Philippines COVID-19 Vaccine Post-Introduction Evaluation

18–27 April 2022
PHILIPPINES
COVID-19 VACCINE
POST-INTRODUCTION EVALUATION

18–27 April 2022
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### Abbreviations and acronyms

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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AEFI</td>
<td>adverse event following immunization</td>
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<tr>
<td>AESI</td>
<td>adverse event of special interest</td>
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<tr>
<td>BHW</td>
<td>barangay health workers</td>
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<tr>
<td>CDC</td>
<td>United States Centers for Disease Control and Prevention</td>
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<td>CDSS</td>
<td>COVID-19 Vaccine Delivery Support</td>
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<tr>
<td>cPIE</td>
<td>COVID-19 vaccine post-introduction evaluation</td>
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<tr>
<td>COVAX</td>
<td>COVID-19 Vaccines Global Access</td>
</tr>
<tr>
<td>DOH</td>
<td>Department of Health</td>
</tr>
<tr>
<td>DTP3</td>
<td>third dose of diphtheria, tetanus toxoid and pertussis vaccine</td>
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<tr>
<td>EB</td>
<td>Epidemiology Bureau</td>
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<tr>
<td>eLMIS</td>
<td>e-logistics management information system</td>
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<tr>
<td>EUA</td>
<td>Emergency use authorization</td>
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<tr>
<td>EVMA</td>
<td>Effective Vaccine Management Assessment</td>
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<tr>
<td>FDA</td>
<td>Food and Drug Administration</td>
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<tr>
<td>HTAC</td>
<td>Health Technology Assessment Council</td>
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<tr>
<td>IATF-EID</td>
<td>Inter-Agency Task Force for the Management of Emerging Infectious Diseases</td>
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<tr>
<td>iClinicSys</td>
<td>Integrated Clinic Information System</td>
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<tr>
<td>IT</td>
<td>information technology</td>
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<tr>
<td>LGU</td>
<td>local government unit</td>
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<tr>
<td>MCV1</td>
<td>first dose measles-containing vaccine</td>
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<td>NAEFIC</td>
<td>National Adverse Events Following Immunization Committee</td>
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<td>NCD</td>
<td>noncommunicable disease</td>
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<td>NDVP</td>
<td>National Deployment and Vaccination Plan</td>
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<td>NITAG</td>
<td>National Immunization Technical Advisory Group</td>
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<tr>
<td>NRA</td>
<td>National Regulatory Authority</td>
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<tr>
<td>ODK</td>
<td>Open Data Kit</td>
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<tr>
<td>PHC</td>
<td>primary health care</td>
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<tr>
<td>PQS</td>
<td>Performance, Quality and Safety</td>
</tr>
<tr>
<td>RAEFIC</td>
<td>Regional Adverse Events Following Immunization Committee</td>
</tr>
<tr>
<td>RESU</td>
<td>Regional Epidemiology and Surveillance Unit</td>
</tr>
<tr>
<td>SAGE</td>
<td>Strategic Advisory Group of Experts on Immunization</td>
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<tr>
<td>UCC</td>
<td>ultra-cold chain</td>
</tr>
<tr>
<td>UMC</td>
<td>Uppsala Monitoring Centre</td>
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<tr>
<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td>VAS</td>
<td>Vaccine Administration System</td>
</tr>
<tr>
<td>VIMS</td>
<td>Vaccine Information Management System</td>
</tr>
<tr>
<td>VOC</td>
<td>Vaccination Operations Center</td>
</tr>
<tr>
<td>VORS</td>
<td>Vaccine Operations Reporting System</td>
</tr>
<tr>
<td>VPD</td>
<td>vaccine-preventable disease</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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Executive summary

The start of the COVID-19 vaccine roll-out in the Philippines on 1 March 2021 has led to the full vaccination of 60% of the population and more than 90% of its health workers by mid-April 2022. Although the overall COVID-19 vaccination coverage is high, disparities are seen among priority groups across different regions. At present, efforts are being channelled towards enhancing the coverage of primary series vaccines for priority populations, including older adults and socioeconomically disadvantaged groups, as well as improving booster dose coverage.

A post-introduction evaluation of the COVID-19 vaccines (cPIE) was undertaken to highlight key accomplishments and challenges faced during the vaccine roll-out, with the aim of refining current strategies. Additionally, this evaluation assessed the influence of the COVID-19 response on the larger immunization framework, offering recommendations to augment its impact in this rapidly evolving context. The cPIE was conducted from 18 to 27 April 2022 across seven regions, with evaluators from the World Health Organization (WHO), United Nations Children’s Fund (UNICEF), United States Centers for Disease Control and Prevention (CDC) and MM Global Health Consulting. This was carried out using the WHO COVID-19 Vaccine Post-introduction Evaluation Guide.

In general, the COVID-19 response and vaccination campaign in the Philippines have proven to be successful. The country stands out as one of the few in the Western Pacific Region to have used nine different vaccines. Despite providing an array of options, there were challenges related to managing different doses and dosing schedules, cold chain and storage requirements, and the handling and delivery of vaccines and supplies across the archipelago. Vaccination uptake was initially slow, linked to limited vaccine supply at the onset of the programme. However, a variety of innovative service delivery strategies, including outreach and mobile vaccination sites and organization of national vaccination days, significantly contributed to a rapid increase in coverage. Agile legal and regulatory actions, coupled with varied funding and procurement mechanisms, enabled the country to secure sufficient vaccine doses to inoculate priority populations and vulnerable groups with both primary series and booster doses.

Nevertheless, the COVID-19 pandemic and the intensive public health response it required have resulted in a significant decrease in routine immunization coverage, leading to a sharp fall in the first dose of measles-containing vaccine and a decline in fully immunized children during 2020–2021. This low coverage could precipitate outbreaks of vaccine-preventable diseases, such as measles, polio and diphtheria, unless timely mitigation strategies are implemented.

On a brighter note, the COVID-19 vaccination response has presented opportunities to bolster routine immunization. The National Immunization Program can harness the investments made, including effective multisectoral collaboration and coordination, innovative financing and delivery platforms, enhanced cold chain capacity and improved logistics and supply chain systems. The Philippines is also developing and implementing digital tools, which are invaluable for consolidating electronic health and immunization registries. These are key to tracking vaccination status and supporting vaccination beyond early childhood.

Experiences from the COVID-19 vaccination response should be documented and best practices adopted to facilitate their integration into the routine immunization system, thereby fostering a more robust and resilient immunization system.
1. Background

General

The Philippines, an archipelago of more than 7000 islands, is divided into three main groups: Luzon, Visayas and Mindanao. These islands are further subdivided into 17 administrative regions, 81 provinces, 146 independent and component cities, 1488 municipalities and 42 046 barangays, with the barangay being the smallest administrative unit. These regions are served by subnational or regional offices of various government departments and bureaus.

As of 2020, the estimated population of the Philippines stands at 111.6 million, ranking it among the most populous countries in South-East Asia. The demographic composition of the country is young, with roughly a third of the population being under 15 years of age. Older adults, defined as those aged 60 years and above, constitute about 11% of the population. An estimated 47% of the population resides in urban areas, predominantly in the National Capital Region.

Health-care delivery system

The health-care delivery system in the Philippines includes both the public and private sectors. The Local Government Code of 1991 prompted the devolution of health service delivery to local government units (LGUs), granting them full autonomy to finance and operate local health systems. The Department of Health (DOH) is responsible for formulating national policies, setting technical standards, enforcing health regulations, and monitoring and evaluating tertiary and specialized hospitals. Provincial governments manage provincial and district hospitals, while municipal governments offer primary care through rural health units, health centres and barangay health stations. The social health insurance programme was introduced in 1995; however, as of 2018, out-of-pocket expenses still constituted more than half of total health spending. The Universal Health Care Law was enacted in February 2019 to ensure equitable access to quality, affordable health-care services for the entire population.

