Western Pacific Regional Road Map for COVID-19 Vaccination Response 2021–2022
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DISCLAIMER

The information and data in this manuscript – including text, graphics and images – are from November 2021. Given the constant changes during the COVID-19 pandemic, readers are encouraged to seek the most up-to-date data from sources cited in this document.
Abbreviations

AEFI  adverse event following immunization
AESI  adverse event of special interest
COVAX COVID-19 Vaccines Global Access
COVID-19 coronavirus disease
EUL  emergency use listing
HCW  health-care worker
NIP  national immunization programme
NRA  national regulatory authority
NDVP national deployment and vaccination plan
PIC  Pacific island countries and areas
RSF  Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific (2021–2030)
SAGE Strategic Advisory Group of Experts on Immunization
SARS-CoV-2 severe acute respiratory syndrome coronavirus 2
TAG  Technical Advisory Group
TTS  thrombosis with thrombocytopenia syndrome
VPD  vaccine-preventable disease
VOC  variant of concern
VOI  variant of interest
WHO  World Health Organization
1. Introduction

1.1 COVID-19

Coronavirus disease (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first recognized in Wuhan, China, in December 2019. SARS-CoV-2 is transmissible by infected people who are symptomatic and asymptomatic by respiratory droplets, direct contact or aerosols. The incubation period is five to seven days on average (up to 14 days), and infected people can be contagious one to three days before the onset of symptoms. Common symptoms of COVID-19 include fever, dyspnoea, myalgia and impaired senses of smell or taste.

Thirty per cent of infected people reportedly remain asymptomatic. Among symptomatic cases: 40% develop mild disease, 40% develop moderate disease with pneumonia, 15% develop severe disease requiring oxygen support, and 5% have critical disease. Advanced (older) age, smoking and underlying noncommunicable diseases have been reported as risk factors for severe disease and death. WHO recommends: the use of non-pharmaceutical interventions (for example, face masks, physical distancing and self-isolation if experiencing COVID-19 symptoms); laboratory diagnosis by reverse transcription polymerase chain reaction (RT-PCR) with respiratory specimens; the use of vaccines to prevent severe disease and death; and therapeutics such as systematic corticosteroids and neutralizing monoclonal antibodies, depending on the severity of the disease.

Like all viruses, SARS-CoV-2 has mutated during the pandemic, resulting in different variants. WHO classifies variants of interest (VOIs) and variants of concern (VOCs), according to public health risks and the global health impact of emerging variants, such as changes in transmissibility or disease characteristics, diagnostic failures and impacts on the effectiveness of vaccines and therapeutics. The Alpha variant (arising from the Pango lineage B.1.1.7) was the first VOC detected in the United Kingdom of Great Britain and Northern Ireland in late 2020. The previously or currently circulating VOCs are Beta (B.1.351), Gamma (P.1), Delta (B.1.617.2) and Omicron (B.1.1.529).

1.2 Pandemic

1.2.1 Epidemiological situation

In 2020, WHO declared the COVID-19 outbreak a public health emergency of international concern on 30 January and a pandemic on 11 March. As of 30 November 2021, COVID-19 has now spread to 226 out of 237 countries, territories and areas (95%) across the globe. Multiple variants of the virus have emerged since early 2021 and become dominant in many countries. Scientists started developing vaccines since the pandemic was declared, building on previous research on faster ways to manufacture vaccines and on related coronaviruses such as severe acute respiratory syndrome and Middle East respiratory syndrome. By December 2020, the first COVID-19 vaccine fully tested for efficacy and safety was approved for emergency use by WHO. Treatments to inhibit the virus are still under way, while treatments focusing on addressing the symptoms are now available.

1.2.2 Global status

By the end of November 2021, more than 260 million confirmed cases and nearly 5.2 million deaths had been reported globally, with the WHO Region of the Americas having the highest number of cases (nearly 97 million), followed by Europe, South-East Asia, the Eastern Mediterranean, the

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Western Pacific and Africa. The United States of America has the highest number of cases with nearly 49 million, followed by India and Brazil.\(^6\) WHO has designated five VOCs and two VOIs (Lambda and Mu). The current global epidemiology can be characterized by the predominance of the Delta variant. Across all six WHO regions, cases of the Alpha variant have been reported from 197 countries and areas, Beta variant from 147, Gamma variant from 105, Delta variant from 196, and Omicron from 18.\(^7\)

Since the onset of the outbreak in December 2019, WHO has worked with governments in establishing public health and social measures to prevent infections, reduce virus spread and minimize related burden. Countries continue to implement multiple measures to prevent transmission and to mitigate the impact of the pandemic on health systems and economies. WHO continues to work with all Member States, gathering data and analysing current situations, contributing to research and development, informing and engaging the public, mobilizing partners, distributing life-saving supplies, and strengthening health systems, including emergency preparedness.

1.3 COVID-19 in the Western Pacific Region

The COVID-19 situation in the Western Pacific varies widely among the Region’s 37 countries and areas. By the end of November 2021, confirmed cases and deaths already reached more than 10.2 million and 141,864, respectively. The first peak of the incidence ran from the end of January to March 2020 in China and the Republic of Korea, before identifying cases in other countries and areas. Eight Pacific island countries and areas (PICs) have not reported any cases as of 30 November 2021. They are Cook Islands, Kiribati, Federated States of Micronesia, Nauru, Niue, Pitcairn Islands, Tokelau and Tuvalu.\(^8\) Twenty countries and areas have reported detection of VOCs with the Delta variant being present in 19.

Countries and areas in the Western Pacific Region continue to impose travel restrictions in varying degrees and to implement non-pharmaceutical interventions to prevent transmission while slowly restarting education, tourism and the economy.

Since COVID-19 vaccinations started in late 2020, there has been an acceleration in the implementation of strategies detailed in the *Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific (2021–2030)* (abbreviated as RSF in this document), particularly on: ensuring preparedness for and response to public health emergencies; expanding immunization services; ensuring vaccine safety and security; and driving evidence-based decision-making and actions (see Annex 1 for synergies between the implementation of the RSF and pillars for COVID-19 vaccination strategies and Annex 2 for the 10 strategies of the RSF supporting the COVID-19 vaccination response).

1.4 Technical Advisory Group meeting in June 2021

The 30th Meeting of the Technical Advisory Group (TAG) on Immunization and Vaccine-Preventable Diseases in the Western Pacific Region was held on 22 to 25 June 2021: (1) to identify progress and challenges amid the COVID-19 pandemic in implementing the strategies and achieving the goals of the RSF, which was endorsed by the WHO Regional Committee for the Western Pacific in October 2020; and (2) to identify, gather and share among countries and partners the experiences and lessons learnt in the deployment of COVID-19 vaccines and immunization activities in the Region. At the meeting, TAG members and participants proposed regional objectives and targets of the COVID-19 vaccination response in the Western Pacific Region in 2021–2022 (see Section 3).

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In conclusion, the TAG: (1) supports the development of the Western Pacific Regional Road Map for COVID-19 Vaccination Response 2021–2022, including setting vaccination coverage targets and enhancing synergies with the RSF; and (2) supports countries and areas in implementing the Regional Road Map to achieve the proposed objectives and targets and in sustaining and building on the improvements and expansion in immunization systems achieved through COVID-19 vaccination efforts.

