tracing and testing and prophylaxis of contacts are being conducted. Contact tracing strategies should be reviewed with Provincial and District Health Offices to ensure that national guidelines and standards are being implemented, especially in areas that are reporting high numbers of diphtheria cases.

**Medium-term**

- Work with Provincial and District Health Offices, particularly in areas reporting high numbers of diphtheria cases, to close immunity gaps in infants and children.
  - Evaluation teams did not observe micro plans or evidence of micro planning at the puskesmas or posyandu level. We recommend that the national and provincial teams work with the DHO staff to support puskesmas and posyandu HCWs to map out the communities in their catchment areas. These activities would help the HCWs identify potentially missed infants.
  - Routine immunization screening and sweeping activities, including doses provided during the second year of life, that is to say the fourth dose of DTP (DTP4) and second dose of MR (MR2), would help identify defaulters and provide catch up vaccination opportunities. Furthermore, including these doses in the definition of the completely immunized child would help to ensure better coverage is attained with these doses.
  - We recommend that Provincial and District Health Offices review the possibility of ‘missed opportunities’ such as lack of vaccination due to healthcare worker concern about providing multiple doses at once, if a child comes for vaccination a few days before the specified age eligibility, or vaccine stock outs at the puskesmas, and work with healthcare providers to address any of these concerns or logistical challenges. and implement corrections if any are found. Missed opportunities could include lack of vaccination due to HCW concern about providing multiple doses at once, because a child has come for vaccination a few days before the specified age eligibility, or due to vaccine stock outs at the puskesmas.

- Increase laboratory diagnosis of cases by building capacity of HCWs to collect specimens and of provincial laboratories to do confirmatory testing. To strengthen the surveillance data, we recommend additional activities to improve the quality of naso-pharyngeal specimen collection and to expand the number of provincial laboratories that can conduct confirmatory testing to improve result feedback timeliness.

**Progress in meeting global and regional goals**

**Maintaining polio-free status**

**Background**

In 2018 — 19, Indonesia experienced an outbreak of circulating vaccine derived poliovirus type 1 (cVDPV1) detected in one district in the highlands of the province of Papua. Although only one AFP case was found, positive stool specimens in two healthy children who were
surveyed indicated that the virus was circulating. The virus diverged from Sabin type 1 virus by 61 nucleotides, indicating five years of circulation without detection. The outbreak confirmed that Indonesia was at high-risk of vaccine derived poliovirus emergence and circulation, which is associated with areas of poor immunization coverage.

The WHO Regional Office for South-East Asia does annual risk assessments of countries in the Region. Many provinces of Indonesia are consistently found to be high-risk in terms of surveillance and population susceptibility. Table 8 indicates that less than half of the 34 Indonesian provinces met the standard indicators for polio surveillance in 2017 and 2018.

Table 8: Polio surveillance indicators, Indonesia, 2017–18

<table>
<thead>
<tr>
<th>Non-polio AFP rate</th>
<th>&lt;1</th>
<th>1 &lt;2</th>
<th>&gt;2</th>
<th>Stool adequacy</th>
<th>&lt;60%</th>
<th>60 &lt;80%</th>
<th>&gt;80%</th>
</tr>
</thead>
<tbody>
<tr>
<td># provinces 2017</td>
<td>3</td>
<td>5</td>
<td>26</td>
<td>8</td>
<td>10</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td># provinces 2018</td>
<td>8</td>
<td>15</td>
<td>11</td>
<td>9</td>
<td>9</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

AFP: acute flaccid paralysis
Source: WHO Regional Office for South-East Asia, unpublished data

Table 9 shows immunization coverage for the first dose of IPV and the third dose of polio vaccine, based on data which is reported annually through the WHO/UNICEF joint reporting process:

Table 9: IPV1 and POL3 coverage, Indonesia, 2016–17.

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPV1</td>
<td>2 %</td>
<td>47 %</td>
<td>66 %</td>
</tr>
<tr>
<td>POL3</td>
<td>80 %</td>
<td>80 %</td>
<td>80 %</td>
</tr>
</tbody>
</table>

IPV1: first dose of inactivated polio vaccine; Pol3: third dose of polio vaccine

Furthermore, several neighbouring countries have recently experienced vaccine derived poliovirus (VDPV) outbreaks:

- Circulating VDPV type 1 (cVDPV1) in Papua New Guinea 2018
- cVDPV1 and circulating VDPV type 2 (cVDPV2), Philippines 2019 / 20
- cVDPV1 and cVDPV2, Malaysia 2019 / 20
- cVDPV1 Myanmar, 2019

Although circulating vaccine derived polioviruses have not frequently spread internationally across borders previously, more recent experience, particularly in Africa and

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48 World Health Organization Regional Office for South-East Asia, internal communication
49 https://www.who.int/immunization/monitoring_surveillance/data/en/
50 http://polioeradication.org/polio-today/polio-now/this-week/circulating-vaccine-derived-poliovirus/
as a regional example, between Malaysia and Philippines, shows that in the current post switch context, importation from outbreaks can now readily occur, especially with cVDPV2.

For the Review, three provinces were visited to assess the risk of polio emergence or importation and further circulation. Those provinces bordered outbreak countries — North Sulawesi which has a sea border with the Philippines, West and North Kalimantan which has a land / river border with Malaysia.

Findings

Awareness of the outbreaks in Malaysia and the Philippines was high, due to an alert promulgated by the Indonesian Director General of Disease Prevention and Control.

As a result of the alert, coordination meetings to share information and discuss actions to be taken had been held. Participants included EPI staff from the PHO, relevant / high-risk DHOs, key health care facilities and Port Health Offices. However, this preparation had not led to specific contingency plans, response plans or table top exercises or simulations.

Port Health Offices had commenced offering IPV to Indonesian citizens travelling to the Philippines for four or more weeks, but the number of people vaccinated was very low, and mostly adults traveling for work or business. This intervention took place during September-December 2019 and ceased with a stock out of IPV. Bivalent OPV (bOPV) was not offered.

Population movements both by boat and by plane are quite low volume. In North Sulawesi, there are three island districts, among which there is considerable intermarriage with Filipino citizens, and sea traffic is mostly in small family sea craft to visit family and friends. Sea nomads were said to be infrequent in this small-scale sea traffic. These outlying Indonesian islands are also monitored by Port Health staff and are well connected to Manado by commercial ferry services. In North Kalimantan, there is a ferry service from the Indonesian district of Nunakan to the large Malaysian town of Tawau. Sebatik Island is divided between the two countries, with many inhabitants having dual citizenship and constantly moving to and fro unrestricted across the international border. While it appears population movement is relatively limited, the risk of Sabin type 2 viruses crossing the border seems high, given the free movement.

Environmental surveillance remains sub-optimal, particularly in North Kalimantan, with low detection rate of non-polio enteroviruses, a standard marker of appropriate site selection and sampling. Together with the sub-standard AFP surveillance, there is a high-risk of missed circulating vaccine derived poliovirus transmission.

Conclusions

The WHO Regional Office for South-East Asia does annual risk assessments of countries in the region. Many provinces of Indonesia are consistently found to be high-risk of vaccine derived poliovirus emergence and transmission in terms of surveillance and population susceptibility. This is of particular concern as several neighbouring countries have recently experienced outbreaks.
Recommendations

Short-term

➢ Procure IPV as soon as possible to meet national demand.
➢ Undertake a more detailed and comprehensive mapping of high-risk cross border movements between Malaysia, Philippines and Indonesia, to better understand the risks, particularly those posed by upcoming monovalent oral polio vaccine type 2 rounds in border districts of Malaysia.
➢ Consider ensuring IPV and bOPV supply for Port Health Offices on borders with Malaysia and Philippines.
   – Although IPV has limited effectiveness in reducing transmission, nevertheless it may reduce risk and will anyhow boost population immunity, noting the poor coverage in general with IPV.
➢ Consider ways to promote information sharing on polio risk management with Malaysia and Philippines, including cross border meetings and teleconferences.
➢ A sustained programme of improving both AFP and environmental surveillance is urgently needed in 2020, as the poor surveillance is a chronic problem.
➢ Prioritize attendance at polio outbreak preparedness and response planning workshop in the South-East Asia Region.
➢ Consider conducting a bOPV National Immunization Day in 2020 as recommended in the Global Polio Eradication Initiative Supplementary Immunization Activity (SIA) calendar to address gaps in population immunity.

Measles, rubella and CRS elimination

Background

Measles, rubella and CRS elimination is a flagship priority programme for the WHO’s South-East Asia Region, reflected as Goal 2 of the Regional VAP. Indonesia has a goal to eliminate measles, rubella and CRS by 2023, aligned with the regional goal. The roadmap to achieve this goal is the draft Measles, Rubella and CRS Elimination, National Strategic Plan for Indonesia 2020–24; however this document has not yet received final approval. Indonesia’s NVC MR has been established and is fully functional. The ITAGI also considers matters related to elimination as part of the EPI and VPDS programme.

Vaccination coverage for measles containing vaccine (MCV) remains below the target of ≥95% (Figure 15). In 2018, the reported administrative coverage for the first dose of MCV (MCV1) was 92%, although MCV1 coverage reported from the 2018 RISKESDAS was lower, at 73.3%, and only 37.4% of 514 districts achieved >95% coverage. Meanwhile,
MCV2, introduced in 2013 and given to children aged 18 – 24 months, only achieved 67.6% overall reported administrative coverage in 2018. Coverage for the MCV dose given to school-aged children (i.e., at 7 years of age) dropped to 64% in 2018 (from 92% in 2016 and 96% in 2017). Potential contributing factors for this drop in coverage could include the MR SIA in 2017 – 18 which included the 7-year old target group and the fact that the age-cohort first receiving MCV at age 18 – 24 months reached school-age in 2018, resulting perhaps in this school-age dose being perceived as "optional".