Immunization systems and services

The Expanded Programme on Immunization (EPI), established in 1976, initially focused on six vaccine-preventable diseases (VPDs): tuberculosis, poliomyelitis, diphtheria, tetanus, pertussis and measles. The programme was broadened in 2010 by the Mandatory Infants and Children Health Immunization Act of 2011, which mandated free basic immunization for infants and children up to 5 years of age at any government health facility. Over the past decade, the programme has expanded considerably to cover more age groups with the introduction of newer vaccines. In 2013, school-based immunization targeting school-aged children with age-appropriate vaccines and missed doses was initiated, coordinated with the Department of Education. The vaccination of older people with pneumococcal conjugate vaccine and influenza vaccines was also mandated through the Expanded Senior Citizens Act of 2010.
Despite these advancements, coverage of fully immunized children remained below 80% over the past decade. A polio outbreak was declared in 2019, two decades after the country achieved polio-free status, shortly after a major measles outbreak vaccination response. A preventative measles-rubella and oral polio vaccine supplemental immunization activity was conducted in late 2020 and early 2021 amid the COVID-19 pandemic. The Philippines successfully ended the polio outbreak in June 2021; however, the pandemic led to disruptions in routine immunization services. The proportion of fully immunized children dropped from 65.2% in 2020 to 48% in 2021, and the number of doses administered for children against VPDs such as measles and diphtheria pertussis declined from 2019 to 2021. Fig. 1 presents the number of first dose of measles-containing vaccine (MCV1) and third dose of diphtheria, tetanus toxoid and pertussis vaccine (DTP3) administered by month in the Philippines from 2019 to 2022.

**Fig. 1. Number of MCV1 and DPT3 administered by month in the Philippines, 2019–2022**
COVID-19 epidemiology

The Philippines has recorded among the highest COVID-19 infection rates within the Western Pacific Region. Over 3.6 million cases and 60,000 COVID-19 related deaths have been documented since the pandemic’s onset. The country experienced surges in cases from August to September 2021, with a sharp rise in late December 2021 due to the Omicron variant. However, after peaking in early January 2022, there has been a continuing decrease in daily reported cases.

COVID-19 vaccination roll-out and coverage

The Philippine National Deployment and Vaccination Plan (NDVP) for COVID-19 vaccines was conceived following the guidance of the Strategic Advisory Group of Experts on Immunization (SAGE), as well as recommendations from independent expert bodies including the National Immunization Technical Advisory Group (NITAG) and the Technical Advisory Group on Immunization and Vaccine Preventable Diseases in the Western Pacific Region. Vaccination commenced on 1 March 2021, shortly after the arrival of the first batch of COVID-19 vaccines. The NDVP adopted strategies and contingencies in line with the WHO SAGE road map for prioritizing uses of COVID-19 vaccines, to facilitate equitable vaccine distribution for all Filipinos. Fig. 2 illustrates the timeline of the COVID-19 vaccination response in the Philippines.

Fig. 2. Timeline of COVID-19 vaccination response, November 2020 – April 2022

Nine different COVID-19 vaccines\(^1\) have been used for various priority groups. As of the end of April 2022, over 245 million doses were received, with about one third through the COVID-19 Vaccines Global Access (COVAX) facility and two thirds procured through bilateral government agreements with vaccine manufacturers or other nations (either through procurement or donations) (Fig. 3). Over 147 million doses have been administered, with 92 million doses of Pfizer-BioNTech (Comirnaty) given to all priority groups, including children aged 5–11 years and adolescents aged 12–17 years (Fig. 4).

\(^1\) AstraZeneca (Vaxzevria), Gamaleya (Gam-Covi-D Vac), Gamaleya (Sputnik Light), Janssen (Ad26.COV2-S), Julphar (Hayat-Vax), Moderna (Spikevax), Pfizer-BioNTech (Comirnaty), Sinopharm (BBIBP-CorV) and Sinovac (Coronavac).
Fig. 3. Total doses received by source and brand, as of end April 2022

147,623,883
Total doses administered

Doses received by source
- Bilateral: 74M (30.2%)
- COVAX: 13M (5.1%)
- Donation: 159M (64.7%)

Doses received by brand
- Pfizer-BioNTech (Comirnaty): 22M (14.6%)
- Sinovac (CoronaVac): 5M (3.2%)
- AstraZeneca (Vaxzevria): 56M (37.7%)
- Moderna (Spikevax): 92M (62.2%)
- Janssen (Ad26.COV 2-S): 3M (2.0%)
- Gamaleya (Gam-Covid-Vac): 1M (0.7%)
- Sinopharm (BBIBP-CorV): 1.1M (0.7%)
- Julphar (Hayat-Vax): 45M (30.7%)
- Gamaleya (Sputnik-Light): 1.1M (0.7%)

Fig. 4. Total doses administered by brand, as of end April 2022

Doses received by brand
- Pfizer-BioNTech (Comirnaty): 22M (14.6%)
- Sinovac (CoronaVac): 5M (3.2%)
- AstraZeneca (Vaxzevria): 56M (37.7%)
- Moderna (Spikevax): 92M (62.2%)
- Janssen (Ad26.COV 2-S): 3M (2.0%)
- Gamaleya (Gam-Covid-Vac): 1M (0.7%)
- Sinopharm (BBIBP-CorV): 1.1M (0.7%)
- Julphar (Hayat-Vax): 45M (30.7%)
- Gamaleya (Sputnik-Light): 1.1M (0.7%)
By mid-April 2022, 66% of the target population (those 5 years and older) had received the last dose of the primary series, equating to 60% of the total population. Among health workers, who are at increased risk of SARS-CoV-2 exposure, coverage with the last dose of the primary series is high at over 94%, with 49% receiving the first booster dose. Currently, efforts are concentrated on increasing primary series coverage of priority populations, specifically older adults (categorized as priority group A2) and the impoverished (categorized as priority group A5), and improving booster dose coverage for all eligible individuals. Vaccination coverage for priority groups A2 and A5 exceeds 71% and 70%, respectively. However, vaccination coverage varies between regions (Fig. 5).

**Fig. 5. Vaccination coverage of different priority groups, as of 11 April 2022**

<table>
<thead>
<tr>
<th>Fully Vaccinated</th>
<th>Partially Vaccinated</th>
<th>Booster Shot</th>
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<tbody>
<tr>
<td>6,058,389 (94.3%)</td>
<td>335,465 (6.5%)</td>
<td>51,707 (98.4%)</td>
</tr>
<tr>
<td>4,999,896 (72.3%)</td>
<td>2,037,112 (27.7%)</td>
<td>15,707 (30.2%)</td>
</tr>
<tr>
<td>91,739 (35.6%)</td>
<td>130,262 (54.2%)</td>
<td>16,259 (32.0%)</td>
</tr>
<tr>
<td>124,290 (21.2%)</td>
<td>165,904 (28.4%)</td>
<td>20,269 (35.6%)</td>
</tr>
<tr>
<td>98,007 (16.7%)</td>
<td>110,598 (20.1%)</td>
<td>15,207 (24.2%)</td>
</tr>
<tr>
<td>105,707 (98.4%)</td>
<td>15,207 (98.4%)</td>
<td>-</td>
</tr>
</tbody>
</table>

Legend:
- Priority Group A1: Workers in Frontline and Health Services
- Priority Group A2: Senior Citizens 65 years of age and above
- Priority Group A3: Individuals with Comorbidity/Immunocompromised/Immunocompetent
- Priority Group A4: Pregnant Women
- Priority Group A5: Poor Population
- Rest of the Adult Population 18-64 years old (ROAP)
- Rest of the Adolescent Population 12-17 years old (ROAP)