1.5 Purpose of this document

The Western Pacific Regional Road Map for COVID-19 Vaccination Response 2021-2022 aims: (1) to summarize the vaccination response and progress in the Region; (2) to outline the regional goals and targets for 2022; and (3) to propose strategies to achieve these goals and targets. This road map builds and improves on the progress achieved by countries and areas, and provides guidelines needed to further strengthen national COVID-19 vaccination programmes in the Region.

2. COVID-19 vaccination response in the Western Pacific Region

2.1 COVID-19 vaccines used in the Region

By the end of November 2021, WHO had issued emergency use listing (EUL) for eight COVID-19 vaccines, seven of which are used in the Region as specified below.

2.1.1 mRNA vaccines

Pfizer-BioNTech vaccine (Comirnaty) is used in 26 countries and areas: American Samoa, Australia, Brunei Darussalam, Cook Islands, the Federated States of Micronesia, French Polynesia, Guam, Hong Kong SAR (China), Japan, the Lao People’s Democratic Republic, Macao SAR (China), Malaysia, the Marshall Islands, Mongolia, New Caledonia, New Zealand, Niue, the Commonwealth of the Northern Mariana Islands, Palau, the Philippines, the Republic of Korea, Samoa, Singapore, Tokelau, Tonga and Viet Nam.

Moderna vaccine (Spikevax) is used in 15 countries and areas: American Samoa, Australia, Brunei Darussalam, the Federated States of Micronesia, Fiji, Guam, Japan, the Marshall Islands, the Commonwealth of the Northern Mariana Islands, Palau, the Philippines, the Republic of Korea, Samoa, Singapore, Tokelau, Tonga and Viet Nam.

2.1.2 Viral-vectorised vaccines

AstraZeneca vaccines (Vaxzevria and Covishield) are used in 22 countries and areas: Australia, Brunei Darussalam, Cambodia, Fiji, Japan, Kiribati, the Lao People’s Democratic Republic, Malaysia, Mongolia, Nauru, New Zealand, Papua New Guinea, the Philippines, Pitcairn Islands, the Republic of Korea, Singapore, Solomon Islands, Tonga, Tuvalu, Viet Nam, Vanuatu and Samoa.

The Janssen vaccine is used in 13 countries and areas: American Samoa, Cambodia, the Federated States of Micronesia, French Polynesia, the Lao People’s Democratic Republic, Guam, the Marshall Islands, New Caledonia, the Commonwealth of the Northern Mariana Islands, Palau, Papua New Guinea, the Philippines and the Republic of Korea.

2.1.3 Inactivated vaccines

Sinovac vaccine (Coronovac) is used in seven countries and areas: Cambodia, China, Hong Kong SAR (China), the Lao People’s Democratic Republic, Malaysia, the Philippines and Singapore.

Sinopharm vaccine (BBIPBP-CorV) is used in 14 countries and areas: Brunei Darussalam, China, Cambodia, Kiribati, the Lao People’s Democratic Republic, Macao SAR (China), Mongolia, Malaysia, the Philippines, Papua New Guinea, Singapore, Solomon Islands, Viet Nam and Vanuatu.

2.2 COVID-19 vaccine roll-out

By December 2020, few countries and areas in the Region had started rolling out vaccines. In early 2021, more countries and areas started vaccinations as manufacturers had secured WHO EUL and completed national regulatory approvals. By July 2021, all countries and areas in the Region had started their vaccination campaigns. At least 13 COVID-19 vaccines are currently used, of which seven have already secured WHO EUL. By the end of November 2021, a total of 3.1 billion doses had
already been administered in the Region with vaccine supplies coming from multiple sources, including government procurement, donations and COVAX.

2.2.1 COVAX

COVAX, the vaccines pillar of the Access to COVID-19 Tools (ACT) Accelerator, aims to accelerate the development and manufacture of COVID-19 vaccines and ensure equitable access and distribution. Co-led by the Coalition for Epidemic Preparedness Innovations (CEPI), Gavi, the Vaccine Alliance, and WHO (with key partner UNICEF), the COVAX plan is to vaccinate 20% of a country’s total population by the end of 2021. In the Western Pacific Region, a total of 20 countries and areas have received COVID-19 vaccines from COVAX.

2.2.2 National Deployment and Vaccination Plan (NDVP)

By February 2021, a total of 14 COVAX advance market commitment or AMC countries and areas in the Region had developed NDVPs: Cambodia, the Federated States of Micronesia, Fiji, Kiribati, the Lao People’s Democratic Republic, Mongolia, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu and Viet Nam. These NDVPs served as guides for planning, implementing and monitoring the COVID-19 vaccine roll-out. NDVPs were submitted to COVAX as part of the preparation process to receive vaccines and access logistic and financial resources.

2.2.3 Strategic Advisory Group of Experts on Immunization (SAGE)

Since the beginning of the COVID-19 vaccine roll-out, SAGE has been advising WHO and its Member States, giving recommendations on vaccination strategies and the use of vaccines.

2.2.4 Prioritization road map

Following the WHO SAGE Roadmap for Prioritizing Uses of COVID-19 Vaccines in the Context of Limited Supply, countries and areas strategically rolled out COVID-19 vaccines using a phased approach. Vaccination began with health-care workers (HCWs) and elderly, and subsequently expanded to other priority groups such as individuals with comorbidities, pregnant women and high-risk sociodemographic populations.

2.2.5 Additional and booster doses

Waning immunity and vaccine effectiveness in protecting against infection have been reported, while data show that currently available vaccines remain effective in preventing hospitalization and severe disease. To provide policy recommendations amid the emerging evidence of need and global supply constraints, WHO defines: additional doses as part of an extended primary series for target populations with weaker immune systems, and booster doses as doses administered to a vaccinated population that has completed a primary vaccination series.

SAGE recommends additional doses of vaccines under EUL for immunocompromised and older people.

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10 COVAX AMC includes 92 middle- and lower-income countries that are funded by official development assistance (ODA) and other contributions to pay for COVID-19 vaccines (see: https://www.gavi.org/vaccineswork/covax-explained).
2.3 Vaccination coverage

The Western Pacific has had significant progress in COVID-19 vaccination since the introduction and deployment of vaccines in the Region in late 2020. By the end of November 2021, the following were achieved.

2.3.1 Health-care workers

At least 18 countries and areas have achieved 90% coverage for fully vaccinated HCWs (Fig. 1): American Samoa, Brunei Darussalam, Cambodia, the Federated States of Micronesia, Fiji, Hong Kong SAR (China), Japan, the Lao People’s Democratic Republic, Malaysia, the Marshall Islands, Mongolia, Nauru, Palau, the Philippines, Pitcairn Islands, Singapore, Tokelau and Tonga. The following countries were expected to achieve 90% coverage for HCWs by December 2021: Macao SAR (China), New Zealand, the Commonwealth of the Northern Mariana Islands and Viet Nam. At the same time, Papua New Guinea, Kiribati and Solomon Islands achieved less than 50% vaccination coverage for HCWs.

2.3.2 Elderly

At least 18 countries and areas have achieved 90% coverage for fully vaccinated elderly (Fig. 2): American Samoa, Australia, Brunei Darussalam, Cambodia, the Federated States of Micronesia, Fiji, Guam, Japan, the Marshall Islands, Malaysia, Mongolia, Nauru, New Zealand, Palau, the Republic of Korea, Singapore, Tonga and Tokelau. The following countries were expected to achieve 90% coverage for elderly by December 2021: China, French Polynesia, the Commonwealth of the Northern Mariana Islands and Pitcairn Islands. At the same time, coverage among elderly is less than 10% in Papua New Guinea and Solomon Islands.