To increase measles vaccination coverage, a number of activities were undertaken in the last five years. During August-September 2016, the Measles Crash programme was implemented in 183 high-risk districts in 28 provinces in children aged 9–59 months. In 2017 and 2018 a wide age range (9 months – 15 years) SIA was implemented nationally in two phases, as outlined in Table 10. Nationally, 87.8% coverage was achieved with 51% of districts achieving coverage ≥95%. During the second phase of the 2017 – 2018 MR campaign, some religious leaders questioned the permissiveness (halal) of the vaccine, leading to reduction in acceptance of MR among some religious groups and individuals.

Table 10: Outline of measles and rubella campaign phases and coverage achieved, Indonesia, 2017–2018.

<table>
<thead>
<tr>
<th>Year</th>
<th>Provinces targeted (# children targeted)</th>
<th>Coverage – admin</th>
<th>Coverage – survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>2017</td>
<td>6 provinces on Java Island (34,964,384)</td>
<td>100.98%</td>
</tr>
<tr>
<td>Phase 2</td>
<td>2018</td>
<td>28 provinces outside Java island (31,963,154)</td>
<td>73.4%</td>
</tr>
</tbody>
</table>

Figure 15: Reported measles cases and MCV coverage, Indonesia, 1990–2018


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Measles, rubella and CRS are all notifiable diseases in Indonesia. National case-based surveillance for measles commenced in 2008 using the case definition of fever, rash and at least one of the three “C’s” (cough, conjunctivitis, coryza). In 2019, Indonesia began to use the more sensitive case definition of fever and rash in some provinces. However, vaccination status of suspected and confirmed measles cases is not routinely collected, and, where it is, is not validated or used to inform public health action. There are currently five WHO-accredited laboratories for measles and rubella. However, there is a low rate of specimen collection from suspected measles cases, therefore, the non-measles discard rate (1.75 in 2019) is below the national target and genotyping of confirmed cases is not routinely performed. Sentinel CRS surveillance started in 2014 in 12 hospitals, although, in 2018, 2 did not report any cases. By 2019 there were 19 sentinel sites with plans to add 6 additional sites by the end of 2020, one in each province with the highest number of measles and rubella cases and lowest MR coverage. Specimens are tested sequentially, first for measles and then for rubella. The 2018 report of the Regional Verification Committee noted that, in about 40% of cases, discrepancies existed between data at the laboratory and data at the surveillance unit.

Since the 2017–18 MR campaign, there has been a reduction in measles and rubella cases, though the impact of the MR campaign in Java was considerably greater than outside of Java. The age distribution of confirmed measles cases in 2018 is shown in Figure 16.

Figure 16: Age distribution of confirmed measles cases, Indonesia, 2018

In 2019, most rubella cases were seen in school-aged children and adolescents (5–15 years of age). Modelling shows immunity gaps in those aged 16–28 years who have not

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63 World Health Organization, Regional Office for South-East Asia (2018). Third Meeting of the South-East Asia Regional Verification Commission for Measles Elimination and Rubella/Congenital Rubella Syndrome Control. New Delhi: License: CC BY-NC-SA 3.0 IGO.
64 World Health Organization Regional Office for South-East Asia. Factsheet Indonesia Expanded Programme on Immunization, 2019. New Delhi, India.
65 However, not all measles cases had been tested at the time that this rate was calculated.
68 World Health Organization, Regional Office for South-East Asia (2018). Third Meeting of the South-East Asia Regional Verification Commission for Measles Elimination and Rubella/Congenital Rubella Syndrome Control. New Delhi: License: CC BY-NC-SA 3.0 IGO.
been offered rubella-containing vaccine; however this is based upon a number of assumptions regarding the independence of doses between supplementary immunization activities and routine immunization and population immunity prior to the introduction of rubella vaccine. There was an increase in number of rubella positive cases in children aged <1 year from 2017 to 2018. In 2018, of the serum collected from suspected measles cases, more were IgM positive for rubella (25%) than measles (12%).

**Findings**

**Policy and planning**

- Province and district-owned sub-national MR elimination plans and routine immunization micro plans have not yet been developed.
- MR2 (and DTP4) not currently included in the definition of a fully immunized child – although some districts have changed the operational definition which is reported to have led to improved MR2 coverage. The Review team understands that a change in the national definition to include MR2 and DTP4 has been proposed but is awaiting finalization.
- Perception of a restrictive upper age limit (36 months) for primary doses of MR limits the potential to increase population immunity – older children missing doses are referred to a (public or private) pediatrician who decides the catch up vaccination schedule.
- As provinces are at different stages of measles, rubella and CRS elimination, there is a need to tailor surveillance guidelines to cater to the local epidemiology of the disease OR the national surveillance guide will have to accommodate these differences in scenarios.

**Vaccination and demand**

- Written operational guidance for routine immunization in the second year of life was widely available at district and puskesmas.
- MR was available in most provinces, districts, puskesmas and posyandu visited, especially on Java Island. However, coverage for MCV1 and MCV2 remains below the target needed to reach elimination goals (≥95%).
- A variety of missed opportunities for vaccination with MR were observed. There were multiple causes, including:
  - Restricting access to vaccine: not opening a vial for one child, vaccine only being available on certain days of the week, or no catch up of missed MR doses after 36 months of age.
  - False contraindications raised by caregivers and HCWs.

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69 World Health Organization Regional Office for South-East Asia. Factsheet Indonesia Expanded Programme on Immunization, 2019. New Delhi, India.
70 World Health Organization, Regional Office for South-East Asia (2018). Third Meeting of the South-East Asia Regional Verification Commission for Measles Elimination and Rubella/Congenital Rubella Syndrome Control. New Delhi: License: CC BY-NC-SA 3.0 IGO.
Caregivers’ and HCWs’ fear of multiple injections leading to delay of MR administration, especially MR2 (i.e., DTP4 administered and caregiver told to come back next week for MR2).

- Areas with low demand for MR. This is due to a complex array of nuanced issues that include: the belief by some individuals and religious groups that the MR (and vaccination itself) is not halal; fear of common side effects of the vaccine (e.g., swelling, fever) and negative associations with the term “MR”; “campak-rubella” is better accepted.

- Caregivers in some remote locations reported that they were not aware of the need for MR2.

- In many provinces, school-aged children do not receive an individual record of vaccines administered through BIAS, although the school health record book is being used in some provinces with plans for expansion to others.

**Surveillance**

- Written operational guidance for MR surveillance was widely available at district and puskesmas.

- However, limited case-based surveillance of measles and rubella was noted, especially among private providers.

- HCWs had limited knowledge of the fever and rash measles case definition, case finding and use of surveillance data to monitor the surveillance system.

- The vaccination status of suspected and confirmed cases was frequently not recorded or monitored.

- Some CRS sentinel surveillance hospitals did not report cases regularly.

- Private providers, including hospitals, often did not report measles or rubella cases, although interviews and brief reviews of patient records highlighted that these sites treat cases of these diseases.

**Laboratory**

- Less than 90% of suspected measles cases had serum collected for laboratory testing and provincial laboratories did not have sufficient funding to support testing.

- There was a low rate of genotyping of measles isolates at the reference laboratory.

- There was an insufficient supply of reagents and proficiency testing kits and samples for quality assurance due to procurement and customs challenges.

- Laboratory results were sent late or not at all to districts and puskesmas.

**Conclusion**

Indonesia faces serious challenges in terms of vaccine coverage and surveillance to meet the 2023 measles, rubella and CRS elimination goal.
Recommendations

Short-term

➢ Finalize the “Measles, Rubella and CRS Elimination. National Strategic Plan for Indonesia 2020–24”.
➢ Intensify efforts to improve coverage of MCV2, by tailored demand generation and addressing causes of MOV.
➢ Provide clear policy recommendations for missed MR doses in children and clear guidance on MR vaccination in women >15 years of age. Provide operational guidance to support implementation of these recommendations.
➢ Finalize the revised nationally-recommended definition of a fully immunized child, as has been proposed, to include MR2 (and DTP4), and operationalize this definition in all provinces.
➢ Accelerate the use of the revised measles case definition (fever and rash), active case finding and testing of suspected cases.
➢ Develop province- and district-owned and appropriate sub-national plans for MR elimination and surveillance, in line with national road map.
➢ The national level should assess the need to expand the capacity of provincial labs to conduct MR serology and virology to support the elimination goal. Increasing the capacity of provincial labs will also decrease the cost of shipping specimens.

Medium-term

➢ Implement and evaluate efforts to screen vaccination status at early childhood development centres and primary schools in order to vaccinate children who have missed doses of vaccines. Care should be taken that this strategy does not inhibit the right of the child to education, but rather uses existing opportunities (e.g., at enrollment or through BIAS) to check vaccination status and provide opportunities for catch up vaccination.
➢ Coordinate with the pharmaceutical group in the Ministry of Health to purchase additional laboratory reagents and collaboratively plan to secure sufficient annual supply, including buffer stock.
➢ Create the opportunity for younger professionals with relevant expertise, including international experience with VPDs, to join the NVC MR as shadow members. This will help build sustainability and bring the opportunity for new ideas to the group.
Long-term

- Data and surveillance quality and use need to be improved to better identify immunity gaps, focus routine immunization strengthening activities, and demonstrate interruption of measles and rubella virus transmission.
- If concerns exist about the immunity profile of the population, a sero-survey for measles and rubella, using existing samples, could be considered. In this context, it would be important to ensure robust methodology and take into account the feasibility of such a sero-survey.

**MNTE**

Note: An independent and more in-depth report on the MNTE PVA held in Indonesia in February 2020 is available.