**Rationale for conducting a cPIE for COVID-19 vaccine deployment**

The Philippines, one of the earliest countries to introduce COVID-19 vaccines in the Western Pacific Region, currently uses nine types of COVID-19 vaccines. The country’s aim is to achieve the WHO global target of vaccinating 70% of the entire population with the last dose of the primary series by June 2022. Despite already reaching 60% coverage by mid-April 2022 and vaccinating over 94% of health workers, there remains variability in vaccination coverage among priority groups across regions, particularly among older adults and the impoverished. Moreover, essential services have been disrupted in many provinces across various regions. One year after the deployment of the COVID-19 vaccine, it is crucial for the Philippines to review the progress of COVID-19 vaccine introduction and its impact on the overall immunization system.
2. Objectives

The objectives of this evaluation are:

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<tbody>
<tr>
<td><strong>1</strong></td>
<td>To highlight the accomplishments and challenges of the COVID-19 vaccine roll-out and implementation strategies.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>To provide recommendations for both national and subnational levels, identifying opportunities and optimizing the impact of COVID-19 vaccination in a rapidly evolving context.</td>
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<tr>
<td><strong>3</strong></td>
<td>Assess the impact of the COVID-19 vaccine deployment on the overall immunization system and core immunization activities, such as routine immunization and surveillance of VPDs.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td>To identify and highlight the lessons learned in order to enhance the overall national immunization system and the capacity of health systems to prepare for and respond to threats to health security.</td>
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</table>
3. Methods

The WHO Country Office in the Philippines, in close partnership with the Vaccine-preventable Diseases and Immunization unit of the Western Pacific Region, crafted the evaluation methodology and implementation plans in alignment with the cPIE guide. In mid-February 2022, a concept note was developed to guide the evaluation team on the review process.

Site selection

Seven out of the 17 regions in the country were selected for evaluation, including a visit to the national cold store for COVID-19 vaccines (Fig. 6). The selection was made in concurrence with the National COVID-19 Vaccination Operations Center (VOC) of the DOH. It was based on COVID-19 vaccination coverage, specifically for the older adult population, and the trend in routine immunization coverage of MCV1, as well as the third dose of the pentavalent vaccine from 2019 to 2021. High- or low-performance provinces, cities and municipalities in COVID-19 vaccination and routine immunization were selected in each region (see Annexes 1 and 2).

Fig. 6. Sites selected for the evaluation

Note: Selected provinces are in blue; selected cities/municipalities in each province are in yellow.
Evaluation team roles and responsibilities

The evaluation team comprised individuals selected based on their expertise and knowledge of the immunization programme (see Annex 3). Eight field teams were established, each composed of four to five experts from the World Health Organization (WHO), United Nations Children’s Fund (UNICEF), United States Centers for Disease Control and Prevention (CDC), and MM Global Health Consulting. Field team leads were appointed for each team, while topic leads were assigned to each evaluation area. Their respective roles and responsibilities include:

- **WHO**: Overall lead of the evaluation, providing technical guidance and administrative support on the implementation of the cPIE, coordinating with DOH and partners and finalizing the report.
- **MM Global Health Consulting**: Providing technical guidance in planning and report writing.
- **WHO, MM Global Health Consulting, UNICEF, and CDC**: Participating in the field review and contributing to the discussion and summary of findings.

Evaluation topics

Information and data were collected on the following 11 evaluation topics which were aligned with the Philippine NDVP:

1. Planning and coordination
2. Costing and funding
3. Regulatoy measures
4. Service delivery
5. Supply, cold chain and waste management
6. Human resources
7. Vaccine demand, advocacy and communication
8. Vaccine safety
9. Monitoring and evaluation
10. Surveillance
11. Research.

Data collection tools

Data collection tools, including questionnaires and observation checklists, were developed to guide and standardize data collection. The WHO cPIE guide was adapted to the Philippine context and priorities.

The following tools were developed:

- National stakeholder questionnaire
- Region, province/city and health facility questionnaire
- Cold chain storage area observation checklist
- Vaccination session observation checklist
- Beneficiary questionnaire.

Questionnaires were administered to key health staff and beneficiaries at all health facilities visited. Observations were made at cold chain facilities, including DOH warehouses and dry storage areas for vaccines. Vaccination sessions were also observed. Verbal consent was obtained from all persons in the community who were interviewed or had their photos taken during this evaluation.

Data management and analysis

The Open Data Kit (ODK) software was used to easily consolidate, summarize and archive findings. The ODK software has the following features:

- A pull-down menu for each type of form (questionnaires and checklists).
- Evaluation topics bookmarked within each form.
- Inclusion of both categorical and open-ended questions.
- Offline saving of entries.
- Accessibility of forms from different devices (tablet, mobile phone, laptop or desktop).
- Export options to other formats for data analysis.
- Dashboard for key indicators.

Activities and timeline

The timeline of activities is summarized in Table 1.
**Table 1. Timeline of cPIE activities in 2022**

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Participants</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>13 April</strong></td>
<td>Orientation and briefing of participants</td>
<td>All field teams</td>
<td>Virtual meeting (Topics discussed include the Philippine health systems; COVID-19 vaccine deployment and roll-out; cPIE methodology; roles and responsibilities; and timeline.)</td>
</tr>
<tr>
<td><strong>18 April</strong></td>
<td>Briefing of DOH</td>
<td>National and regional DOH</td>
<td>Hybrid meeting (virtual and face-to-face) (Topics discussed included objectives of the cPIE, areas to be visited, evaluators and timeline.)</td>
</tr>
<tr>
<td><strong>18–24 April</strong></td>
<td>Field work</td>
<td>All field teams</td>
<td>Interview of key stakeholders and beneficiaries, visit to cold stores and observation of vaccination session Synthesis of initial findings Debriefing of DOH regional and/or provincial offices.</td>
</tr>
<tr>
<td><strong>25 April</strong></td>
<td>Presentations from regions and national-level teams</td>
<td>Team leads and members</td>
<td>Presentation and discussion of findings from the field.</td>
</tr>
<tr>
<td>(morning)</td>
<td>Presentations from regions and national-level teams</td>
<td>Topic leads</td>
<td>Presentation and discussion of findings from the field.</td>
</tr>
<tr>
<td><strong>25 April</strong></td>
<td>Topic-specific breakout sessions</td>
<td>Topic leads</td>
<td>Synthesis of findings and recommendations for designated topic.</td>
</tr>
<tr>
<td>(afternoon)</td>
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<tr>
<td><strong>26 April</strong></td>
<td>Topic-specific presentations</td>
<td>Topic leads</td>
<td>Presentation of findings and recommendations for each topic.</td>
</tr>
<tr>
<td>(morning)</td>
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<td></td>
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</tr>
<tr>
<td><strong>26 April</strong></td>
<td>Preparation for debriefing presentation</td>
<td>Coordination team</td>
<td>Compilation and streamlining of topic presentations for debriefing with DOH.</td>
</tr>
<tr>
<td>(afternoon)</td>
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<tr>
<td><strong>27 April</strong></td>
<td>Debriefing</td>
<td>DOH</td>
<td>Debriefing of high-level DOH officials.</td>
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<tr>
<td></td>
<td></td>
<td>Topic leads</td>
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</tbody>
</table>
4. Findings and recommendations

4.1. Evaluation Topics

4.1.1. Planning and coordination

Background

The Government of the Philippines instituted the COVID-19 Vaccine Cluster Organizational Structure under the Inter-Agency Task Force for the Management of Emerging Infectious Diseases (IATF-EID), a body tasked with addressing the nation’s emerging infectious diseases, and the National Task Force against COVID-19, responsible for overseeing the national response operations. Both task forces were established by the President of the Philippines. The COVID-19 Vaccine Cluster Organizational Structure acts as a unified command centre providing control, coordination, communication and cooperation mechanisms to facilitate procurement and deployment of COVID-19 vaccines and vaccination of identified eligible populations (Fig. 7).