2.3.3 Other vulnerable populations

Apart from HCWs and elderly, some countries and areas have expanded vaccination of other vulnerable populations to include individuals with comorbidities and high-risk sociodemographic groups (such as indigent population, immigrants). As of November 2021, vaccination coverage of individuals with comorbidities with all recommended doses has reached more than 50% in the Philippines (88.4%), the Lao People’s Democratic Republic (78.0%), Malaysia (76.3%) and Tonga (64.5%). Papua New Guinea, Solomon Islands and Vanuatu are also slowly making progress in vaccinating individuals with comorbidities.

In the Philippines, people living in extreme poverty are one of the sociodemographic groups prioritized for vaccination. With about 12% of the population classified as indigent, the country made progress in fully vaccinating 32.8% of this group by the end of November 2021.

2.3.4 Entire population

Out of the 37 countries and areas in the Region, 32 vaccinated at least 10% of their population with full recommended doses by the end of September 2021 (Fig. 3), which is the global coverage target.17

In addition, 30 countries and areas in the Region vaccinated at least 40% of their population with full recommended doses by the end of December 2021, which is the global coverage target. They are: American Samoa, Australia, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, French Polynesia, Guam, Hong Kong SAR (China), Japan, the Lao People’s Democratic Republic, Macao SAR (China), Malaysia, Mongolia, Nauru, New Zealand, Niue, New Caledonia, the Commonwealth of the Northern Mariana Islands, Palau, Pitcairn Islands, the Republic of Korea, Singapore, Tokelau, Tonga, Tuvalu, Viet Nam, Samoa, and Wallis and Futuna.

Three countries were expected to achieve the 40% global coverage target by December 2021: the Federated States of Micronesia, the Marshall Islands and the Philippines. Meanwhile, four countries achieved less than 20% coverage for the population: Kiribati, Papua New Guinea, Solomon Islands and Vanuatu.

The vaccination of adults (at least 18 years old) progressed, with recent clinical evidence on vaccines for children (5–11 years) and adolescents (12–17 years). In all, 30 countries and areas had begun vaccinating adolescents with Pfizer/BioNTech and/or Moderna vaccine by November 2021: American Samoa, Australia,

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Brunei Darussalam, Cambodia, China, Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Guam, Hong Kong SAR (China), Japan, Macao SAR (China), Malaysia, the Marshall Islands, Mongolia, New Caledonia, New Zealand, Niue, the Commonwealth of the Northern Mariana Islands, Palau, the Philippines, the Republic of Korea, Samoa, Singapore, Tokelau, Tonga, Vanuatu, Vietnam, and Wallis and Futuna. China and Cambodia have approved Sinovac for use in children 3 and 5 years old, respectively.

2.3.5 Introduction of additional and/or booster doses

By November 2021, at least 19 countries and areas have approved and introduced additional/booster doses: American Samoa, Australia, Brunei Darussalam, Cambodia, China, the Federated States of Micronesia, Guam, Hong Kong SAR (China), Japan, the Lao People’s Democratic Republic, Macao SAR (China), Malaysia, the Marshall Islands, Mongolia, New Caledonia, the Commonwealth of the Northern Mariana Islands, Palau, the Republic of Korea and Singapore. The prioritized target populations include HCWs, elderly and people who are immunocompromised. Both homologous and heterologous schedules have been introduced by countries and areas.

2.4 Immunization safety

2.4.1 Immunization safety monitoring

Since mid-2020, WHO has been accelerating technical support in enhancing reporting and analysis of COVID-19 vaccine and immunization safety data. In early 2021, there were two key channels for reporting and monitoring COVID-19 vaccines and immunization safety in the Region:

1) country weekly report on COVID-19 vaccination coverage and safety, which includes the indicators for the functionality of a country’s safety surveillance systems (such as total number of adverse events following immunization (AEFIs) and serious AEFIs); and

2) WHO Health Emergencies Programme reporting system of platform-based and event-based surveillance for COVID-19 vaccination-related media reports, including reports on post-vaccination deaths and adverse events of special interest (AESIs).

At least 30 countries and areas in the Western Pacific Region have been sharing weekly reports since February 2021. This suggests that most countries have at least a routine passive surveillance system in place, though the degree of functionality varies by country.

While high-income countries and areas have high capacities for surveillance and response to vaccine and immunization safety events, capacities in low- and middle-income countries and PICs, particularly at the subnational level, are limited. This is especially so in investigation and causality assessment of serious AEFIs/AESIs. WHO has been supporting low- and middle-income countries for conducting surveillance and responding to COVID-19 vaccination safety events.

2.4.2 Adverse events of special interest

An AESI is a pre-specified medically significant event that has the potential to be causally associated with a vaccine product. Some expected AESIs following COVID-19 vaccination include anaphylaxis, thrombosis with thrombocytopenia syndrome (TTS), myocarditis/pericarditis and Guillain-Barré syndrome. They are usually identified through enhanced surveillance or active vaccine safety surveillance, and causality needs to be confirmed by further population-based special studies. Countries with active vaccine safety surveillance or robust surveillance systems, such as Australia, Japan, New Zealand, the Republic of Korea and Singapore, have been reporting AESIs. The rates (per million doses administered) vary by country and type of COVID-19 vaccine:

- Anaphylaxis: 0.5–33 per million
- TTS: 0.1–12.1 per million
- Myocarditis/pericarditis: 0.9–65.6 per million
- Guillain-Barré syndrome: 0.3–10.9 per million

It is worth noting that the reported AESIs are based on various case definitions, which are evolving with

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18 Cambodia updated Sinovac eligible age to ≥ 5 years old on 29 October 2021.
19 Homologous schedule uses the same COVID-19 vaccine platform in the primary series and additional and/or booster dose(s). Heterologous schedule after inactivated vaccines uses different COVID-19 vaccine platforms, such as mRNA or viral-vectored vaccines, for additional and/or booster dose(s).
scientific evidence (for example, TTS), and country capacity to make proper diagnosis of such medical conditions of AESIs.

Capacity for early detection, clinical diagnosis, management and causality assessment of AESIs is still limited in low- and middle-income countries and PICs. WHO facilitates the collaboration of countries with limited capacity with regional stakeholders in clinical management and causality assessment of rare AESIs.

2.5 Vaccine access and availability

2.5.1 Key milestones

By mid-November 2021, a total of 22 of the 37 countries and areas in the Region received enough courses\(^{20}\) for eligible target populations (those at least 18 years old). For priority groups: all 37 countries and areas have received sufficient courses to vaccinate all their HCWs; and 36 have received sufficient courses for all people aged 60 years and above.

2.5.2 Research and development

Research and development of COVID-19 vaccines continues to increase. As of this writing, the WHO R&D Blueprint\(^{21}\) tracker of the research and development landscape has recorded 326 candidate vaccines in the pipeline. Of these, 132 are in the clinical phase and 194 in the pre-clinical phase.

In the Region, the Philippines is participating in WHO-coordinated vaccine trials that aim to uncover second-generation vaccines with greater efficacy and protection against VOCs to offer longer-lasting protection. Innovations in storage and needle-free administration of vaccines are also being explored.