**Background**

Tetanus is an acute infectious disease caused by toxigenic strains of the bacterium *Clostridium tetani* which is found in soil and has a high case-fatality rate even where intensive care is available. Many cases are birth-associated and can occur among insufficiently vaccinated mothers and their newborn infants, following unhygienic deliveries and abortions, and poor postnatal hygiene and umbilical cord care practices.

To reduce the public health burden of tetanus, in 1992 the 42nd World Health Assembly called for the elimination of NT in 57 (following their independence, East Timor and South Sudan were later included in this list to make 59) countries. MNTE is defined as less than one NT case per 1000 live births in every district per year, a level at which NT is considered to no longer be a major public health problem. As per WHO recommendations, countries which have been validated for MNTE need to conduct yearly reviews of core and surrogate MNTE indicators to evaluate their elimination status and implement corrective measures in at risk districts.

Good access to clean delivery services, including appropriate umbilical cord care practices together with high coverage with tetanus toxoid containing vaccines (TTCV) among pregnant women and in high-risk areas among all WRA, and strengthened NT surveillance are the primary strategies for achieving and sustaining MNTE. Coverage of TTCV is routinely monitored by the two doses or more of tetanus toxoid (TT2+) or two or more doses of tetanus diphtheria vaccine (Td2+) method whereby the reported number of protective doses of Td (Td2, Td3, Td4 and Td5), given to pregnant women during a calendar year, is divided by the estimated number of live births during that year. Protection at birth (PAB) coverage is the proportion of births in a given year that can be considered as

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72 World Health Organization. Protecting all against tetanus, guide to sustaining maternal and neonatal tetanus elimination and broadening tetanus protection for all populations. https://www.who.int/health-topics/tetanus/#tab=tab_1

73 Tetanus toxoid containing vaccines (TTCV) include: Diphtheria-Tetanus-Pertussis (DTP) (and its other various formulations) administered during infancy and as booster dose to children 12 – 23 months; Diphtheria-Tetanus (DT) (and its various formulations) given as booster to children 4 – 7 years, and Tetanus-Diphtheria (Td) as booster to children and adolescents aged 9 – 15 years.

74 Since 1998 WHO has recommended that all countries replace tetanus toxoid (TT) with the combination tetanus-diphtheria (Td) vaccine, to sustain protection against diphtheria following waning immunity after the primary series.

75 Td2, Td3, Td4 and Td5 represent the number of doses of Td respectively given to pregnant women
having been protected against tetanus as a result of maternal immunization.\textsuperscript{76} Traditionally, PAB has been assessed and recorded at the first vaccination contact for the new-born baby/infant, usually at the visit for the first dose of pentavalent vaccine or DTP1. However, all postnatal care visits (currently recommended at 24 hours, day 3, and between 7 – 14 days and 6 weeks after delivery) present an opportunity to check PAB.\textsuperscript{77} Assessment of protection using the PAB monitoring method helps countries to overcome the underestimation of protection level when the TT2+ (Td2+) method is used. PAB coverage is calculated as follows:

- **Numerator:** Total number of infants who were protected against neonatal tetanus by their mother’s TTCV status
- **Denominator:** Total number of live births\textsuperscript{78}

Effective surveillance is critical for identifying areas or populations at high-risk for MNT and for monitoring the impact of interventions. However, this can be very challenging in remote and hard-to-reach areas with limited health infrastructure and access to health services.

In 2016, Indonesia became the last country in the SEAR to be validated for MNTE through a WHO recommended process\textsuperscript{79,80} that was conducted in phases by grouping the provinces into regions: Region 1 (Java and Bali) and Region 2 (Sumatera) in 2010, in Region 3 (Kalimantan, Sulawesi, East Nusa Tenggara and West Nusa Tenggara) in 2011 and Region 4 (Papua and Maluku) in 2016. Since then, the strategy for maintaining elimination of MNT in Indonesia has mainly focused on administering TTCV to protect all against tetanus along the life-course, from infancy through childhood and the adolescent period to early adulthood (Table 3). In addition, as part of the MNTE immunization strategy, districts identified as high-risk\textsuperscript{81} for NT implement three rounds of Td supplementary immunization activities (SIAs) targeting WRA, which in Indonesia are women aged 15–39 years. The country also launched the Safe Motherhood programme in 1988 and the Making Pregnancy Safer Initiative in 2000, resulting in steady increases in ANC, clean deliveries, and postnatal care. However, according to available information, the coverage of clean delivery and appropriate cord care practices remains low in hard-to-reach communities, especially those that lack trained HCWs.

Trends in DPT3 coverage are displayed in Figure 4, and trends in booster doses of TTCV in Figure 17. In 2007, 2012 and 2013 (the most recent years for which data are available), coverage with 4 or more ANC visits was reported to be 82%, 88% and 84% respectively.\textsuperscript{82} In 2016, 2017 and 2018, the coverage of SBA deliveries was 93%, 93% and 94% respectively.\textsuperscript{83}

\textsuperscript{76} World Health Organization. Protecting all against tetanus, guide to sustaining maternal and neonatal tetanus elimination and broadening tetanus protection for all populations. https://www.who.int/health-topics/tetanus/#tab=tab_1
\textsuperscript{77} World Health Organization. Protecting all against tetanus, guide to sustaining maternal and neonatal tetanus elimination and broadening tetanus protection for all populations. https://www.who.int/health-topics/tetanus/#tab=tab_1
\textsuperscript{78} World Health Organization. Protecting all against tetanus, guide to sustaining maternal and neonatal tetanus elimination and broadening tetanus protection for all populations. https://www.who.int/health-topics/tetanus/#tab=tab_1
\textsuperscript{81} Districts are considered high-risk if they have: reported NT >1/1000 live births; Td2+ <80%; SBA rate <70% during a one-year period
\textsuperscript{82} https://www.who.int/data/maternal-newborn-child-adolescent/indicator-explorer-new/mca/antenatal-care-coverage
Despite the high ANC coverage reported, the percentage of women who received two or more Td doses (Td2+) as reported through the WHO and UNICEF Joint Reporting Form (JRF) shows a declining trend between 2012 and 2018: 70.6% in 2012 to 52.0% in 2018. The same declining trend was reported through the 2017 Demographic and Health Survey (DHS) where, between 2007 and 2017, the percentage of women who received 2 or more Td doses during their last pregnancy declined from 50% to 35%. However, the 2017 DHS shows that the percentage of the most recent live births protected against NT remained steady between 2012 (60%) and 2017 (58%). The low Td2+ coverage figures reported through the JRF could be partly attributed to the sub-optimal computation by health workers during ANC visits of TTCV doses received by pregnant women; these computations might not take into consideration doses received during previous pregnancies, Td SIAs and TTCV booster doses delivered through BIAS. The DHS findings in terms of SBA coverage align with the information reported through the WHO global database.

The simultaneous implementation of the various MNTE strategies in Indonesia over the past decades has resulted in a 99% decline in the number of annually reported NT cases from 1506 in 1981 to only 14 in 2018. However, one needs to take into consideration the general under-reporting of NT cases which may have contributed to the significantly lower...
annually reported NT cases in recent years, particularly after the country was validated for MNTE.

Figure 18: Reported neonatal tetanus cases, Indonesia, 1980–2018

Source: WHO/IVB data base, data reported to WHO by Member States, as of 10 December 2019

Since Indonesia was validated for MNTE, it has not yet conducted the recommended yearly review activity. To review its MNTE status, the NIP, with technical guidance from partners decided to combine a PVA of MNTE with the EPI and VPDS Review planned for February 2020. This would permit an understanding of the extent and nature of links between MNTE related issues and the broader EPI and VPDS systems nationally, as well as reducing the costs associated with an independent PVA.

Methods

The MNTE PVA was conducted primarily through desk review of reports on routine immunization coverage, previous EPI and VPDS Reviews, NT risk analysis, and DHS reports, as well as JRF and WHO/UNICEF Estimates of National Immunization Coverage. These were supplemented by interviews of EPI officers at provincial, district and health facility levels. This information was complemented by data collected in 4 districts determined to be at high-risk for NT (see below) using rapid community convenience surveys in 4 villages in each district targeting those villages that were at least 5–10 km from the health centres and interviewing 10 WRA in randomly selected households; these women had delivered during the two-year period preceding the assessment. For comparison, similar surveys were implemented in three well-performing districts selected for convenience. The underlying assumption was that, if the PVA concluded that MNTE was maintained in the highest-risk districts, it was likely to also be maintained in other districts (with the exclusion of those in Papua province which could not be visited due to security concerns; further explanation regarding these districts is below in footnotes).

All districts in the country were screened to determine those considered to be at highest risk based on the WHO algorithm for NT risk analysis. In summary, if the surveillance

World Health Organization. Protecting all against tetanus, guide to sustaining maternal and neonatal tetanus elimination and broadening tetanus protection for all populations. https://www.who.int/health-topics/tetanus/#tab=tab_1, Annex 11.
system is reliable and the NT rate is <1/1000 live births, NT is considered eliminated in the district; if the surveillance system is not reliable, a district is considered at low-risk if the SBA rate is above 60% or if the 2 or more doses of tetanus toxoid vaccines (Td2+) coverage is >70%. From the NT risk analysis conducted, none of the districts in the country had an NT rate above 1/1000 live births. However, factoring in the district NT surveillance reliability in interpreting the NT rates, we conducted further analysis to determine high-risk districts by using the other core NT indicators (Td2+ and SBA coverage). The MNT “at highest risk” districts of the country were identified based on an average SBA rate of <60% over the last three years (2016, 2017 and 2018). Because Td2+ was generally low in most districts, (most districts had Td2+ coverage <70 %,) the districts with the lowest Td2+ coverage (i.e., <30%\(^67\) were selected among the districts with <60% SBA coverage.\(^68\) Out of this group, districts with DTP3 coverage <60% and with an under-one-year-of-age population of >4000 were selected. A total of 14 districts were in this way identified as being at highest risk for MNT in the country.\(^69\) None of these 14 highest risk districts was among the 30 districts already selected for the EPI and VPDS Review. However, some districts from the list of those initially selected for the EPI and VPDS Review could be exchanged for MNT highest risk districts because these districts were located near the initial EPI and VPDS Review list districts and met the selection criteria for the EPI and VPDS Review list districts. The four districts that were finally selected for the MNTE PVA were Kupang and Manggarai-Barat, both in East Nusa Tenggara, and Humbang Hasundutan and Tapanuli Utara, both in North Sumatera.