Fig. 7. COVID-19 Vaccine Cluster Organizational Structure
Six sub-technical working groups, functioning as task groups, were created under the COVID-19 Vaccine Cluster: (1) Scientific Evaluation and Selection; (2) Diplomatic Engagement and Negotiation; (3) Procurement and Finance; (4) Cold Chain and Logistics Management; (5) Immunization Programme; and (6) Demand Generation and Communications. This structure is further reinforced by an activated Incident Command System, supported by the COVID-19 VOC. The VOC has been established and made operational at national, regional and local levels.

A range of pertinent legislation, regulations, laws, acts, policies, advisories and guidelines were developed to enable implementation of the COVID-19 response and vaccination. Among these crucial documents is Republic Act 11525, “Establishing the coronavirus disease 2019 (COVID-19) vaccination program expediting the vaccine procurement and administration process, providing funds therefore, and for other purposes”, approved on 26 February 2021.

A coordination mechanism was set up to ensure effective communication and information-sharing between task groups, sub-task groups and independent bodies, including the Health Technology Assessment Council (HTAC), NITAG, the National Adverse Event Following Immunization Committee (NAEFIC), and the Vaccine Expert Panel. The Vaccine Expert Panel regularly provides updates to the COVID-19 Vaccine Cluster Head, HTAC, NITAG and NAEFIC.

The NDVP for COVID-19 vaccines was developed to provide operational guidance in implementing the COVID-19 vaccination programme. Finalized in January 2021, the NDVP was drafted with input from various government agencies to ensure policy and plan alignment and integration into national governance mechanisms. An updated version of the NDVP is currently being finalized.

**Strengths and achievements**

Strong political commitment and leadership at all levels have been instrumental to the success of the COVID-19 response and vaccination, as evidenced by the high coverage rates. The Government of the Philippines, under the leadership of the President, played a significant role in facilitating all necessary elements for this success. The structures, such as the IATF, National Task Force and VOC, established to respond to the COVID-19 pandemic and ensure vaccine roll-out, have been functional, despite initial complexities in the interactions among different task forces, clusters and technical groups. Collaboration and coordination between the Government, line agencies, partners, communities and the private sector at all levels have been strong and successful, as frequently highlighted by stakeholders during the cPIE.

The legislation, regulations, laws, acts, policies, advisories and guidelines developed represent a comprehensive package, covering all areas necessary to manage the COVID-19 response and implement the vaccine roll-out. Adherence to these policies, strategies and guidelines has facilitated successful COVID-19 vaccination.

With regard to planning, the development and recalibration of macro- and micro-plans for a comprehensive COVID-19 vaccination response, following the NDVP, have enabled faster deployment of vaccines, particularly to eligible priority groups. COVID-19 vaccination strategies have been thoughtfully adapted to the evolving pandemic context, enabling different groups to be reached over time and underserved populations to be served according to available resources and local context (such as hard-to-reach areas, urban versus rural).

**Challenges**

The COVID-19 response has affected the routine immunization programme due to the diversion of human and financial resources towards pandemic response, leading to decreased immunization coverage in some areas. If left unchecked, this may result in outbreaks of VPDs, such as measles and polio. The current level of efforts and resources dedicated to the COVID-19 response is not sustainable in the medium to long term, and presently there is no clear national strategy to incorporate COVID-19 vaccination into routine immunization.

There have been delays in cascading directives, information and plans in certain areas (regions 7, 11 and 12), mainly due to geographical challenges, limited infrastructure (information and communications technology, power) and technical capacity.

Planning-related issues have arisen in some LGUs due to mismatches between targets and actual populations. In urban areas, tracing priority groups vaccinated elsewhere has proven difficult due to insufficient data reconciliation.
The Philippines will transition to a new administration in the latter half of 2022. While the DOH is prepared to ensure continuity of the COVID-19 response, the transition may pose challenges and necessitate enhanced communication and coordination.

Recommendations

- Formulate a national strategy that involves various stakeholders to integrate COVID-19 vaccination into routine immunization and primary health care (PHC). The strategy should detail delivery methods, required resources and the transition time frame. Any associated interventions for progression – such as policy on booster doses, reaching all priority groups and aligning national targets for COVID-19 vaccination with the updated WHO road map – should be clearly stated in this strategy.
- Enhance messaging around the need for booster doses, particularly for priority groups, in light of waning immunity and the emergence of variants.
- Utilize evidence-based data to guide planning and prioritization, and to achieve equitable access to COVID-19 vaccines.
- Provide technical and financial support to challenging regions (such as regions 7, 11 and 12). This can include high-level advocacy, identification and deployment of political influencers, implementation of targeted interventions, and increased supportive supervision in areas with a high number of unvaccinated individuals.
- Consider connecting the vaccination information management system with data from the civil registration and vital statistics system using a unique ID. This will help establish more accurate denominators and address mismatches between target and actual populations.
- Collaborate closely with the incoming administration, providing necessary briefings and other related information to ensure continuity of the COVID-19 response and its integration into the routine immunization programme.

4.1.2. Costing and funding

Background

The enactment of Republic Act 11525, which established the COVID-19 vaccination programme and expedited the vaccine procurement and administration process, facilitated the funding of the COVID-19 vaccination initiative from multiple sources. The procurement of COVID-19 vaccines was enabled by the Congress-approved "Bayanihan" emergency funds. Additional vaccine supply was procured through donations from the COVAX facility and other countries, alongside multi-year loans from the Asian Development Bank (ADB) and the World Bank. LGUs and the private sector also made vaccine purchases using their own budgets, resulting in a total procurement of 244 311 480 doses of COVID-19 vaccines between February 2021 and April 2022 (Table 2).

Table 2. COVID-19 vaccines procured in the Philippines from February 2021 to 17 April 2022

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Donation (doses)</th>
<th>Procurement (doses)</th>
<th>Total (doses)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COVAX Facility</td>
<td>Other Donors National Government</td>
<td>LGUs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>GOP</td>
</tr>
<tr>
<td>Sinovac</td>
<td>30 993 300</td>
<td>1 432 080</td>
<td>4 075 000</td>
</tr>
<tr>
<td>Pfizer</td>
<td>16 324 000</td>
<td>6 003 750</td>
<td>13 873 260</td>
</tr>
<tr>
<td>Moderna</td>
<td>12 725 650</td>
<td></td>
<td>12 725 650</td>
</tr>
<tr>
<td>Sinopharm</td>
<td>1 100 000</td>
<td></td>
<td>1 100 000</td>
</tr>
<tr>
<td>Total</td>
<td>73 916 210</td>
<td>12 615 830</td>
<td>15 500 000</td>
</tr>
</tbody>
</table>

For operational purposes, the DOH, utilizing savings from various programmes, transferred funds to 17 subnational offices. These funds bolstered the hiring of additional human resources, demand generation, logistics and other operational costs associated with the COVID-19 vaccination programme. Furthermore, the private sector made contributions that supported local-level COVID-19 vaccination operational costs.

COVID-19 Vaccine Delivery Support (CDS) funds were utilized to enhance operational activities for scaling up COVID-19 vaccination, given that a large portion of the Government’s budget for COVID-19 vaccination was allocated for vaccine procurement and funds for operational costs were limited. These CDS funds supported ongoing priority activities essential for increasing vaccination coverage, particularly in some of the most geographically isolated and insecure communities of the country, aiding the continuation of efforts initiated by the DOH and LGUs.