2.5.3 Regulatory preparedness

In 2018, the Western Pacific Regional Action Agenda on Regulatory Strengthening, Convergence and Cooperation for Medicines and the Health Workforce kick-started the work on regulatory preparedness for public health emergencies. In the context of COVID-19, bringing together national regulatory authorities (NRAs) to develop legal frameworks has proven to be a timely step: to facilitate the entry of products during public health emergencies, to share information and to draw mechanisms for regulatory reliance. WHO assisted NRAs across the Region in establishing a mechanism to issue emergency use authorization through reliance and recognition of the WHO EUL and stringent regulatory authority decisions on emergency use authorization or conditional marketing authorization of medical products during public health emergencies.

2.5.4 Access and availability in the Region

Countries and areas in the Region have accessed COVID-19 vaccines through different sources, including COVAX, donations and government procurement. A total of 1.53 billion courses are needed to vaccinate all people aged 18 years and older in the Region.\(^{22}\) Excluding China, this figure shrinks to 396 million courses. As of 12 November 2021, the number of courses received from all sources is estimated to total 1.58 billion including China, or 419.7 million excluding China. Currently, 22 of 37 countries and areas in the Region have received enough courses for eligible target populations: Australia, Brunei Darussalam, Cambodia, China, Cook Islands, Fiji, Guam, Japan, Kiribati, Macao SAR (China), Malaysia, Mongolia, Niue, the Commonwealth of the Northern Mariana Islands, Palau, Pitcairn Islands, the Republic of Korea, Samoa, Singapore, Tokelau, Tuvalu, and Wallis and Futuna.

An additional 28.8 million doses need to be mobilized to cover all eligible populations in countries and areas in the Region.

2.5.5 Vaccines through COVAX

COVAX has been critical for the procurement of vaccines. As of November 2021, COVAX has allocated 56.38 million courses to 20 countries and areas in the Region – out of 600 million courses allocated globally – through 11 regular allocation rounds, seven administrative (exceptional or
special) rounds, and 34 dose-sharing rounds using dose donation.

2.6 Impact of the pandemic on regular immunization programmes and vaccine-preventable disease surveillance

In 2020 and 2021, the Region has continued to achieve high immunization coverage with routine/regular vaccines, despite temporary disruptions, as a result of mitigation measures implemented. However, among the countries and areas in the Region with available estimates, few reported more than a 5% decrease in diphtheria-pertussis-tetanus vaccine third dose (DPT3) coverage from 2019 to 2020, based on the data reported through the annual WHO/UNICEF electronic Joint Reporting Form (eJRF) 2020. They are Kiribati, the Commonwealth of the Northern Mariana Islands, the Philippines, Tokelau and Vanuatu.

Despite the significant efforts of countries and areas to sustain immunization services and activities during the pandemic, measles (and rubella) immunity gaps have increased in some countries. Large declines in the coverage of measles-containing vaccine first dose (MCV1) were reported by the Lao People’s Democratic Republic, Malaysia, Papua New Guinea, the Philippines and Viet Nam, posing threats of resurgence of endemic measles followed by large-scale outbreaks of imported measles.

Outbreaks of poliomyelitis (polio) in 2019 in the Philippines and Malaysia were declared over in May and August 2021, respectively, after nearly two years of intensive vaccination campaigns and surveillance activities. However, large declines in the coverage of polio vaccine third dose were reported in Papua New Guinea and the Philippines from 2020 to mid-2021. The re-emergence of vaccine-derived poliovirus in areas with suboptimal vaccine coverage represents a risk for further circulation and outbreaks.

Detection, reporting and investigation of acute flaccid paralysis and suspected measles cases were seriously affected in some countries and areas due to redeployment of vaccine-preventable disease (VPD) surveillance officers to the COVID-19 response. Laboratories were also repurposed for COVID-19 testing.

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24 WHO/UNICEF eJRF and TAG 2021 documents.
Fig. 1.  COVID-19 vaccination coverage (all recommended doses) among HCWs

(30 November 2021)

Source: WHO Western Pacific Region Vaccination Incident Management and Support Team internal dashboard

Fig. 2.  COVID-19 vaccination coverage (all recommended doses) among elderly

(30 November 2021)

Source: WHO Western Pacific Region Vaccination Incident Management and Support Team internal dashboard

Fig. 3.  COVID-19 vaccination coverage (all recommended doses) for the entire population

(30 November 2021)

Source: WHO Western Pacific Region Vaccination Incident Management and Support Team internal dashboard
3. Regional objectives and targets of COVID-19 vaccination response in 2021–2022

3.1 Regional objectives

3.1.1 Regional objective 1
Sustainable reduction of:
1) mortality and morbidity due to COVID-19 among HCWs and elderly;
2) mortality and morbidity due to COVID-19 among other high-risk populations;
3) burden on health-care systems due to COVID-19;
4) number of severe cases and deaths due to COVID-19; and
5) number of symptomatic COVID-19 cases.

3.1.2 Regional objective 2
Implementation of the RSF strategies through COVID-19 vaccination response:
1) Establish platforms for immunization services along the life course (RSF Strategy 1.2).
2) Promote preparation and implementation of tailor-made immunization strategies (RSF Strategy 1.3).
3) Strengthen COVID-19 vaccine security (RSF Strategy 1.4).
4) Strengthen vaccine safety and safe immunization (RSF Strategy 1.6).
5) Ensure preparedness for and timely/rapid response to safety events related to vaccines or immunization programmes (RSF Strategy 3.2).
6) Promote vaccine confidence, acceptance and demand (RSF Strategy 1.2).
7) Generate quality data for ensuring continuous improvement of immunization programmes and strengthening the overall health system (RSF Strategy 2.3).
8) Promote evidence-based decision-making and action (RSF Strategy 2.4).

3.2 Regional targets

3.2.1 Regional targets by the end of 2021
1) Achieve vaccination coverage of at least 90% with all recommended doses for HCWs and elderly
2) Expand and accelerate vaccination for other high-risk populations (individuals with comorbidities, high-risk sociodemographic groups, essential workers outside of health sector, high-risk employment groups, etc.).
3) Start additional dose(s) of vaccine to protect immunocompromised people and older people (see Section 2.2.5).
4) Achieve vaccination coverage with at least one dose for the entire population:
   • >40% in non-PICs
   • >90% in PICs.

3.2.2 Regional targets in 2022
1) Achieve vaccination coverage of at least 80% with all recommended doses for the entire population by the first half of 2022.
2) Monitor and evaluate the impact of vaccination on morbidity and mortality of COVID-19.
3) Revise vaccination strategies (including introduction of booster dose/s) and adaptation of heterologous schedule to address evolving epidemiology (such as emergence of new variant/s) and sustain the progress achieved in Regional objective 1.

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25 Discussed with and supported by TAG during the 30th TAG meeting in June 2021.
26 High-risk populations – to be defined by country with reference to WHO SAGE Prioritization Roadmap or to be defined through updating national vaccination strategies and/or national deployment and vaccination plan (NDVP).
28 During the 30th TAG meeting in June 2021, this regional target was supported as by the end of 2022. Considering the Region’s vaccination progress since June 2021, the regional target was moved earlier to the first half of 2022. Regional target of vaccination coverage for the entire population by the end of 2022 will be proposed and discussed during the TAG meeting in June 2022.
3.3 Strategy to achieve global COVID-19 vaccination by mid-2022

3.3.1 Global goal and coverage targets

As stated in the *Strategy to Achieve Global Covid-19 Vaccination by mid-2022*:

The immediate goal of the global COVID-19 vaccination strategy is to minimize deaths, severe disease and overall disease burden; curtail the health system impact; fully resume socioeconomic activity; and reduce the risk of new variants.