The four districts selected on the basis of risk for MNT were assigned to two MNTE specific teams (“PVA Review teams”) that visited two districts each. In addition to completing the standard questionnaires for the EPI and VPDS Review, these teams conducted a more in-depth MNTE PVA by means of rapid community convenience surveys (see above).

Prior to reaching conclusions regarding sustaining MNTE, the PVA Review teams considered data and information collected from all 15 provinces visited during the EPI and VPDS Review to assess the impact of immunization and health systems on MNTE sustainability, and analyzed data for core and surrogate MNTE indicators (NT incidence, TT2+ coverage, SBA deliveries, ANC visits and cord care practices) using data collected through the rapid convenience surveys.

Findings

Desk reviews of MNTE related data indicated that none of the 30 districts visited by Review teams had an NT rate >1/1000 live births. However, this core MNTE indicator finding was considered in the context of NT surveillance found to be largely passive, and which therefore may have been incapable of detecting all NT cases.

Key MNTE-related findings from the seven districts in which rapid community convenience surveys were conducted are summarized in Table 11.

\(^{66}\) District NT surveillance was considered reliable if zero reporting >80%

\(^{67}\) Many districts reported very low Td2+ coverage during 2016 – 2018 with coverage as low as 0%

\(^{68}\) All data for the MNT risk analysis were obtained from the risk analysis spreadsheet shared by the Indonesia NIP

\(^{69}\) While the NT risk analysis indicates that almost all districts in Papua province are at risk based on SBA rate < 60% and TT2+ <70%, these districts except one, have relatively small under-one-year-of-age population size (< 4000) and were therefore, not selected. Due to insecurity in Papua province, the only district with > 4000 under-one-year-of-age population size, which is also NT high-risk was excluded from the list of selected districts for the MNTE PVA.
## Table 11: Findings related to MNTE from rapid convenience surveys, seven districts, Indonesia, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Kupang (n=41)</th>
<th>Manggarai Barat (n=40)</th>
<th>Humbang-hasundutan (n=20)</th>
<th>Tapanuli Utara (n=20)</th>
<th>Siak (n=20)</th>
<th>Dumai (n=20)</th>
<th>Halmahera Tengah (n=10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% TT2+</td>
<td>37%</td>
<td>70%</td>
<td>90%</td>
<td>80%</td>
<td>35%</td>
<td>10%</td>
<td>80%</td>
</tr>
<tr>
<td>% of births delivered in HFs or by SBA</td>
<td>49%</td>
<td>90%</td>
<td>100%</td>
<td>95%</td>
<td>100%</td>
<td>100%</td>
<td>90%</td>
</tr>
<tr>
<td>% of women who put traditional substances on cord*</td>
<td>17%</td>
<td>15%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>% of women attending at least one ANC visit</td>
<td>90%</td>
<td>100%</td>
<td>98%</td>
<td>98%</td>
<td>100%</td>
<td>95%</td>
<td>ND</td>
</tr>
<tr>
<td>% of women attending &gt;4 ANC visits</td>
<td>68%</td>
<td>95%</td>
<td>65%</td>
<td>65%</td>
<td>85%</td>
<td>65%</td>
<td>ND</td>
</tr>
<tr>
<td>% of women neither protected against tetanus by TT nor SBA delivery</td>
<td>10%</td>
<td>3%</td>
<td>0%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>ND</td>
</tr>
</tbody>
</table>

ND: Not determined

*TT2+ includes TT received from BIAS programme/pre-marital (TT Calon Ppengantin or before marriage)/during pregnancy either by history or card. Most of the respondent could not show the proof of receiving TT from BIAS programme.

Interviews of HCWs and review of documents at district and health facility levels indicated that ANC services were widely available; review of health facility registers in the MNTE districts visited showed coverage for the first ANC visit varying between 60%-81%. The rapid convenience survey results with regard to ANC visits were similar to those reported by WHO for 2012 and 2013. However, the rapid surveys and desk reviews found TT2+ and PAB coverage figures among pregnant women to be <80%. The PVA Review team found examples of mis-information or lack of information leading to MOV of pregnant women (e.g., HCWs in one district being mis-informed as to when to vaccinate pregnant women; HCWs in another district unaware of the shift from TT to Td). MOV also resulted from child immunization services not corresponding to ANC sessions, or immunization of pregnant women not being offered at all ANC sites.

National TTCV coverage through BIAS is estimated at >80%, which aligns with the high TTCV coverage reported through the 2017 DHS. In most districts where the EPI and VPDS Review took place, desk review showed that TTCV coverage through BIAS was >80% except for Nagan Raya (DT 61%, MR 64%, and Td 62% in 2019) and Banda Aceh districts (DT 18%, MR 19% and Td 23%), both districts being found in Aceh.

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91 In line with WHO recommendation, Indonesia replaced TT with Td in 2016
92 National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), and ICF. 2018. Indonesia Demographic and Health Survey 2017. Jakarta, Indonesia: BKKBN, BPS, Kemenkes, and ICF.
Findings from the rapid community convenience surveys showed >90% coverage of SBA deliveries among mothers during their last pregnancies except in one district where coverage was only 49%. This reported high coverage of SBA deliveries aligns with WHO and DHS data. Although the rapid convenience surveys in two districts showed that 15% and 17% of mothers respectively reported applying substances to the umbilical cords of their babies, in the remaining districts interviewed mothers reported not applying substances to the umbilical cords of their babies, in line with the WHO guidelines on cord care practices.

The high TTCV booster dose coverage through BIAS observed in most of the districts visited aligns well with similar high coverage reported through the 2017 DHS. However, there is currently no systematic approach to collecting and documenting TTCV doses provided through BIAS, as the existing MCH card does not have a section on school health vaccination. The MoH recently commenced providing health report cards to students, but with only 20% coverage nationally so far. It is important that the planned review of the school health vaccination programme addresses the current gaps in the collection and documentation of TTCV doses administered through the programme.

Trained nurses and midwives were charged with the responsibility for planning, implementing and monitoring MNTE activities, such as NT surveillance, TTCV delivery to pregnant women during ANC visits and outreach sessions in posyandu and mass SIAs targeting WRA in high-risk districts, as well as coordinating the interface between the immunization programme and other maternal, newborn and child health programmes for ANC, clean delivery and appropriate cord care practices. However, PVA Review teams observed during the assessment that immunization and surveillance staff in the districts and health facilities visited had limited skills to adequately plan, implement and monitor the MNTE initiative. Field teams also did not observe routine sharing of data, information or planning activities between MCH and EPI teams.

Existing and readily-available data collection tools had components for monitoring TTCV administered to pregnant women. However, for MNTE related data, HCWs interviewed in most of the health facilities visited were found to lack the skills and knowledge to correctly compute and record in data collection tools the Td doses provided to pregnant women that take into account doses provided during previous pregnancies. TTCV doses provided to WRA during TTCV SIAs were also not taken into account during the computation of TTCV doses for pregnant women.

Visits to provincial and district departments as well as to health centres revealed the existence of social mobilization and communication materials and guidelines, including those for social mobilization and community awareness about the vaccination of pregnant women. Awareness sessions conducted by health promotion officers before outreach sessions were observed to include pregnancy and newborn related information in some of the health posts visited. Nonetheless, the PVA Review teams observed limitations in the ability of the HCWs to provide essential messages on immunization through interpersonal communication to caregivers and WRA.

Conclusions

Based on the findings from desk review and rapid convenience surveys, the PVA team concluded that core and surrogate indicators showed that MNTE was most likely sustained in the four highest-risk districts and, by extension, in all other districts in Indonesia with the exception of the districts in Papua province. Given security and travel logistics constraints, the review teams were unable to visit districts in Papua province\(^\text{94}\).

This conclusion is based on the following findings:

- NT rates are <1/1000 live births in the four MNT high-risk districts (none had reported any NT case in the previous 2–3 years), a finding that is further supported by the low number of NT cases annually reported for Indonesia through the WHO global database. This finding, however, needs to be interpreted in the context of an NT surveillance system that is not as sensitive as it should be, as well as low reporting sensitivity for tetanus cases and uncertainty about the true disease incidence.\(^\text{95}\)

- SBA coverage of >60% in the four highest-risk districts, further supported by the >90% coverage reported for Indonesia through both the WHO global database and the 2017 Indonesia DHS report.

- Despite the low reported Td2+ coverage reported in some of MNTE districts through the rapid convenience surveys, overall, we estimated that at least 70% of the mothers in these 4 districts were protected through TTCV received through infant series and childhood booster doses, as coverage with TTCV administered during the infant series or as booster doses has been high in Indonesia since the late 1990s. Furthermore, 60%-80% of mothers in the 4 highest risk districts had attended at least one ANC session where there was an opportunity to receive a Td booster dose.

- Findings from the 4 high-risk districts showed that application of potentially harmful substances to umbilical cords was quite rare with only a small proportion (15%-17%) of interviewed mothers reporting that they had applied a substance to the umbilical cord of babies delivered during the previous 2 years.