Strengths and achievements

Republic Act 11525, approved in February 2021, served as a timely mechanism for funding COVID-19 vaccines procurement and operational efforts. The Government fully supported and made available significant funds from various sources. These funds were allocated and could be accessed at both national and subnational levels. The sources of these funds included:

- The National Government of the Philippines
- Multi-year loans from the ADB and World Bank facilitating procurement of 101 million COVID-19 vaccine doses
- LGUs supporting service delivery
- The COVAX facility, which procured 73.9 million doses of COVID-19 vaccines
- CDS funds (US$ 9.4 million) supplementing operational activities for scaling up COVID-19 vaccination
- Donations from the private sector in support of COVID-19 vaccination
- Other donors, such as foreign governments, contributing to COVID-19 vaccine procurement.

Vaccine funding reached an unprecedented level in the Philippines, with receipt of 244.3 million doses of COVID-19 vaccine so far for a budget of around 70 billion Philippine pesos (US$ 1.3 billion). Strong political commitment from governors and mayors was established, with allocation of funds for COVID-19 vaccination activities supplementing DOH funds. Adequate funds were assigned to support human resources (salaries, incentives); finance all operational costs; ensure demand generation and communication; and purchase cold chain equipment, supplies/logistics, computers and other equipment.

Challenges

There is inadequate understanding of the cost of various COVID-19 vaccination activities at the national and local levels. While some costs are known, a comprehensive analysis of all costs is not available. This understanding would be crucial for further planning of COVID-19 vaccination efforts and for integrating them into routine immunization. Consequently, estimates for the 2023 budget for the COVID-19 vaccination response, especially operational and running costs, may not be fully understood.

Delays were experienced in the availability of funds during the initial phase of the COVID-19 vaccines roll-out, including funds for service delivery, demand generation and communication. The CDS funds helped address some of these financial gaps.

A significant number of LGUs exhausted resources for operations in the second year (2022), which impacted the sustained COVID-19 vaccination efforts. One third of the provinces and health facilities visited during the cPIE were constrained by financial resources (see Fig. 8).

Budgeting and procurement of syringes for non-bundled COVID-19 vaccines required additional resources. There were also difficulties encountered in contracting and financing third-party companies for storage, distribution and reverse logistics.
Recommendations

- Undertake a comprehensive review of the costing associated with COVID-19 vaccination efforts at both national and subnational levels. This review should consider all financial resources involved (capital, operational, running costs) to facilitate accurate planning of future COVID-19 vaccination initiatives and their integration into routine immunization.
- Concurrently with the comprehensive costing review, consider conducting a costing analysis. This will support LGUs in developing sustainable local health investment plans, considering full devolution as provided by the Mandanas ruling.2
- Consider conducting cost-effectiveness studies to compare the efforts of COVID-19 vaccination in 2021−2022 with an integrated vaccination approach.
- Continue advocacy and fundraising at various levels to ensure resource mobilization and financial sustainability for COVID-19 vaccination activities for the second year (2022), which include activities like “last mile” and equity initiatives.
- Enhance the technical skills of managers in understanding immunization system costing and budgeting. For example, include costed micro-planning that incorporates COVID-19 vaccination activities.

4.1.3. Regulatory measures

Background

National regulatory authorities (NRAs) play a crucial role in protecting public health and upholding public trust, including in relation to vaccines or vaccination programmes. Before the deployment and distribution of any vaccine within an immunization programme or on the market, the NRA assesses its quality, safety and efficacy.

In the Philippines, the regulation of vaccines falls under the jurisdiction of the Food and Drug Administration (FDA), which plays a critical role in ensuring their quality, safety and efficacy. This facilitates the timely entry, access and availability of vaccines. The regulation process of vaccines encompasses several functions. Following a vaccine’s life cycle, regulation begins from clinical trial oversight and extends to licensing of establishments, registration or marketing authorization, laboratory testing, regulatory inspection, pharmacovigilance, post-marketing surveillance and lot release. The proficient execution and enforcement of these functions aim to ensure the quality of vaccines. The findings in the succeeding section mainly concentrate on the process for regulatory approval or emergency use authorization (EUA) for the introduction of COVID-19 vaccines.

2 The Mandanas ruling mandates an increase in LGUs’ just share of all national taxes and revenues.
**Strengths and achievements**

There are prompt legal and regulatory actions for EUA through reliance and recognition procedures. Before the COVID-19 pandemic, a major gap in regulatory preparedness was the absence of a legal basis for issuing an EUA. In December 2020, the President signed an Executive Order authorizing the FDA to issue an EUA. This Executive Order also provided the legal foundation to implement reliance and recognition procedures, enabling the FDA to review decisions and access regulatory dossiers and findings from WHO and other internationally recognized stringent NRAs. A guideline detailing the process, requirements, scope and conditions was subsequently issued through FDA Circular No. 2020-036 for the pharmaceutical industry and government entities like national procurers or health programme implementers.

The Good Reliance Practice fosters a more efficient regulatory approach, thus enhancing and speeding up access to quality-assured, effective and safe medical products, including vaccines. Utilizing available resources and expertise, the Philippine FDA was not required to go through the full and lengthy routine review processes.

There is a collective decision-making process through the IATF and engagement with Congress. The FDA became part of one of the technical working groups of the IATF on Emerging Infectious Disease, providing the agency an opportunity to understand the overall COVID-19 situation and promptly address urgent issues, especially those related to potential safety and efficacy concerns. The established clear communication and coordination channels prevented IATF members from working in isolation.

A dedicated web page was created for COVID-19 vaccines and therapeutics for transparency, which proved beneficial to all partners, health-care professionals, the pharmaceutical industry and the public. The FDA published regulatory requirements, lists and pertinent details of granted EUAs and vaccine product labels on this webpage.

**Challenges**

There is limited vaccine laboratory testing and lot release capacity to address potential quality issues during post-marketing surveillance. Currently, there is no vaccine laboratory in the Philippines so samples are sent to other countries for testing. This makes it challenging to address potential quality issues during an adverse event following immunization (AEFI) investigation and overall post-marketing surveillance. Lot releasing to verify the consistency of quality and safety of different batches is limited and only document review is being conducted without testing vaccine samples.

Regulatory process transitioning from EUA of unlicensed vaccines to marketing authorization is not clearly defined. The current Executive Order that mandates FDA to issue EUA is restricted to COVID-19 vaccines and therapeutics and is thus not applicable to other public health emergencies.

**Recommendations**

- To achieve identification as an NRA with a WHO maturity level 3, the FDA should address the regulatory capacity gaps identified through the NRA self-benchmarking tool by formulating an effective and feasible Institutional Development Plan. Additionally, establishing an FDA vaccine laboratory should be prioritized to ensure the quality, safety and efficacy of both procured and locally manufactured vaccines.

- In preparation for the integration of COVID-19 vaccines into routine immunization, the FDA should provide clear guidelines for the EUA holder and the DOH on the regulatory requirements and processes to apply for full registration or marketing authorization.

- Review the existing EUA policy to broaden its scope to include all new vaccines for health emergencies. To sustain and strengthen preparedness for public health emergencies, it is paramount to establish a legal framework to clarify and enhance the FDA’s authority to foster the development or access to and availability of medical products and other health technologies for use in these emergencies. The Government of the Philippines may consider expanding the existing policy to include all vaccines and health products that are crucial for responding to public health emergencies or future outbreaks.
4.1.4. Service Delivery

Background

The NDVP for COVID-19 vaccines (January 2021) delineates six distinct areas for the vaccination process. These areas allow for smooth flow of vaccine recipients from one zone to another, with assigned personnel for each area (Fig. 9). These designated areas comprise:

- Waiting area: This space accommodates social distancing measures and provides handwashing facilities.
- Registration area: Documenters and recorders staff this area. Their tasks include registering recipients, verifying identities and eligibility documents, encoding data into the data management system and submitting daily reports on coverage, refusals and deferrals.
- Counselling area: Health educators facilitate this area, communicating essential information, ensuring the availability of information, education and communication materials, facilitating informed consent and helping to manage refusals and deferrals.
- Screening and health assessment area: This space is allocated for assessing health status and conducting physical examinations of clients to confirm their fitness for vaccination.
- Vaccination area: This area is assigned for administering vaccines, completing vaccination cards and ensuring the safe disposal of waste.
- Post-vaccination monitoring area: An observer, who is part of an AEFI composite team, staffs this area to monitor for adverse reactions, respond to adverse reactions, and inform vaccine recipients of follow-up steps and where to seek or proceed for treatment.