In the face of an evolving and increasingly transmissible virus, high population immunity is essential to achieve this goal, which means vaccinating broadly. Based on current knowledge, this requires fully vaccinating at least 70% of the world’s population, accounting for most adults and adolescents and for the vast majority of those at risk of serious disease.

Given ongoing vaccine supply constraints, for greatest impact and equity it is crucial to vaccinate in a stepwise, internationally coordinated manner with time-bound coverage targets:

- by end September 2021 10% coverage in all countries
- by end December 2021 40% coverage in all countries
- by end June 2022 70% coverage in all countries.

3.3.2 Priority actions to achieve global targets

All countries and areas

1) Establish updated national COVID-19 vaccine targets and plans defining: (i) dose requirements to guide manufacturing investment and vaccine redistribution and (ii) financial and programmatic resource needs to guide internal planning and external support.

2) Monitor vaccine demand and uptake carefully to rapidly adapt immunization services and ensure continuity of vaccine supplies.

3) Commit to equitable distribution of vaccines in line with the WHO stepwise approach.

4) Revise national vaccination strategies, policies and prioritization as needed to harness emerging evidence in order to maximize the impact of existing, modified and new vaccines.

**WHO**

1) Work in close collaboration with key partners to monitor progress, identify changes needed to resolve bottlenecks, coordinate information, and prioritize actions.

2) Directly support countries to develop and sustain rapid, effective and high-quality COVID-19 vaccine delivery programmes that can achieve the global targets, while strengthening the essential immunization programme and other health services.

3) Monitor and report monthly on progress towards the global COVID-19 vaccination goals at the national and subnational levels.

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4.1 COVID-19 vaccine access and availability (Pillar 1)

4.1.1 Countries and areas
- Ensure regulatory preparedness, including adjustments of regulatory authorization in case of variations against EUL, so that vaccines made available through COVAX and bilateral arrangements can be brought rapidly into countries.
- Strengthen systems, processes and mechanisms for ensuring the safety, quality and efficacy of COVID-19 vaccines in pre- and post-authorization phases.
- Strengthen mechanisms for the detection and response to substandard and falsified vaccines.

4.1.2 WHO Regulations
- Support countries to ensure regulatory approvals and meet regulatory requirements for COVID-19 vaccines in a timely manner.
- Strengthen NRAs using lessons and experiences from the COVID-19 pandemic, including their role in pharmacovigilance, and other public health emergencies.
- Strengthen the Regional Alliance of NRAs as a platform to build trust, cooperation and collaboration across countries and areas in the Western Pacific.
- Support countries’ participation in the global mechanism for surveillance, detection, reporting and response to substandard and falsified medical products, including COVID-19 vaccines.

Access
- Strengthen efforts to maximize vaccine supply and transparent allocation across all channels, including through COVAX, direct procurement and donations.
- Strengthen sharing of the most up-to-date information on regulatory status, sources, prices and production capacity to support countries and areas in decision-making and planning related to bilateral procurement and donations of vaccines.
- Support countries to effectively use bilateral arrangements to increase timely and equitable access to and availability of vaccines across the Region.
- Provide regional input to COVAX so that their policies ensure equitable allocation and supply of vaccines, including effective mechanisms for dose-sharing and donations.
- Support countries to develop vaccine needs scenarios based on public health and social and economic goals.
- Support countries with capacity for vaccine production to participate in global mechanisms to facilitate the expansion of vaccine production, including technology transfer and R&D initiatives for mRNA and other vaccine platforms.

4.2 COVID-19 vaccine deployment and immunization (Pillar 2)

4.2.1 Countries and areas
- Accelerate vaccination of high-priority groups, especially older adults and those with comorbidities, and further expand vaccination to other priority risk groups, including sociodemographic and employment groups.
- Introduce additional doses of vaccine under EUL for immunocompromised people and older people.
- Update NDVPs to address additional risk groups and emerging issues and challenges.
- Supplement human resource needs by engaging and training more HCWs and mobile vaccination teams.
- Ensure vaccines are delivered and distributed efficiently with due consideration of cold chain requirements from central storage to subnational levels.
- Intensify vaccination delivery through expansion of vaccination sites, utilization of non-hospital settings, promotion of mass vaccination activities and mobile outreach vaccination for marginalized and vulnerable populations.
• Develop and implement new strategies to address vaccine hesitancy, manage product preference and prevent discrimination related to vaccination status.
• Address barriers to electronic reporting by developing fit-for-purpose and user-friendly data entry platforms (such as computerized databases and smartphones).

4.2.2 WHO
• Advocate to countries and partners to ensure equitable vaccination of priority target populations in countries, particularly older adults, individuals with comorbidities, essential workers outside the health sector, and sociodemographic or employment groups at elevated risk.
• Monitor and analyse vaccine utilization and coverage by priority group and dose for each country to address issues and challenges in COVID-19 vaccine deployment.
• Provide technical guidance to countries to update their NDVPs.
• Provide technical support to countries to develop and implement tailor-made vaccination strategies by facilitating the exchange of experiences, good practices and lessons among countries and areas and partners.
• Provide technical support to countries to update vaccination strategies (such as the introduction of booster doses, adaptation of heterologous schedules, etc.) to address emerging challenges affecting vaccine effectiveness (emergence of new variants, waning immunity, etc.).
• Work with Member States and partners to mobilize resources to expand vaccination sites at the subnational level, utilize non-hospital settings, and conduct mass vaccination activities and mobile outreach vaccination for marginalized and vulnerable populations.
• Support countries and partners to address vaccine hesitancy, manage brand preference and prevent discrimination through advocacy, capacity-building and risk communication and community engagement while taking into consideration country-specific contexts.

4.3 COVID-19 vaccine and immunization safety (Pillar 3)

4.3.1 Countries and areas
• Strengthen and expand the national and subnational capacities for COVID-19 vaccine-related AEFI surveillance and management to: (i) manage an increasing number of vaccine and immunization safety events due to large and increasing numbers of people vaccinated with COVID-19 vaccines; and (ii) ensure vaccine and immunization safety for COVID-19 vaccination programmes.
• Strengthen subnational capacity for AEFI investigation by forming and training investigation teams.
• Enhance the capacity for early detection and clinical management of AESIs such as TTS and myocarditis at both national and subnational levels by: (i) training immunization staff on detection and initial management of emergencies and AESIs; (ii) training clinical staff on detection and clinical management of these AESIs; and (iii) equipping clinical staff with guidance, diagnostic tests and essential medicines for management of these AESIs.
• Increase capacity for causality assessment by: (i) training and expanding national and subnational AEFI committees to conduct timely and comprehensive causality assessments of AESIs and deaths following immunization; and (ii) proactively seeking support from WHO as needed.
• Share COVID-19 vaccine safety data between the national immunization programmes and NRAs for timely benefit–risk assessment and decision-making to ensure vaccine safety.
• Expand the sharing of vaccine and immunization safety data with WHO, including sharing adverse event reports with the global safety database, VigiBase.
• Prepare and use tailored risk communication tools and strategies to address safety concerns arising with COVID-19 vaccination including TTS, myocarditis and coincidental deaths among vaccinated adults.
4.3.2 WHO

- Closely monitor AEFI s and AESI s across the Region, in collaboration with global and regional immunization safety partners, to provide countries with timely alerts on COVID-19 vaccine safety events, especially those of regional and global interest.
- Continue providing countries and areas with regular updates on COVID-19 vaccine safety profiles to inform decision-making in vaccine programmes.
- Facilitate prompt sharing of data on serious AEFIs and AESI s among Member States and partners to support decision-making on COVID-19 vaccination.
- Support middle-income countries and PICs by providing guidelines and training materials and facilitating training to: (i) establish and enhance national and subnational capacities for investigation and management of serious AEFIs; (ii) strengthen national and subnational AEFI committees in timely and comprehensive causality assessment, upon request; and (iii) strengthen national COVID-19 vaccination safety data management.
- Support countries to survey COVID-19 vaccines, develop strategies to overcome hesitancy, and build and sustain acceptance and demand for COVID-19 vaccination.
- Conduct COVID-19 vaccination intra-action reviews and post-introduction evaluations, where feasible, with the support of WHO and partners.
- Conduct COVID-19 vaccine effectiveness and impact studies, to expand the evidence base for newly developed vaccines and document their impact in real-world settings.