- Indonesia has, over the years, used the life-course approach to deliver TTCV; this approach aims to protect everyone against tetanus.

Recommendations

**Short-term**

- As Indonesia has not developed an MNTE sustainability plan since the country was validated for elimination in 2016, the NIP, in collaboration with the Reproductive, Maternal, Newborn, Child and Adolescent (RMNCAH) programme and with the support of relevant stakeholders should develop, implement and

\(^\text{94}\) Almost all districts in Papua province are at risk based on SBA rate <60% and TT2+ <70%, but due to the relatively small population size of most districts, only one district has more than 4000 under-one-year-of-age population. While this district satisfied the selection criteria for both assessments, it was excluded for security reasons

monitor a plan for sustaining MNTE. The plan should be based on the WHO recently disseminated global guide “Protecting all against tetanus. Guide to sustaining maternal and neonatal tetanus elimination (MNTE) and broadening tetanus protection for all populations”. The plan should also take into consideration key recommendations related to increasing Td coverage from the planned BIAS review. The key aspects of the MNTE sustainability plan should be integrated into the cMYP currently being developed.

➢ Critical findings and recommendations from this MNTE PVA should be incorporated into the 2020–2024 cMYP currently being developed to maintain MNTE during the period covered.

➢ The EPI in Papua province with the support of the national programme should conduct NT risk analysis, desk review of MNTE related documents and field visits to three high-risk districts to assess the MNTE sustainability status in the province, and recommend necessary actions.

➢ District Health Departments, with the support of their provincial counterparts, should take measures to address the current gaps in correctly vaccinating pregnant women during ANC visits and correctly documenting previously administered TTCV doses through:
  - Training health workers to regularly screen pregnant women at ANC visits, to ensure they receive the appropriate Td doses, which takes into consideration doses received during previous pregnancies and through BIAS.
  - Developing and implementing a clear guideline for documenting all Td doses provided during ANC visits, including in the numerator for Td2+ pregnant women who were not vaccinated because their records showed that they had received five doses of TTCV previously.
  - Implementing existing guidelines to ensure all opportunities to vaccinate pregnant women with Td are used, avoiding current MOV, especially in high-risk areas.

➢ The planned BIAS review should identify strategies to improve individual records of TTCV doses provided through the programme. Such strategies could include the revision of the existing MCH book to include a page for capturing, through a life-course vaccination approach, vaccine doses administered through BIAS and to WRA, which can include a card with a record of the individual’s TTCV vaccination history.

➢ The RMNCAH programme, with the support of relevant stakeholders should identify strategies to improve the coverage of clean delivery and appropriate cord care practices that could include:
  - Improving the provision information and awareness to pregnant women during ANC visits, about proper cord care and the risks of applying traditional substances on the umbilical cord
  - In hard-to-reach communities with limited (or lack) health workers, identify innovative strategies that will improve their access to clean delivery and appropriate cord care practices as well as improve community/family knowledge and awareness
Formulate and implement policies that ensure the availability of health workers in hard-to-reach communities.

- The NIP should support the provincial, district and health facility levels to implement the recommendations of the recent DQR report on improving data completeness, availability and quality as they relate to core and surrogate MNT indicators.

- NT surveillance should be fully integrated into active VPDS, including the revision of case investigation forms and protocols. NT surveillance should include community assessment and zero case reporting.

- All reported NT cases should be investigated, and immunization response implemented as per WHO guidelines, especially in areas with generally low coverage.

Medium- to long-term

- The NIP, with support from stakeholders, should review and strengthen the already existing platforms for delivering TTCV along the life-course (infant vaccination, booster doses during the second year of life, booster doses through BIAS, ANC, and periodic intensification of routine immunization).

- As part of efforts to address the current underestimation of Td2+, the NIP should consider introducing the monitoring, during DTP1 visits, of PAB, which should be preceded by training of HCWs on the method for obtaining information from caregivers and monitoring of PAB coverage.

- The NIP should strengthen its collaboration with the RMNCAH and BIAS programmes at all levels, to improve the coverage and quality as well as information sharing related to all MNTE services delivered through platforms under these programmes. Such collaboration could include, among other approaches, quarterly data sharing and review meetings to identify areas of weakness and monitor the implementation of corrective actions.

Hepatitis B control and eventual elimination

Background

Chronic hepatitis B virus (HBV) infection is a major cause of cirrhosis and liver cancer worldwide. Perinatal transmission is the main source of chronic HBV infection in high prevalence settings whereby 90% of children with perinatally acquired infections will remain chronically infected and ultimately develop liver cirrhosis and cancer. Universal infant immunization with three doses of hepatitis B vaccine (HepB), with the first dose provided within 24 hours of birth, is the most cost-effective prevention and control strategy for HBV infection. HepB is heat stable and freeze sensitive. Vaccine stability data show that

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vaccine can be stored at 37°C for 30 days without losing its potency based on multiple studies.101, 102, 103, 104, 105, 106

In May 2016, the World Health Assembly endorsed a global target to achieve a hepatitis B surface antigen (HBsAg) seroprevalence of ≤1% among children less than 5 years of age by 2020, and eliminate viral hepatitis by 2030 as part of the Global Health Sector Strategy for Viral Hepatitis Control.107 In June 2016, the SEAR Immunization Technical Advisory Group recommended the establishment of a target of ≤1% HBsAg seroprevalence among children aged 5 years by the year 2020 and Goal 6 of the SEAR VAP focuses on accelerating hepatitis B control in the region.108, 109 In May 2019, the SEAR established a Regional Expert Panel (REP) on hepatitis B to verify countries for the achievement of the hepatitis B control target. In July 2019, four countries, Bangladesh, Bhutan, Nepal, and Thailand, were verified to have achieved the regional hepatitis B control target.110

Indonesia has a high-intermediate endemicity of chronic HBV infection.111 A nationwide survey conducted in 2013 in 33 provinces reported an overall seroprevalence of HBsAg of 7.1% with no difference in prevalence among age groups (Figure 15). Prevalence in children aged 1–4 years was 4.2%. There are no national estimates on the prevalence of chronic HBV infection and particularly HBeAg (a marker of infectiousness and indicator of risk of mother-to-child transmission) among pregnant women.

HepB was introduced in Indonesia in 1997 and hepatitis B birth dose was scaled up nationally in 2002. The current vaccination schedule is birth dose followed by 4 doses of pentavalent vaccine at the age of 2, 3, 4, and 18 months. Hepatitis B birth dose (HepB-BD) was previously recommended to be given within 7 days of birth. The policy was changed to within 24 hours of birth in 2017, although the vaccine can still be given within 7 days of birth in remote areas. HepB-BD vaccination is included in the essential newborn care package (2015). In 2018, the WUENIC estimate for coverage with HepB-BD was 54% and for the third dose of Hep B (HepB3) was 79%.112 Coverage with the HepB3 has been stagnant since

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103 Hipgrave et al. Immunogenicity of a locally produced hepatitis B vaccine with the birth dose stored outside the cold chain in rural Vietnam. American Journal of Tropical Medicine and Hygiene. 2006; 74 (2) 255-260.
112 World Health Organization. http://apps.who.int/immunization_monitoring/globalsummary/countries/countrycriteria%5Bcountry%5D%5B5D=IDN.
2007 while timely HepB-BD is <60% (Figures 17, 18). The RISKESDAS coverage survey conducted in 2018 reported HepB-BD coverage of 83% and HepB3 of 61%.

*Figure 19: Seroprevalence of chronic HBV infection in 33 Provinces, by age, Indonesia, 2013*

![Graph showing seroprevalence of chronic HBV infection in 33 Provinces, by age, Indonesia, 2013.](image)

HBV: hepatitis B virus


*Figure 20: HepB-BD coverage, Indonesia 2000–2008*

![Graph showing HepB-BD coverage, Indonesia 2000–2008.](image)

HepB-BD: Hepatitis B vaccine birth dose

Source: WHO/IVB database

WHO UNICEF estimates of immunization coverage (WUENIC) as of 1 July 2019

http://www.who.int/immunization/monitoring_surveillance/data/administrative_coverage.xls

http://www.who.int/entity/immunization/monitoring_surveillance/data/coverage_estimates_series.xls
In 2019, national guidelines were developed to prevent mother to child transmission of HIV, syphilis and hepatitis B. The guidelines include the recommendation for screening of all pregnant women for HBsAg, and vaccinating all newborns with HepB-BD within 24 hours of birth. A national technical committee on viral hepatitis was established in December 2019 to track progress towards hepatitis B elimination in Indonesia.

Findings
The current draft cMYP 2020–2024 does not include a goal to control hepatitis B similar to the SEAR VAP (Goal 6). Hepatitis B vaccination is listed under improving immunization coverage with no particular attention to regional and global control/elimination targets.

Based on field observations by the Review team and meetings with physicians, over the past few years, pregnant women were screened for HBsAg. The team noted that information on HBsAg status was included in the women’s medical records; however, aggregate data were not available on the number and proportion of pregnant women who tested positive for HBsAg at visited hospitals. Estimated prevalence in pregnant women ranged from 2%-7% in visited hospitals in East Java based on anecdotal reports by physicians. Children born to HBsAg positive women were given HepB-BD and Hepatitis B immunoglobulin (HBIG) within 24 hours of birth free of charge in all hospitals, including private hospitals. In private hospitals, HBIG had to be ordered from the DHO on the day of delivery, which delayed administration to more than 12 hours after birth.