Fig. 9. Patient flow at vaccination sites

The NDVP and the omnibus guidelines released on 9 March 2022 detail the following vaccination strategies:

- National mass vaccination campaigns: As of the time of evaluation, four campaigns have been executed.
- Fixed-site vaccinations: These take place in health facilities and non-health facilities. Non-health facility implementing units must comply with certain requirements and protocols, including the ability to maintain social distancing and promptly respond to an adverse event of special interest (AESI).
Mobile and outreach sites: These sites should fulfill the same requirements as fixed-site vaccinations.

The omnibus guidelines mandate that teams or sites should administer only one type of vaccine product at a time to prevent vaccine administration errors. Special requirements should be adhered to for sites dispensing the temperature-sensitive Pfizer vaccine.

Strengths and achievements

All 25 health facilities visited during the evaluation reported they were able to vaccinate priority populations in the sequence articulated in the national plan.

Four national vaccination days conducted between November 2021 and March 2022 reached over 19.5 million Filipinos and contributed to a rapid uptick in coverage – especially during the first two campaigns. Experience from measles, rubella and polio supplementary immunization campaigns was also leveraged for implementing national vaccination days.

At service delivery level, fixed sites were highly visible and accessible, including covered courts near barangay halls, schools and malls. Transportation to vaccination sites was reported to be in place for older adults and persons with comorbidities. Residents could be vaccinated in other LGUs outside their residency, especially in later stages of vaccine roll-out.

Reach of vaccination was increased by bringing vaccines to priority groups (for example, through house-to-house visits), including older adults, persons with comorbidities and other persons who are unable to leave their homes. Mobile vaccinations teams were used to take vaccines to priority groups such as indigent populations to avoid incurring costs which may prevent them from accessing the vaccines. Mobile vaccination teams also administered vaccines at job sites as a way to vaccinate workers who may not seek vaccination due to time constraints.

A tremendous amount of creativity, tailoring, branding and promoting fixed and mobile activities were observed; examples include: “vaccinate as one”, “bakuna [vaccine] nights”, “vax to school”, “jabs for jobs”. Vaccination hours/days were extended and included evenings, weekends and holidays, targeting harder-to-reach groups, such as daily wage workers. Eighteen health facilities (72% of those visited) reported they changed their primary vaccination strategy to increase access to vaccination.

Vaccination sites observed were well organized and followed the national guidance to have the recommended stations (see Fig. 10). Adherence to guidance for managing multiple products was observed.

In the locations that the field teams visited, service delivery was supported by a wide array of partnerships (as noted in section 4.1.6 on human resources).

Challenges

Vaccination coverage in the priority groups proved to be challenging. Eighteen of the health facilities (72% of those) visited reported that reaching the older adult population for vaccination was the most challenging. (The reasons for this are discussed in the section 4.1.7 on vaccine demand, advocacy and communication.)

Limited use of data to guide delivery strategies was observed, especially at the health facility level where mainly the number of persons vaccinated were counted and reported but not vaccination coverage. For example, since house-to-house vaccination is costly, it would be beneficial to have coverage data for catchment areas to understand the possible impact and to justify the time and funds required.

Integration of COVID-19 vaccination with other health services was also challenging. It was somewhat expected that there would be limited integration of COVID-19 vaccinations with other health services since, until recently, most vaccinations have taken place in non-health facility venues. Even so, over half of the health facilities visited reported integration of other services, including with routine immunization or flu vaccination, prenatal check-up, provision of vitamins and noncommunicable diseases (NCD) risk assessments (Fig. 10).
Fig. 10. Number of health facilities integrating COVID-19 vaccination and other health-care services

Were vaccination session organized specifically for COVID-19 vaccination as opposed to COVID-19 vaccination being integrated into other health care services?

- Yes 11 (44.0%)
- Both 4 (16.0%)
- No 10 (40.0%)

Coverage data indicate that the pandemic has interrupted the provision of routine vaccines. Most health facilities reported that they needed to stop routine immunization sessions during the height of the pandemic or that even if sessions were maintained, there was fear of being exposed to SARS-CoV-2 at the health facilities. Among the 25 health facilities visited, the mean number of days vaccination services are offered is 1.75 days for routine immunization and 4.9 days for COVID-19 vaccine; seven health facilities (28% of those visited) offered routine immunization vaccines during COVID-19 vaccination sessions.

Other challenges that also need to be addressed include: Managing product preference and expiring vaccines; and low-level political commitment and partner engagement in some LGUs.

Recommendations

- Increase COVID-19-priority group and routine immunization vaccination coverage. Persist with innovative methodologies, collaborations and health facility engagements to boost vaccination coverage, particularly among older adults and individuals with comorbidities. Disseminate knowledge and experiences from LGUs that have effectively achieved high coverage for COVID-19 and routine immunizations. Evaluate whether the forthcoming national routine immunization catch-up campaigns will yield sufficient coverage to augment population immunity, mitigating a potential measles outbreak. As necessary, plan for supplementary activities (for example, determine if a supplemental immunization activity or local catch-up initiatives are required).

- Use data to guide strategies. Advise and build capacity for the generation and application of vaccination coverage data to guide health-care service delivery strategies. For instance, carry out geographical coverage assessments to aid in prioritizing LGUs or health-care facilities for support; evaluate product-specific dropout rates as an indicator of potential barriers. This advice could also involve correlating coverage data with other sources of information to identify the most effective and high-impact strategies. For example, social listening might reveal a lack of demand for booster doses due to perceived irrelevance. Prior to implementing mobile or other high-cost strategies, it would be cost-efficient to boost awareness and demand for vaccinations.

- Integrate COVID-19 vaccination with other health services. Provide guidance on incorporating COVID-19 vaccinations with other health-care services. This is particularly important as the transition of vaccine delivery to health-care facility settings opens new opportunities to vaccinate throughout the life course. This consideration is especially pertinent for health-care interactions involving older patients and patients with comorbidities.
4.1.5. Supply, cold chain and waste management

Background

As a rapidly growing economy, the Philippines does not qualify for financial support from Gavi, The Vaccine Alliance. Consequently, all resources for the National Immunization Program are derived from domestic and specific donor funds.

Despite geographical challenges, owing to the country being composed of over 7000 islands and a history of natural disasters such as typhoons and earthquakes, the nation’s cold chain supply system has notably adapted to a significantly expanded list of antigens in the immunization schedule.

To identify challenges and formulate solutions, the country has completed several Effective Vaccine Management Assessments (EVMAs). These assessments have led to a substantial cold chain expansion of the routine immunization schedule, beginning in 2011. The latest EVMA in 2017 reveals the impacts of this expansion on the national vaccine management system, demonstrating improvement in some indicators and significant deterioration in others. The system grappled with the swift increase of antigens, and the enormity of the task was not foreseen even in the 2011 assessment. The improvement plan devised a post-2017 EVMA that focused on seven strategic objectives addressing the primary deficiencies in the system.