4.4 WHO

- Provide countries and areas of the Region with updated information on the characteristics and safety of COVID-19 vaccines used or slated to be used in the Region, as well as recommendations on vaccination policy.
- Collaborate with countries and areas of the Region in collecting, analysing and sharing information and data on vaccine availability, deployment and immunization safety through the Weekly COVID-19 Vaccination and Safety Update and the COVID-19 Vaccination Country/Area Profiles.
- Develop and periodically share a regional bulletin on COVID-19 vaccination and safety for countries and areas and partners.
- Provide support to countries and areas to:
  1) plan and conduct vaccination intra-action reviews and post-introduction evaluations;
  2) monitor the impact of COVID-19 vaccination on transmission and epidemiology of COVID-19;
  3) plan and conduct vaccine effectiveness and impact studies in selected countries to ensure regional representation in the evidence base for vaccines being used in the Region;
  4) monitor COVID-19 infections in people who have been fully vaccinated, especially those that result in hospitalization or death, and provide virological characterization of the virus; and
  5) make evidence-based decisions to adjust and optimize COVID-19 vaccination strategies.
Annexes

Annex 1. Synergies between implementation of the Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific (2021–2030) and pillars for COVID-19 vaccination response

Note: The Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific (2021–2030) has three strategic objectives and 18 strategies. The above strategies are applicable to the COVID-19 vaccination response.

Annex 2. Ten strategies of the Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific (2021–2030) supporting (and to be accelerated by) the COVID-19 vaccination response

Strategy 3.4 Ensuring preparedness for and response to public health emergencies affecting immunization systems and programmes and/or interrupting deliveries of immunization services

Preparedness

1) Regularly conduct risk assessments at the national and subnational levels to identify population subgroups or geographic areas at higher risk of morbidity and mortality during emergencies.
2) Include an emergency immunization activity plan into existing national health service packages for disaster response.
3) Develop strategies for the continuity of immunization service delivery and mechanisms for response and recovery operations as part of national health sector preparedness plans.

Response

1) Rapidly develop and implement plans for sustaining the delivery of routine immunization services in an effort to minimize the accumulation of unvaccinated individuals, without compromising the health and safety of health-care workers, caregivers and patients during emergencies by:
   a. prioritizing vaccinations for epidemic-prone diseases (i.e., polio, measles and rubella, diphtheria and pertussis) while vaccination of other antigens may be delayed;
   b. prioritizing immunization activities for vulnerable populations at higher risk of morbidity and mortality from VPDs;
   c. ensuring that the National Immunization Technical Advisory Group (NITAG) or equivalent expert body is included in decision-making around modifications in immunization policies or practices during emergencies; and
   d. ensuring that parents are notified of any temporary changes in immunization practices during emergencies.
2) Ensure that VPD surveillance, including robust laboratory support, is maintained, reinforced and intensified as much as is feasible to enable early detection of and response to VPD outbreaks.
3) Maintain vaccine supply and vaccination logistics by:
   a. evaluating damage to the cold chain and the loss of biologicals, syringes and supplies;
   b. immediately restocking vaccines utilized routinely by NIPs as soon as possible; and
   c. initiating recovery of the cold chain (purchase of refrigerators, thermoses, thermometers, etc.).
4) Ensure confined groups that result from mass population movements or confinement, such as in quarantine facilities, are protected against epidemic-prone VPDs (e.g., polio, measles and rubella, diphtheria, pertussis, etc.) through documentation of their vaccination status followed by catch-up vaccinations as soon as feasible.
5) If VPD outbreaks occur during public health emergencies, adjust response activities to ensure the health and safety of health-care workers, caregivers, patients, and the general public during emergencies. The target population for mass vaccination activities may need to be limited to maximize the protection of the most vulnerable or most accessible, as allowed by the circumstances.
6) Ensure that immunization services are restarted at full capacity as soon as possible to limit the accumulation of susceptible unvaccinated individuals by:
   a. identifying individuals who missed vaccinations during the emergency;
   b. identifying and describing new or worsening immunity gaps;
   c. re-establishing community demand and providing catch-up vaccinations;
   d. restarting activities to strengthen childhood routine immunization programmes; and
   e. planning and conducting, if feasible and appropriate, catch-up vaccinations and SIAs in target high-risk areas.
Strategy 3.5  Ensuring preparedness for and response to events or outbreaks of novel diseases requiring an immunization response

1) Immunization systems and programmes including VPD surveillance systems, laboratories and laboratory networks should play active roles in preparedness for and response to events or outbreaks of novel diseases requiring an immunization response once safe and effective vaccines become available.

2) Core principles of VPD outbreak preparedness and response, described in Strategy 3.1, should form a foundation of cross-cutting outbreak response capacity, especially through strengthening policies and structures for overall strategic leadership and response coordination.

Preparedness

1) Ensure that VPD outbreak response policies, plans, protocols, skills and contingency resources are flexible and adaptable for the response to novel infectious disease emergencies.

2) Continue strengthening systems for both disease-specific VPD surveillance with laboratory confirmation and early-warning syndromic infectious disease surveillance.

3) Continue improving routine diagnostic capabilities for common microbial pathogens.

4) In addition to simulating known VPD outbreaks, conduct VPD outbreak simulation exercises of hypothetical scenarios that include emergence of novel pathogens with a variety of epidemiological characteristics.

5) Proactively develop a national plan for vaccine development and immunization response based on an epidemiological analysis of the highest risk groups for infection, disease and transmission in anticipation of when a vaccine is developed and made available for mass administration.

6) Regularly update the national plan for vaccine development and immunization response as new information is learnt about clinical and epidemiological characteristics of the disease.

7) Prepare for vaccine deployment.

Response

1) Prepare and implement the national plan for vaccine development and immunization response.

2) Implement response activities 1 to 6 described in RSF Strategy 3.4.
Strategy 1.4  Ensuring vaccine security in all countries and areas in the Region

Quality

1) Assure quality of vaccine through strengthening national regulatory capacity to allow diversification of manufacturing sources.
2) Assure quality of vaccine at the service-delivery level by ensuring effective vaccine management by vaccinators and health-care providers.

Affordability

1) Ensure that new vaccines meet country needs through an evidence-based decision-making process.
2) Ensure that vaccines are priced affordably to sustain the supply and/or demand through consultation with manufacturers and other international partners.
3) Consider establishment of a new pooled procurement mechanism by a group of selected countries to reduce the cost of vaccine (such as Vaccine Independence Initiative for 13 Pacific island countries and the Receiving Fund for Latin American countries).
4) Ensure that vaccines are introduced in a timely manner through an evidence-based decision-making process and well-planned preparation.