In terms of the timeliness of the birth dose, while most infants born in hospitals were given the HepB-BD within 24 hours of birth, some physicians were still reluctant to vaccinate infants who weighed <2000 g. The national policy only addresses birth weights <1000 g and
recommends delaying vaccination for pre-term infants until the child reaches 2000 g, except for infants born to HBsAg positive women who should be vaccinated within 24 hours of birth (Figure 20)

Figure 22: National policy of Hepatitis B birth dose vaccination for low birth weight infants, Indonesia, 2020

Recordings in immunization registers in several visited puskesmas and hospitals did not differentiate between timely and untimely birth doses, with the exception of a few hospitals where the date and time of HepB-BD and HBIG were recorded, as well as the date and time of birth. In addition, the vaccination books still referred to HepB-BD within 7 days of birth and have not been updated to indicate that this should be given within 24 hours of birth. However, many vaccinators wrote the date of HepB-BD on the vaccine booklet.

Storage of HepB was adequate in most sites visited in East Java with a few exceptions where the birth dose was stored near the freezer, leading to inactivation of the vaccine (Figure 21). In this instance, once the refrigerator door was closed, the HepB-BD came in contact with ice in the freezer. In addition, HepB-BD stock outs were reported in several provinces.

Figure 23: Puskesmas refrigerator demonstrating storage of HepB-BD.
Conclusions

Indonesia has a high-intermediate endemicity of chronic HBV infection. Although HepB and HepBD were introduced a number of years ago, coverage with HepB3 has been stagnant since 2007 and timely HepB-BD has remained <60%. The cMYP does not reflect the weight given by the SEAR VAP to hepatitis B control and eventual elimination.

Recommendations

Short-term

➢ Ensure each level uses a revised reporting tools to differentiate between timely and non-timely HepB-BD
➢ Inform physicians about lack of justification of weight restrictions for HepB-BD vaccination if the baby is stable, especially if the mother is HBsAg positive; the WHO vaccine position paper on hepatitis B vaccines does not list any contraindications to HepB-BD vaccination.\(^{113}\)
➢ Conduct vaccine storage training and supervisory visits to ensure quality of vaccines is maintained in the cold chain and enough vaccines are available.
➢ Hepatitis B control should be listed as a separate target in the cMYP to be in line with SEARO VAP (Goal 6).
➢ Identify an advocate for Hepatitis B control to be a member of the REP.

Medium-term

➢ Emphasize the need to improve timely HepB-BD coverage to reach >80%.
➢ Test specimens from the 2019 Survey for HBsAg to assess current prevalence, especially in children.
➢ Compile evidence to submit to the SEAR REP for verification of achievement of hepatitis B control (HBsAg <1% among children)

Long-term

➢ Track percentage of pregnant women who are HBsAg positive by creating a reporting system.
➢ Work towards elimination of hepatitis B as a public health threat as per global target (HBsAg <0.1% by 2030).

Control of JE is accelerated

Background and findings

JE is considered endemic in 10 of the SEAR’s 11 member states, with the exception being the Maldives. Accelerating control of JE is articulated as Goal 5 in the SEAR VAP.\(^{114}\) However, control of the disease is not given the same prominence in the draft cMYP.

\(^{114}\) World Health Organization. South-East Asia Regional Vaccine Action Plan. 2016-2020. Available at: [https://apps.who.int/iris/handle/10665/272397].
Data from studies and surveillance suggest that JE transmission is nationwide in Indonesia. Ompusunggu conducted a study in 2005–2006 based on surveillance at sentinel sites in six provinces encompassing high and low-risk locations; this study indicated nationwide, year-round transmission with the 1–4 year old age group most affected.\textsuperscript{115} These observations of nationwide JE transmission were corroborated by data illustrated in Figure 22, which indicates that, from 1972–2015, almost all provinces in Indonesia had documented evidence of animal or human JE transmission.

\textit{Figure 24: Geographic distribution of seropositive JE in humans and animals by province, Indonesia, 1972–2015}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure24.png}
\caption{Geographic distribution of seropositive JE in humans and animals by province, Indonesia, 1972–2015}
\end{figure}


AES surveillance was launched in 2015 and is currently operational in 11 provinces at 34 sites. In 2016, based on the data from these sites, 43 (13\%) of the 326 reported AES cases were JE-positive. Cases were reported from nine provinces, including Bali. Updated analysis of AES/JE cases was not available to Review participants.

Province-specific data is offered by Kari’s 2006 study in Bali\textsuperscript{116}, which showed transmission in all nine districts, with 70\% of reported cases in children aged <5 years. This study concluded that “our findings clearly suggest that countries previously classified as at low JE risk may be so only because of insufficient surveillance data”. Further information relevant to JE in Indonesia is available indirectly from surveillance conducted for >19 years in Malaysia’s state of Sarawak, which borders West Kalimantan. These data mirror Ompusunggu’s in terms of year round transmission and age-specific incidence.

Live attenuated JEV was introduced in Bali province in March 2018, initially with an SIA targeting all children aged 9 months – 15 years. Coverage for this SIA was estimated at 100.7\% based on administrative data and 93\% through survey reports.\textsuperscript{117} JEV is

\begin{thebibliography}{99}
\end{thebibliography}
administered through the routine immunization system at 10 months of age. Reported administrative coverage for Bali in 2019 was 75%.\textsuperscript{118} This is substantially lower than reported Bali-specific 2018 administrative coverage for MR1 (100.4%), which is administered at 9 months of age. A PIE which included JEV was conducted in Indonesia in 2019.\textsuperscript{119} The EPI and VPDS Review team was told that concerns exist around introducing the current formulation of JEV, which may be considered non-\textit{halal} by some, into Muslim-majority areas of the country.

**Conclusion**

Several different sources indicate that JE transmission in Indonesia is nationwide. At present, JEV has only been introduced in one province and coverage lags substantially behind coverage for MR1, which is administered at a comparatively similar age.

**Recommendations**

*Short-term*

- Analyze existing AES and JE surveillance data to better describe JE epidemiology in Indonesia.
- Reinforce efforts to increase JEV coverage in line with the other vaccines (i.e., pentavalent vaccine, MCV) given at/or around the same time as JEV.
- Consider listing accelerating control of JE as a separate goal in the cMYP, in line with the SEAR VAP (Goal 5).

*Medium-term*

- Expand surveillance through:
  - Initiating AES surveillance in provinces and districts adjoining current surveillance sites to facilitate the use of existing JE testing laboratories to test specimens.
  - Establishing pan country surveillance to monitor epidemiology and trends in JE transmission.
  - Expanding availability of laboratory testing for JE through adding five additional laboratories capable of testing for JE, backed by a national capacity building workshop.
- Based on AES surveillance results, conduct a phased scale-up of JEV to high burden provinces, conducting a need-based wide age range SIA before introducing the vaccine in the routine immunization programme.
- Identify an appropriate vaccine preparation from the several now-available pre-qualified JEV products.

\textsuperscript{118} WHO and UNICEF. Joint Reporting Form. Indonesia. 2019
\textsuperscript{119} Government of Indonesia, Report of the joint national/international mission Indonesia on Post-Introduction Evaluation (PIE) of Inactivated Polio Vaccine, Pneumococcal Conjugate Vaccine and Japanese Encephalitis Vaccine, 18-30 September, 2019, Jakarta, Indonesia
New vaccine introduction

Current status of vaccine introductions

Indonesia transitioned from Gavi grant funding support for new vaccine introductions in January 2017. All future introductions are to be fully self-financed by the government. As Indonesia graduated from Gavi support, critical antigens were yet to be introduced including MR (subsequently introduced in 2017/2018), HPV, PCV and rotavirus vaccine. The latter three are yet to see national introductions.

The cMYP 2020–2024, while still in draft at the time of the EPI and VPDS Review, identifies high level objectives for new vaccine introductions over the five-year timeframe and certain incremental steps toward the achievement of these objectives. Specifically:

➢ Introduction of the HPV vaccine gradually scaled up by province and districts.
➢ JEV expansion to West Kalimantan (2021) and Yogyakarta (2023).
➢ PCV scaled up by province and districts with a full national introduction targeted for 2024.
➢ Rotavirus vaccine demonstration projects in 2022 and 2023.

With the exception of PCV, a new vaccine introduction plan for each antigen is yet to be developed and a clear roadmap to confirmed national introductions is lacking.

The ITAGI, with technical support from WHO, has established a Total Systems Effectiveness task force responsible for full systems costing studies for HPV vaccine, JEV, PCV, and rotavirus vaccine, and the provision of recommendations to the MoH on the prioritization of introductions.

PCV

Pneumonia remains the leading infectious disease killer of children under five years of age in Indonesia (Figure 23), with 25 000 deaths annually. This, however, is just the tip of the iceberg, with up to 1.26 million pneumonia cases annually amongst under-five year olds, both outpatient and hospitalized, in the last six years. This translates to US$ 28.1 million annually in treatment costs, representing a significant burden on the health budget.

The leading bacterial cause of infant pneumonia is pneumococcus, which has been identified in 49.5% of cases in Indonesia and could be prevented by PCV. The lack of PCV in the routine immunization schedule is, therefore, a critical gap.

120 UNICEF. Global database: child mortality estimates. 2015
In recognition of this disease burden, the government has been investigating the introduction of PCV since 2017, which saw the first demonstration project in two districts in Lombok (Nusa Tenggara Barat province). In 2018, this was expanded to a further six districts in Nusa Tenggara Barat. On the basis of an evaluation of the demonstration project, in January 2019 the ITAGI recommended a gradual expansion to further provinces and a progressive scale up to national introduction.

The cost of the PCV vaccine has remained a limiting factor for government in looking to a national introduction. As a Gavi-transitioned country, Indonesia has procured PCV for the expanded demonstration project at commercial prices.

In January 2020, the government took the decision to apply for access to the Gavi-managed Pneumococcal Advanced Market Commitment – an innovative financing mechanism allowing eligible countries to access PCV at US$ 2.90 per dose. Access to the Advanced Market Commitment price will enable the government to bring forward a national PCV introduction and realize significant savings in procurement.