The COVID-19 vaccine cold chain plan is aligned with the overarching National Immunization Program Cold Chain and Management Plan. It takes into account the following factors to ensure efficient and well-organized distribution of COVID-19 vaccines to eligible population groups:

- **Storage temperatures:** The different storage temperature requirements of various vaccine products and data on the available cold chain capacity – including the surge capacity of DOH storage facilities and warehouses, as well as those of other government agencies and the private sector – should be considered. Specifically, considerations should include COVID-19 vaccines requiring ultra-cold storage (UCC) temperature, for example −70°C, and identification of practical solutions, such as engaging logistics service providers to deploy the UCC equipment and facilitate vaccine transportation and reverse logistics.

- **Distribution of vaccines:** Thought should be given to the distribution of vaccines from the national cold store to the implementing health units, including safety and security measures and interventions, particularly for vaccine storage facilities and transportation platforms, to ensure the integrity of vaccines during transport and the safety of all staff managing the supply and implementing the vaccination.

- **Supply chain information system:** A reinforced supply chain information system on stock management and distribution should be implemented, inclusive of monitoring and reporting on vaccine utilization and wastage rates, and the use of online or digital platforms to guide suitable allocation of subsequent supplies. A robust mechanism should be established to track COVID-19 vaccine distribution from the national level to the service points, reducing the risk of diversion and falsification.

- **Health-care waste:** A health-care waste management plan should be developed to include reverse logistics, ensuring the health and safety of vaccinators and the community.

**Strengths and achievements**

Contrary to the shortage experienced during the initial response stages, the present supply of vaccines and ancillaries was found to be ample and sufficient. Several products are available throughout the cold chain system, providing options for initiating primary series and boosters.

Cold chain storage capacity for COVID-19 vaccines was consistently found to be adequate, with equipment well-maintained and fully functional. The enhancement and expansion of cold chain capacity at the regional and provincial storage levels encompassed ultra-low-temperature freezers and walk-in refrigerators. During periods when cold chain space was constrained, such as at the onset of the roll-out, contracts with private companies were established for both storage and transportation. This model has been sustained over time as a key element of the supply chain in this highly complex context. In situations where cold chain storage capacity might be further strained, such as at provincial and municipal levels, contingency plans were implemented. These plans optimized the utilization of available resources at those levels and provided solutions in case of emergency situations or temporary constraints.
The vaccine management landscape is complex and changes frequently due to updates in the required recommendations. However, staff at all levels had a good understanding of the recommendations and policies, which resulted in good management of the different products.

A reverse logistics system has been established for the collection of used vials. Empty vials are gathered at delivery points and transported to provinces and regions. Vials are segregated by product brand, counted and stored in plastic containers for final transportation, auditing and destruction by a subcontracted company.

Challenges

The supply landscape, with multiple products and different handling requirements, is creating a complex context for health workers and cold chain staff that requires frequent supervision and training. The fact that some of these product-specific requirements are updated as roll-out progresses further complicates this context, and emphasizes the need for frequent trainings. The short shelf life of some of the products is placing additional pressure on staff and on the supply chain, as these products reach the end of their shelf life and are stored while waiting for a possible update on extension. At lower levels, specially at delivery points, there were reports of stock-outs of routine immunization vaccines due to “space-competition” with COVID-19 vaccines and challenges in distribution of vaccines from the national vaccine store.

At provincial and municipal levels, there is a dearth of transport carriers and continuous temperature monitoring devices. Occasional use of non-WHO Performance, Quality and Safety (PQS) equipment for vaccine storage, transportation and temperature monitoring has been observed at provincial and municipal levels.

Due to the limited availability of PQS equipment, there is inadequate temperature monitoring during transport and vaccination activities. Incorrect vaccination practices such as prefilling of doses, needle recapping, and failure to note the time of reconstitution of vaccines (Pfizer) or vial opening time have been occasionally observed. A standard COVID-19 logistics tracking and monitoring system (for example, e-logistics management information system or eLMIS) is absent.

Recommendations

- Carry out targeted EVMAs on the compliance of vaccination sites with vaccine handling requirements, vaccine preparation and safe injection practices. Based on the results of these assessments, conduct regular refresher training on vaccine management, cold chain and waste management, complemented with increased supportive supervision. Consider expanding the national vaccine store and dry storage facility to use a centralized storage and distribution system for COVID-19 supplies and routine immunization. Enhance vaccine storage capacity at subnational levels to accommodate both routine immunization and COVID-19 vaccines.
- Consider both COVID-19 and routine immunization vaccines when planning shipments to lower-level facilities and ensure the timely shipment of these vaccines from the national level. Integrate routine immunization and COVID-19 vaccines in the supply chain under one cold chain team.
- Procure new PQS equipment to increase the availability and usage of adequate fridges, transport boxes, vaccine carriers and continuous temperature monitoring devices.
- Consider involving private companies in managing the complex distribution system for the integration between COVID-19 vaccine and routine vaccines. Adopt a comprehensive and functional eLMIS that can be utilized at all levels. Ensure that COVID-19 vaccines are integrated into a future eLMIS for routine immunization.

4.1.6. Human resources

Background

The recent Human Resources for Health Philippine Masterplan 2020–2040 data suggest that the current estimate of number of health workers per 10 000 population falls short of WHO standards to achieve the coverage needed to meet the Sustainable Development Goals. It is estimated that 25% of all barangays in the Philippines lack health workers, with the densest population of nurses in the National Capital Region. The primary contact point for health-care services is typically rural health units, health centres and satellite barangay health stations, each employing approximately one doctor, two nurses and five midwives. During the COVID-19 vaccine roll-out, all health workers from the private
and public sectors, regardless of their employment status – permanent, contractual, on job order or outsourced – were given training and mobilized to implement the vaccination response.

Strengths and achievements

Throughout the vaccine roll-out, strong, rapid mobilization and deployment of human resources occurred at all levels to manage vaccination. This was achieved through various strategies:

- At the regional level, in particular, extra vaccinators, encoders, screeners and medical support staff were recruited on short contracts or job orders. These engagements were often brief (~3 months) and have been renewed on a continual basis (Fig. 11).

![Fig. 11. Strategies to overcome shortfall of human resources at province and health facility levels](image)

- Task shifting was heavily relied upon and was particularly evident at provincial and local facility levels, where staff were asked to divert from their pre-pandemic roles and focus on the COVID-19 vaccination roll-out.

- Health workers across the system commonly took on multiple roles and responsibilities to maintain pre-pandemic work and meet the increased demand associated with vaccine roll-out.

- Health workers displayed great agility and geographical mobility, often traveling considerable distances each day for house-to-house campaigns and to reach remote populations. Some regions also established “office hoppers”, who worked from different geographical locations each day based on the needs of various health facilities and communities.

Skilled, motivated staff were in place throughout the COVID-19 vaccine roll-out. All staff at the health facilities visited reported being trained in key topics prior to administering vaccines and majority of interviewees (92%) received some form of supportive supervision.

In the face of high global turnover rates, fatigue and burnout among health workers, the Philippines demonstrated impressive support for their health workers through motivational strategies and logistical support. Motivational strategies included financial incentives, awards, acknowledgement from political figures and community leaders, and friendly competitions. Logistical support included provision of free transportation, food and haircuts.

The importance of barangay health workers (BHWs) in the creation of vaccine demand and increasing uptake cannot be understated. As one provincial health officer stated, BHWs are “where the magic happens”. Some of their key contributions included:

- The creation or updating of master lists for their respective community, a paper-based tool identifying all individuals (5 years and older) in the community and record of their vaccination status.
Individual follow-up to drive uptake of first, second and booster doses, and to understand any hesitancy within a particular barangay.

Active surveillance for AEFI by checking in with each individual in the days following their vaccination.

Challenges

Human resource challenges can be categorized into two main areas: quantity and quality.