Production and supply

1) Promote integration of the immunization supply chain into the entire primary health-care system.
2) Strengthen national forecasting, planning and procurement capabilities for all vaccines used in NIPs through close collaboration with manufacturers and other international partners.
3) Enhance communication and coordination with manufacturers to ensure adequate vaccine production and supply.
4) Consider feasibility of a new pooled procurement mechanism by a group of select countries to ensure timely and sufficient supply of vaccines.
5) Improve timely access to quality vaccines through strengthening national regulatory capacity.

Financial sustainability

1) Ensure good governance, stewardship and accountability of immunization programme financing and management to achieve high performance.
2) Promote participation of subnational governments in immunization financing.
3) Ensure funds for public health emergencies related to VPDs, vaccines and immunization.
4) Secure funding for research and innovations in the field of vaccines and immunization service delivery.
5) Advocate with high-level decision-makers for sustainable immunization financing and long-term vaccine procurement strategies.
Strategy 1.2 Expanding immunization services along the life course

1) Determine the burden of VPDs beyond childhood by strategic use of epidemiologic intelligence through optimized and integrated VPD surveillance.

2) Expand the immunization schedule from childhood along the life course to address the burdens of VPDs determined throughout the life course.

3) Introduce, or accelerate the introduction of, booster doses and new vaccines to address the burdens of VPDs determined throughout the life course (e.g., pneumococcal diseases, rotavirus diarrhoea, human papillomavirus, seasonal influenza, etc.):
   a. New vaccines
   b. Booster doses in the second year of life
   c. Vaccination of adolescents, women of childbearing age and older people.

4) Raise awareness among health-care professionals on the burdens of VPDs throughout the life course, and the importance and measures for decreasing and preventing the burden of VPDs through vaccines and the immunization programme.

5) Generate demand among the general population for vaccination through the life course for decreasing and preventing morbidity, mortality and disability caused by VPDs over the life course (Strategy 1.7).

6) Establish integrated delivery points of contact between immunization and other essential health interventions for various target age groups.

7) Expand vaccine delivery through collaboration beyond the health sector, and develop and implement context-specific immunization programmes such as:
   a. Preschool, school and universities
   b. High-risk occupational groups (such as health-care workers, the military, travel industry)
   c. Business settings (such as factories)
   d. Nursing care homes
   e. International travellers.
Immunization along the life course

<table>
<thead>
<tr>
<th>Pregnancy</th>
<th>Newborn &amp; Neonatal</th>
<th>Infancy</th>
<th>Early Childhood</th>
<th>Adolescents</th>
<th>Youth &amp; Adulthood</th>
<th>Older Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early in pregnancy</td>
<td>&lt;24 hrs of life</td>
<td>&lt;1 year</td>
<td>1-9 years</td>
<td>≥10-19 years</td>
<td>20-65 years</td>
<td>&gt;65 years</td>
</tr>
</tbody>
</table>

- **Tetanus (Td/Tdap)**
- **Influenza**
- Hepatitis B
- Tuberculosis
- Diphtheria
- Tetanus
- Pertussis
- Polio
- Hepatitis B
- Pneumococcal disease
- Hib
- Rotavirus
- Measles
- Rubella
- Mumps
- Japanese encephalitis
- Varicella
- Meningococcal disease
- Typhoid

**Routine immunization**

**In specific regions**

**In specific groups**

*Source: Regional Strategic Framework for Vaccine-Preventable Diseases and Immunization in the Western Pacific 2021–2030. Manila: WHO Regional Office for the Western Pacific; (in press).*

**Strategy 1.3  Closing immunity gaps through tailor-made immunization strategies**

**Identification and characterization**

1) Generate disease burden data by age, gender, geographical location and socioeconomic status through the use of epidemiological intelligence obtained from optimized and integrated VPD surveillance systems.
2) Conduct a prompt and thorough outbreak investigation and risk assessment immediately after the detection of a VPD outbreak to quickly identify and characterize undetected immunity gaps.
3) Conduct a knowledge, attitude and practice (KAP) survey for NIPs to design targeted strategies that increase uptake of vaccination along the life course.
4) Conduct a serosurvey for a defined population over a specified period of time, or establish and conduct serosurveillance for a defined population on a periodical basis to determine the level of antibodies against a given etiologic agent as a direct measure of the population immunity, in an effort to detect age cohorts or special groups with immunity gaps, and to monitor and evaluate vaccine effectiveness.

**Closure of immunity gap**

1) Enhance vaccine confidence, acceptance and demand among the population with an immunity gap (Strategy 1.7).
2) Enhance two-way communication and engagement with communities and health workers.
3) Plan and conduct catch-up immunization activities through the routine immunization programme.
4) Utilize the World Immunization Week (the last week of every April) to raise awareness and conduct catch-up immunization activities for people who were missed in the NIP.

5) Plan and conduct high-quality SIAs to prevent large-scale outbreaks (e.g., cVDPV) and nationwide resurgences (e.g., measles) caused by accumulation of susceptible children missed by NIPs.

6) Plan and conduct SIAs for high-risk groups (e.g., ethnic minorities) or in high-risk areas (e.g., urban slums) and plan and conduct targeted, tailored immunization campaigns to protect high-risk populations (e.g., ethnic minority groups, urban slum dwellers, migrants, non-state citizens, etc.) from morbidity, mortality and disability caused by VPDs and outbreaks of VPDs (e.g., measles, rubella, diphtheria, pertussis, etc.)

7) Conduct outbreak response immunizations in a timely manner after prompt and thorough outbreak investigations and risk assessments to fill residual immunity gaps causing further spread of VPDs (e.g., cVDPV, measles, rubella, diphtheria, etc.).

Strategy 1.6 Ensuring vaccine safety and safe immunization

Vaccine safety

1) Establish and maintain a fully functional NRA to monitor and evaluate inherent properties and quality defects of vaccine products.

2) Collaborate with other countries to establish a subregional regulatory body to perform NRA functions for Pacific island countries and areas.

Safe immunization

1) Strengthen and maintain technical capacity of health-care providers at all levels through regular training on immunization safety and AEFIs.

2) Ensure immunization safety supplies, e.g., auto-disable syringes, reuse prevention syringes for the reconstitution of vaccines during routine immunization services and mass vaccination campaigns, and safety boxes, are adequately available at the service-delivery level.

3) Ensure environmentally responsible waste management is properly carried out with adequate disposal facilities, supplies, and correct practices at the district and service delivery levels.

Safety surveillance and causality assessment

1) Detect, report, investigate and respond to AEFIs in a timely manner through a well-functioning immunization safety surveillance in collaboration with NRAs.

2) Establish and support a national immunization safety expert committee to conduct causality assessments and provide evidence-based recommendations in response to vaccine and immunization safety events.

Injury compensation

1) Develop a programme or procedures to compensate individuals who experience a vaccine-related injury.

Strategy 3.2 Ensuring preparedness for and response to a safety event related to vaccines or immunization programmes

Preparedness

1) Establish and sustain a functional immunization safety surveillance system for: (i) prompt detection and reporting of AEFIs; (ii) thorough investigation; (iii) analysis; (iv) assessment of causality; and (v) corrective actions and feedback.

2) Establish and sustain a functional national immunization safety expert committee as part of the immunization safety surveillance system for establishing the causality of serious AEFIs.
3) Ensure all necessary functions of the NRA\(^1\) are in place to prevent and be prepared for vaccine quality defect-related events, and monitor pharmaceutical outlets to prevent the use of substandard, falsified or unregistered vaccines by immunization service providers.