The current introduction plan will see a national introduction by 2024, phased over 2020–2023.

**Rotavirus vaccine**

The government of Indonesia has elected to wait for a domestically manufactured rotavirus vaccine through Biofarma (a state-owned enterprise) before committing to a national introduction. The RV3-BB product from Biofarma is in Phase 3 clinical trials with an estimated production date of 2021 or 2022. While rotavirus surveillance has stopped (see section above on surveillance), the government is committed to the selection of provinces with a high disease burden for planned demonstration projects in 2022 and 2023.

**HPV vaccine**

HPV was first introduced in all six districts of Daerah Khusus Ibukota Jakarta in 2016 as a demonstration project. In the following year it was expanded to two districts in Yogyakarta (with Gavi support for a further demonstration project) and one district in East Java. In 2019, further expansion saw the inclusion of large cities, Surabaya, Makassar and Manado, as the
government moves to a phased introduction. An evaluation in 2019 of the demonstration projects in Daerah Khusus Ibukota Jakarta and Yogyakarta identified high community acceptance and demand for HPV vaccine and a strong basis upon which to build toward national introduction.

While the government is yet to commit to a national introduction, current plans will see up to 10 provinces and a significant proportion of the population covered by 2024.

**JEV**

On the basis of epidemiological evidence and an ITAGI recommendation, the JEV was introduced through a sub-national campaign to all districts in Bali Province in 2018. The government is looking to further JE surveillance and a future ITAGI recommendation on the expansion of JEV to additional provinces. Expansions are tentatively planned for West Kalimantan in 2021 and Yogyakarta in 2023. There are currently no plans for a nationwide introduction.

**Conclusion**

In summary, Indonesia has clearly articulated plans and budget commitment to realize the phased introduction of PCV through to nationwide coverage by 2024. Plans for the scale up or demonstration of other antigens – HPV, JE and rotavirus – appear less certain and longer-term decision making is hampered by a lack of surveillance data.

**Recommendations**

**Short-term**

- Finalize a comprehensive plan for phased introduction of PCV during 2020–2024.
- Develop a more comprehensive introduction roadmap by vaccine for JEV, HPV and rotavirus vaccine.
- Identify required technical assistance needs to support national introductions.
- Note the lack of baseline data to generate evidence for introductions and/or expansions of new vaccines (JE, rotavirus, PCV) and recommend strengthening surveillance for new vaccine associated VPDs, for example expanding JE surveillance and establishing rotavirus sentinel surveillance.

**For immediate action**

Indonesia has many comparative advantages to improve immunization coverage, including good and modern health and transportation infrastructure in most areas, an adequate number of multi-purpose HCWs available as vaccinators, community participation mechanisms, high mobile phone and social media coverage, and G-20 status.

Immediate priorities for the EPI and VPDS are to identify districts with a high number of children who drop out from immunization and to improve coverage in these districts through intensifying defaulter tracking and backlog fighting, updating micro plans (particularly in peri-urban areas), and developing tailored demand generation strategies for these populations. The MoH and partners should coordinate and collaborate to ensure that there is dedicated technical assistance to the programme, at minimum one medical epidemiologist/public health expert in all provinces. This will increase technical capacity, coordination and
advocacy sub-nationally, enhance capacity to scale up HPV and PCV vaccine, and strengthen the capacity of weak districts through supportive supervision. A monthly coordination meeting should be established between surveillance and immunization teams at national, provincial and district levels to implement agreed-upon actions. It is critical to ensure an adequate supply of HPV, IPV, JEV and PCV through avoiding procurement barriers, and to ensure adequate and timely laboratory supplies.

Conclusions

In conclusion, Indonesia has historically had many successes in immunization, as demonstrated by achieving polio eradication and MNTE, and the introduction of a number of new vaccines. Under the current President, the country has benefited from a substantial increase in spending on the health sector and, as of 2016, funded 90% of vaccine expenses. Nonetheless, vaccination coverage has stagnated for the past decade, leaving approximately one million children annually un- or under-vaccinated and resulting in endemic transmission of diphtheria and recurrent measles outbreaks. Although the EPI and VPDS are buttressed by strong regulatory, legal and advisory frameworks, programme implementation is challenged by a highly decentralized structure, and gaps in human resources, vaccine demand, and data quality, use, and local ownership. These gaps directly impact the programme’s ability to reach unreached populations and maintain or attain targeted disease goals, and will require a sustained effort to address. Immediate actions, as outlined above, can help to increase coverage in the Short-term in districts with the highest number of un- and under-vaccinated children.
### Annex 1

**National and international participants in 2020 EPI and VPDS review**

<table>
<thead>
<tr>
<th>Name</th>
<th>Position and Organization</th>
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<tbody>
<tr>
<td><strong>International Reviewers</strong></td>
<td></td>
</tr>
<tr>
<td>Dr Lisa Cairns</td>
<td>WHO Consultant, Team Lead</td>
</tr>
<tr>
<td>Dr Charung Muangchana</td>
<td>Director, National Vaccine Institute, Ministry of Public Health, Thailand</td>
</tr>
<tr>
<td>Dr Jamun Prasad Singh</td>
<td>Member, National Immunization Advisory Committee, Nepal</td>
</tr>
<tr>
<td>Dr Aung Kyaw Moe</td>
<td>Deputy Director, EPI, Ministry of Health and Sports, Myanmar</td>
</tr>
<tr>
<td>Dr Chaninan Sonthichai</td>
<td>Medical Officer, Department of Disease Control, Ministry of Public Health, Thailand</td>
</tr>
<tr>
<td><strong>Partners</strong></td>
<td></td>
</tr>
<tr>
<td>Dr Arindam Ray</td>
<td>India Country Lead, New Vaccines and Immunization Systems</td>
</tr>
<tr>
<td></td>
<td>Bill and Melinda Gates Foundation</td>
</tr>
<tr>
<td>Mr Samuel Muller</td>
<td>Senior Country Manager Asia Pacific, Gavi</td>
</tr>
<tr>
<td>Mr Imam Subekti</td>
<td>SKIPI, Gavi</td>
</tr>
<tr>
<td>Dr Bilal Ahmed</td>
<td>Planning &amp; Monitoring Specialist – MNTE, Programme Division, Maternal, Newborn &amp; Adolescent Health, UNICEF Headquarters</td>
</tr>
<tr>
<td>Ms Michelle Dynes</td>
<td>Immunization Specialist, UNICEF East Asia and Pacific Regional Office</td>
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<tr>
<td>Ms Adinda Silitonga</td>
<td>Communication Specialist UNICEF Indonesia</td>
</tr>
<tr>
<td>Dr Ruhul Amin</td>
<td>Immunization Specialist UNICEF Indonesia</td>
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<tr>
<td>Dr Kenny Peetrosutan</td>
<td>Immunization Specialist UNICEF Indonesia</td>
</tr>
<tr>
<td>Dr Ermi Ndoen</td>
<td>Field Officer UNICEF Indonesia</td>
</tr>
<tr>
<td>Dr Sartini Saman</td>
<td>National Consultant UNICEF Indonesia</td>
</tr>
<tr>
<td>Dr Kirsten Ward</td>
<td>Epidemiologist, Global Immunization Division, US Centers for Disease Control and Prevention (CDC), Atlanta</td>
</tr>
<tr>
<td>Dr Rania Tohme</td>
<td>Medical Epidemiologist, Global Immunization Division, US CDC, Atlanta</td>
</tr>
<tr>
<td>Dr Lucy Breakwell</td>
<td>Epidemiologist, Accelerated Disease Control and Vaccine Preventable Disease Surveillance Branch, US CDC, Atlanta</td>
</tr>
<tr>
<td>Ms Fetty Wijayanti</td>
<td>Public Health Specialist, Global Immunization Division, US CDC Indonesia office</td>
</tr>
<tr>
<td>Dr Juliette Morgan</td>
<td>Country Director, US CDC Indonesia office</td>
</tr>
<tr>
<td>Name</td>
<td>Position and Organization</td>
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<tr>
<td><strong>WHO Headquarters, Geneva</strong></td>
<td></td>
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<tr>
<td>Dr Nasir Yusuf</td>
<td>Expanded Programme on Immunization Plus</td>
</tr>
<tr>
<td>Dr Graham Tallis</td>
<td>Senior Adviser, Polio Eradication Department</td>
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<tr>
<td>Dr Laura Nic Lochlainn</td>
<td>Technical Officer, Integration Essential Programme on Immunization</td>
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<tr>
<td>Dr Hilde Sleurs</td>
<td>Consultant, MNTE PVA</td>
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<tr>
<td><strong>WHO South-East Asia Regional Office, New Delhi</strong></td>
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<tr>
<td>Dr Sigrun Roesel (Mission Coordinator)</td>
<td>Technical Officer - Vaccine Preventable Disease</td>
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<tr>
<td>Dr Jayantha Liyanage</td>
<td>Regional Adviser - Immunization Strengthening Systems</td>
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<td><strong>WHO Country Office, India</strong></td>
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<tr>
<td>Dr Arun Kumar</td>
<td>National Professional Officer - Surveillance</td>
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<td><strong>WHO Country Office, Indonesia</strong></td>
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<tr>
<td>Dr Vinod Bura (Review Manager)</td>
<td>Medical Officer</td>
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<tr>
<td>Ms Winda Hutami</td>
<td>Data Assistant</td>
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<tr>
<td>Ms Aning Isfandyari</td>
<td>District Level Surveillance Consultant</td>
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<tr>
<td>Dr Kamal Mushtofa</td>
<td>NPO – Surveillance</td>
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<tr>
<td>Mr Riza Dewantara</td>
<td>Data Assistant</td>
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<tr>
<td>Dr Alfrida Camelia S</td>
<td>National Professional Officer (NPO) - Reproductive, Maternal, Newborn, Child and Adolescent Health</td>
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<tr>
<td>Dr Fina Tams (National Coordinator)</td>
<td>NPO – Immunization</td>
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<tr>
<td>Dr Olivi Silalahi</td>
<td>NPO – Routine Immunization</td>
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<tr>
<td>Ms Endang Utami</td>
<td>Data Assistant</td>
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<tr>
<td>Mr Hermansyah</td>
<td>District Level Surveillance Consultant</td>
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<td><strong>Reviewers from Indonesia – Nationals</strong></td>
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<td>EPI Manager, EPI - MoH</td>
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<td>Deputy EPI Manager, EPI - MoH</td>
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<td>Deputy EPI Manager, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<td>Name</td>
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<tr>
<td>Ms Hastha Meyta (National Coordinator)</td>
<td>Staff, EPI - MoH</td>
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<tr>
<td>Ms Indah Hartati</td>
<td>Staff, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<tr>
<td>Dr Sherli Karolina</td>
<td>Staff, EPI - MoH</td>
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<td>Agustina Saranga</td>
<td>Staff, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<td>Mr Reza Isfan</td>
<td>Staff, EPI - MoH</td>
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<td>Mr Hakimi</td>
<td>Staff, EPI - MoH</td>
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<td>Staff, EPI - MoH</td>
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<td>Mr Muammar Muslih</td>
<td>Staff, Surveillance - MoH</td>
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<td>Ms Vivi Vironica</td>
<td>Staff, Surveillance - MoH</td>
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<td>Dr Cornelia Kelyombar</td>
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<td>Mr Rubiyo Wahyuardi</td>
<td>Staff Surveillance - MoH</td>
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<td>Dr Irma Gusmi Ratih</td>
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<td>ITAGI</td>
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<td>DI Yogyakarta PHO</td>
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<tr>
<td>Ms Widyawati</td>
<td>Health Family, MoH</td>
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<tr>
<td>Dr Edi Hartoyo</td>
<td>Indonesian Pediatric Society</td>
</tr>
<tr>
<td>Name</td>
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<tr>
<td>Ms Yenny Ekawati</td>
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<td>Dr dr Toto Wisnu Hendarto, Sp. A(K), DTM&amp;H</td>
<td>National Committee - AEFI</td>
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<tr>
<td>Ms Defi Amalia</td>
<td>Staff, Public Health Emergency Operating Centre</td>
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<td>Professor Dr Ismoedijanto, dr, Sp. A(K)</td>
<td>Expert Committee of Polio Eradication</td>
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<tr>
<td>Mr Andi Apriyanto</td>
<td>Kepulauan Riau PHO</td>
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<tr>
<td>Ms Menikha Maulida</td>
<td>Field Epidemiology Training Programme</td>
</tr>
<tr>
<td>Mr Hanse Tanikwele</td>
<td>Immunization staff, Maluku PHO</td>
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<tr>
<td>Ms Septi Dora Puspitasari</td>
<td>Sumatera Selatan PHO</td>
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<td>Mr Abuchori</td>
<td>Public Health Emergency Operating Centre</td>
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<tr>
<td>Mr Welly Wamear</td>
<td>Head of Surveillance and EPI Division, Papua Barat PHO</td>
</tr>
<tr>
<td>Ms Anita</td>
<td>Bengkulu PHO</td>
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<tr>
<td>Dr Ike Silviana</td>
<td>CDC Manager Jambi PHO</td>
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<td>Mr Yogi Prayogi</td>
<td>Immunization staff, West Sulawesi PHO</td>
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<tr>
<td>Ms Erni Nuraini Mansur</td>
<td>Head of Surveillance and EPI Division, Gorontalo PHO</td>
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<td>Mr Husni</td>
<td>Field Epidemiology Training Programme</td>
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<tr>
<td>Mr Muhammad Satta</td>
<td>Head of Surveillance and Immunization Division, East Kalimantan</td>
</tr>
<tr>
<td>Ms Kartina</td>
<td>Head of Surveillance and Immunization Division, South East Sulawesi</td>
</tr>
</tbody>
</table>
Annex 2
Provinces, districts and facilities visited as part of EPI and VPDS Review

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<th>No</th>
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<td>4. 4 Posyandus</td>
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<td>5. 4 Hospitals (RSUD Cilincing, RS Pelabuhan, RSUD Cengkareng, RSUD Kalideres)</td>
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<td>4. 4 Posyandus (Mutiara 5, Sedap Malam, Mangga, and Dahlia)</td>
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<td>5. 3 Hospitals (RSUD Berkah, Cinta Kasih and Sari Asih)</td>
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<td>5. 2 Hospital (RSUD Sidoarjo and Kusuma Wijaya)</td>
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<td>6. 2 Private clinics (Indah Kurnia and Ain Hartoko)</td>
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<td>Central Java</td>
<td>1. Kota Surakarta</td>
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<td>7. House to house visit</td>
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<tr>
<td>5</td>
<td>West Java</td>
<td>1. Sukabumi 2. Depok</td>
<td>1. PHO 2. DHOs (Sukabumi and Depok) 3. 4 Puskesmas (Sukalarang, Cicantayan, Tanah Baru and Cipayung) 4. 4 Posyandus (Nuri, Mawar, Markisa and Lembah Griya) 5. 2 Hospital (Hermina and Grha Permata Ibu) 6. 9 House to house visit</td>
</tr>
<tr>
<td>6</td>
<td>North Sulawesi</td>
<td>1. Kota Bitung 2. North Minahasa</td>
<td>1. PHO 2. 2 DHOs (Kota Bitung and North Minahasa) 3. 4 Puskesmas (Tumbala, Danowudu, Kolongan and Likupang) 4. 4 Posyandus (Cerdas, Rajawali, Dahlia, and Tokatindung) 5. 2 Hospitals (Budi Mulia and Siloam) 6. 1 Private clinic (Madani) 7. House to house visit</td>
</tr>
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<td>South Sulawesi</td>
<td>1. Gowa 2. Pare-Pare</td>
<td>1. PHO 2. 2 DHOs (Gowa and Pare-Pare) 3. 4 Puskesmas (Botonompo, Palangga, Lapadde, and Madising Na Mario) 4. 8 Posyandus 5. 1 Hospital 6. 2 Private clinics</td>
</tr>
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<td>West Sumatera</td>
<td>1. Kota Padang 2. Padang Pariaman</td>
<td>1. PHO 2. 2 DHOs (Kota Padang and Padang Pariaman) 3. 4 Puskesmas (Padang Pasir, Rawang, Lubuak Aluung and Sungai Sariak) 4. 7 Posyandus 5. 1 Private clinic (Midwife Yeti) 6. 1 Private hospital</td>
</tr>
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<td>North Sumatera</td>
<td>1. Humbas 2. North Tapanuli</td>
<td>1. PHO 2. 2 DHOs (Humbas and North Tapanuli) 3. 4 Puskesmas (Matiti, Onan Ganjang, Siatas Barita, and Onan Hasang) 4. 4 Posyandus (Pasaribu, Mawar Merah, Sitompul and Manggis) 5. 2 Hospitals 6. 4 Villages, house to house visit (Pasaribu, Sibuluan, Sitompul and Hutabarat)</td>
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<tr>
<td>No</td>
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<td>4. 4 Posyandus (Yandu Kasih Ibu, Kemuning, Jogja, and Lampulo)</td>
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<td>3. 4 Puskesmas (Kerinci Kanan, Rengganis, Dumai Kota, Siak)</td>
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<td>4. 8 Posyandus</td>
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<td>5. 2 Hospitals</td>
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<td>6. 2 Private clinics</td>
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<td>12</td>
<td>West Kalimantan</td>
<td>1. Sambas</td>
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<td>2. 2 DHOs (Sambas and Kota Singkawang)</td>
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<td>3. 4 Puskesmas (Sebawi, Sambas, Singkawang Tengah 1 and Singkawang Tengah 2)</td>
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<td>4. 6 Posyandus (Cendra, Mandung Sebedang, Andah, Harapan, Kayu Urip and Nusa Indah)</td>
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<td>5. 3 Private clinics</td>
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<td>2. Nunukan</td>
<td>2. 2 DHOs (Tarakan and Nunukan)</td>
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<td>4. 3 Posyandus (Ranggaina, Seruni and Harapan Kasih)</td>
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<td>5. 2 Hospitals (RSUD Tarakan and RSUD Nunukan)</td>
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<td>6. 34 House to house visits in community</td>
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<td>3. 4 Puskesmas (Weda, Wairoro, Bahari Berkesan and Kalumpang)</td>
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<td>4. 5 Posyandus (Goeng, Mekarsari, Wairoro, Sigaro Malaha, and Kalumata)</td>
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<td>5. 3 Hospitals (District, Islam and Chasan Basoire)</td>
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<td>6. 10 House to house visit</td>
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<td>2. Manggarai Barat</td>
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<td>3. 4 Puskesmas (Benteng, Camplong, Tarus and Wae Kanta)</td>
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<td>4. 4 Posyandus (Cempaka 3, Camplong, Naunu and Wae)</td>
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<td>5. 1 Hospital (Siloam Manggarai Barat)</td>
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<td>6. 1 Private clinic (Dr Dian, Sp.A)</td>
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<td>7. 81 House to house visit</td>
</tr>
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A joint national/international review was conducted in 15 provinces in Indonesia on 10–18 February 2020 to assess the national immunization programme and share lessons learnt for preventing and controlling vaccine preventable diseases. This report summarizes the findings and recommendations made during the review.