4) Have plans, guidelines and standard operation procedures by both the NIP and NRA for properly responding on time to AEFIs and vaccine quality defect-related events.

5) Ensure trained human resources to implement immunization safety surveillance.

6) Ensure sufficient funds are available to release in an emergency response to serious AEFIs and vaccine quality defect-related events.

7) Prepare in advance awareness and advocacy materials to use in the emergency response.

8) Periodically and proactively communicate and advocate the benefits and risks of vaccines and immunization to increase public awareness and stakeholder support to avoid negative responses in a safety event caused by vaccines or immunization.

**Response**

1) Carry out a joint NRA–NIP response, which includes:
   a. verification and confirmation of a reported AEFI;  
   b. search for additional AEFI cases;  
   c. timely and comprehensive investigation;  
   d. causality assessment by a national immunization safety expert committee; and  
   e. epidemiological analysis of AEFI data by the NIP and/or NRA to determine vaccine reaction rates.

2) Implement follow-up actions based on established causality and the established vaccine reaction rates:
   f. with an AEFI caused by vaccine product-related reaction (more than expected vaccine reaction rates or newly identified vaccine reaction signal) or vaccine quality defect-related reaction, the NRA should take the necessary regulatory actions (e.g., changing lot/batch, shifting to another supplier or product, etc.).
   g. with an AEFI caused by immunization error-related reaction, the NIP should inform parents and the public of the service gaps and state that corrective actions will be taken to ensure immunization safety, rectify immunization service gaps (e.g., vaccine storage issues, vaccine preparation, administration errors, etc.) and retrain immunization staff.
   h. with an AEFI caused by either anxiety-related reaction or coincidental event, the NIP should inform the parent and the public of causes of AEFIs and avoid or minimize public concerns and panic.

3) Immediately quarantine substandard, falsified or unregistered vaccines; alert the public about these vaccines; and recall substandard, falsified or unregistered vaccines based on thorough investigation.

4) Monitor media (printed, electronic and social) reports and provide alerts within the ministry of health and stakeholders to increase vigilance and appropriate responses.

5) Carry out an awareness and advocacy campaign for maintaining public confidence, acceptance and demand for vaccination.

6) Resume the vaccination programme as early as possible, if vaccination programme has been suspended, to avoid the accumulation of susceptible children triggering VPD outbreaks (e.g., measles).

**Strategy 1.7  Enhancing vaccine confidence, acceptance and demand**

**Confidence**

1) Provide the public with accurate information on the benefits of vaccines and immunization to mitigate negative behavioural and social drivers of vaccination.

2) Promote the reliability of vaccination services and competence of health professionals providing those services.

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\(^1\) Countries producing vaccines need to exercise six critical regulatory functions, namely: (i) a published set of requirements for licensing; (ii) surveillance of vaccine field performance; (iii) a system for lot releases; (iv) use of laboratories when needed; (v) regular inspections for good manufacturing practices; and (vi) evaluation of clinical performance.
3) Include the topic of immunization in educational curricula of health-care worker training schools and provide health-care workers with guidance and training for effective and efficient interpersonal communication and advocacy.

4) Develop information resources and processes for sharing resources, for policy-makers, advocacy groups and the media.

5) Monitor and build public confidence through creating forums for public engagement in sharing opinions and concerns on vaccines and immunization.

Acceptance

1) Promote positive attitudes towards vaccination among the population through expanded community engagement, including through dissemination of information on immunization by trusted public figures and celebrities.

2) Monitor rumours on social media platforms and in communities and respond in real time with proactive communication using a variety of strategies.

3) Develop and implement evidence-based, human-centred and tailored solutions to address vaccine hesitancy in the local context.

Demand

1) Collect information on the most common causes of hesitancy and refusal of vaccination, and identify groups most prone to those perspectives.

2) Encourage immunization programme managers, public and private sector providers, local leadership, and civil society organizations to hear and act on the voices of individuals and communities on vaccines and immunization services.

3) Foster and enhance the actions of individuals and communities that are proactively seeking and supporting vaccination services and encourage their participation in advocacy activities.

Strategy 2.3 Generating quality data for ensuring continuous improvement of immunization programmes and strengthening the overall health system

1) Improve the quality of immunization programme data, with disaggregation at the subnational level and by special populations, through:
   a. enhanced data standards, standard operating procedures, and data recording and reporting tools that are adapted to emerging needs;
   b. capacity-building of the health workforce on data-related capacities as relevant to each level through effective pre-service and on-the-job training approaches;
   c. regular monitoring and periodic assessments of data quality; and
   d. triangulation of different data sources.

2) Conduct quality and representative surveys and serosurveys based on international standard methodologies and ensure use of their results.

3) Enhance coordination between immunization programmes and all relevant stakeholders for the integration of immunization programme data in broader health management and logistics management information systems.

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2 At the service-delivery level, data recording, data aggregation and use of data for microplanning; at the district and provincial level, data quality assessment, basic data analysis, basic data management and use of data for planning; at the national level, data quality assessment, advanced data analysis and monitoring of complex indicators, advanced data management and design of tools/standard operating procedures, and use of data for planning and definition of strategies.

3 For example, triangulate coverage and surveillance data to identify exclusion of specific populations from coverage calculation; use of administrative and survey data to increase accuracy of coverage estimation and target populations; and immunization coverage and vaccine stock data to rapidly identify issues with vaccine distribution at the health facility level.
4) Engage immunization programmes in understanding and shaping national eHealth strategies, and supporting the implementation of information and communications technology (ICT) solutions and innovative approaches adequate to the country context, including electronic immunization registry.

5) Increase collaboration between the immunization programme and relevant stakeholders to improve availability and quality of data that are not directly managed by Expanded Programme on Immunization, through:
   a. strengthening monitoring of financing indicators, behavioural data and social determinants for immunization; and
   b. strengthening target population data (e.g., through quality birth registration systems, improved census projections and triangulation of data).

Strategy 2.4  Driving evidence-based decision-making and action for immunization and disease control and elimination

1) Build the capacity of the health workforce to use data for action through pre-service training, on-the-job training and continuous education opportunities on basic epidemiology and data analysis.

2) Ensure that immunization and VPD surveillance modules are included in: (i) relevant curricula and training materials for health workforce development; and (ii) in-depth epidemiology training courses, such as the Field Epidemiology Training Programme.

3) Develop standard guidelines and tools to guide analysis and triangulation of key data, and their interpretation and visualization, as relevant at all levels.

4) Build capacity for the critical appraisal of data by systematically including an analysis of available data (including non-EPI data, such as financing, health-seeking behaviour, social determinants) in programme reviews and evaluations.

5) Periodically conduct independent immunization programme reviews at the national and subnational levels.

6) Regularly conduct risk assessments on VPD outbreaks.

7) Ensure that programme reviews and risk assessments are closely linked to the development and updating of strategic and operational plans for VPD control and elimination.

8) Use evidence-based on programme reviews and risk assessment as the basis for policies, strategies and investments for VPD control and communicate the evidence clearly to non-technical decision-makers and conduct high-level advocacy.

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4 Comprehensive eHealth strategies exist or are being developed by most countries in the Western Pacific Region to ensure communication across digital information systems already in place in the public and private sectors (such as in China, Mongolia and Viet Nam) and to support the rapid adoption of ICT solutions (such as in the Lao People’s Democratic Republic and Solomon Islands).