Quantity: While solutions to human resource needs were implemented, some were not sustainable and had negative impacts on the wider health workforce. These included:

- The reassignment of staff from their daily roles in routine immunization and preventive health care to focus on the COVID-19 vaccine roll-out in some areas led to a negative impact on routine immunization and general preventive health care.
- The incentives offered, which had associated costs, may not be sustainable in all areas. Removing these incentives could lead to an increased risk of health worker burnout.
- BHWs are volunteers who receive incentives but are not salaried employees. Incentives can be in the form of cash or in kind and are not consistent in all areas.
- Although many human resource shortages were addressed by employing short-term contract/job order staff, maintaining these workers in their current roles permanently may not be financially sustainable.
- Some regions reported high staff turnover.

Quality: Despite all health facilities reporting receiving adequate training in key areas, by itself training provides only a basic level of knowledge around a specific topic. Ensuring high performance among health workers necessitates opportunities for continuous learning, strong and consistent performance management, regular assessment of processes for quality improvement, and ongoing feedback and recognition of high performance. In addition to this overall challenge of maintaining high performance among health workers, some specific quality issues included:

- Although supportive supervision was conducted, the frequency varied significantly by health facility.
- Online training was heavily utilized in the early stages of the vaccine roll-out. While it offers a low-cost method of quickly disseminating information to large groups of health workers, there are inherent challenges. In some regions, health workers faced power outages or poor Internet connectivity that hindered access to online content. Furthermore, the online learning provided did not offer opportunities for practice or real-time feedback.
- Given the high demands placed on many health workers across the Philippines – multitasking, long work hours, extensive travel – maintaining high levels of morale and motivation will be an ongoing challenge.

Recommendations

In order to address the challenges associated with the quantity and quality of human resources, the following recommendations are proposed:

Quantity of human resources:

- Gradually transition surplus health workers to focus more broadly on health services, integrating COVID-19 vaccination into PHC.
- Consider reassigning surplus vaccination staff employed on a contract/job order basis to areas beyond the health sector. As COVID-19 transitions to an endemic stage and the Philippines continues to reopen for travel and tourism, additional staff will be needed in these industries. Health sector workers’ skills may be adaptable for use in the tourism industry, as well as in the education and sanitation sectors.
- Roster excess staff within the Medical Reserve Corps to pool health professionals for future emergencies.
- Professionalize the health workforce to include technical accreditations and salaries for BHWs, who could be trained by the Technical Education and Skills Development Authority to gain technical accreditation for further learning and development interventions, enabling them to qualify for basic civil service positions.
- Prioritize the completion of the draft Human Resource Development Master Plan at the national level within the next year to prepare for staff surging in future emergencies.
Quality of human resources:

- Develop online platforms for knowledge-sharing at regional and national levels. Such platforms can host successful training materials, supportive supervision tools, flowcharts, processes, job aids, etc., helping to avoid duplication of efforts.
- Regional and provincial health offices should continue to provide high-quality and innovative supportive supervision to health facilities and clinics. Clear expectations should be established regarding visit frequency, along with any associated checklists or tools. Supervisors should receive support and coaching on using interpersonal communication skills to deliver high-quality feedback during supervision sessions.
- Implement standard follow-up protocols and support mechanisms for online learning, enabling learners to practice newly acquired skills and receive real-time feedback.
- Employ strategies to maintain morale at all levels. Some examples include:
  - Ensure health workers have clear job descriptions.
  - Provide health workers with high-quality personal protective equipment.
  - Offer incentives when financially feasible.
  - Recognize and celebrate quality performance.
  - Deliver constructive, actionable feedback at regular intervals.
  - Provide clear processes and job aids.
  - Create opportunities for peer-to-peer feedback and support.

4.1.7. Vaccine demand, advocacy and communication

Background

The Philippines has traditionally exhibited a high acceptance of vaccination as a crucial public health measure for reducing VPDs. However, the controversy surrounding the dengue vaccine (Dengvaxia)3 in 2016/2017 is thought to have resulted in diminished vaccine confidence and subsequent declines in coverage rates. The COVID-19 pandemic has seen the development and introduction of several new vaccines, each with differing target populations, schedules, effectiveness and side effects. Consequently, demand for vaccines and effective communication have emerged as crucial areas of focus across all government levels and among partners with the introduction of these vaccines.

Strengths and achievements

Planning templates for demand and communication were developed and implemented in 12 out of the 13 provinces evaluated. This resulted in broad sharing of communication materials and key messages across government levels and partners, promoting unified messaging to the public. Numerous communication platforms and approaches were utilized for health promotion activities, including chatbots, media briefings, house-to-house outreach and health worker training.

Strong collaborations were established among government bodies, partners (such as WHO and UNICEF), civil society and the private sector. These partnerships helped to amplify the reach of key messages, particularly to groups not primarily targeted by government communication campaigns.

Innovative strategies for risk communication and community engagement included: utilizing trusted community leaders and health workers as vaccine advocates; integrating communication activities during festivals; implementing a “relax, we’re vaxed” business designation; and providing food incentives after vaccination.

Challenges

Vaccine hesitancy remains a challenge, driven by factors such as misinformation, fear of side effects and adverse events, low risk perception or complacency, previous experience with the dengue vaccine, fatalistic attitudes and religious beliefs. This hesitancy is exacerbated by the cost, distance and time required for community members to access vaccines.

Lower demand for the first dose of the vaccine has been observed among older age groups, indigenous populations and caregivers of children aged 5–11 years. Overall demand for the second and booster doses has also been lower across all groups. During the evaluation, under-utilization of vaccination centres was noted. Based on interviews at provincial and health facility levels it was reported that older age groups and children aged 5–11 years require more targeted efforts and resources to increase demand (see Fig. 12).

3 Dengvaxia, a dengue vaccine manufactured by Sanofi, was used in the Philippines in 2016. However, after allegations surfaced that the vaccine was linked to the deaths of several children, Dengvaxia’s Food and Drug Authority licence was revoked and its use was stopped in 2018.
While large-scale surveys have provided a general understanding of barriers to COVID-19 vaccination, demand issues are context-specific. Gaps exist in understanding and generating data on local reasons for non-vaccination. This lack of local insights has resulted in uncertainties on how to tailor strategies with context-specific solutions. Limited and varied capacity and availability of human resources at subnational levels have contributed to these gaps.

The ever-changing pandemic environment, including the development of new vaccines, emergence of variants and public vaccine preferences, have led to shifts in vaccine demand, supply and access. These changes have created challenges in implementing effective communication strategies for vaccine roll-out, as there was a constant need for “firefighting”. Recalibrating communication targets was necessary as the balance of supply and demand evolved, yet indicators to measure or operationalize demand remained unclear.

**Recommendations**

- Re-evaluate demand and communication strategies, prioritizing vulnerable populations and areas facing geographical constraints where COVID-19 vaccine coverage is lacking. Strategies should consider:
  - Contingencies to help with rapid shifts in vaccine demand, supply and access.
  - Clear definitions of demand indicators, targets, priorities and the utilization of data for action.
  - Establishment of a two-way communication channel that includes communities and spans across all levels, allowing for bidirectional information flow.
  - Incorporation of messaging on routine immunization and other essential health services for mothers, newborns, children and adolescents. These messages should highlight the importance of these services and describe measures undertaken to ensure their safety.
  - Build and refresh local capacity, with an emphasis on face-to-face training/coaching, and the aim to strengthen:
    - Interpersonal and risk communication skills among front-line workers, including BHWs and social mobilizers, particularly in response to vaccine hesitancy.
    - Evidence generation at the local level to inform the design and evaluation of context-specific and acceptable solutions, using participatory community engagement approaches. This human-centred design
strategy engages community members in the identification, prioritization and design of solutions for demand issues.

- Continue to build capacity development of health workers in demand generation, risk communication and community engagement at subnational levels.

4.1.8. Vaccine safety

Background

In 2010, the DOH in the Philippines released Administrative Order No. 2010-0017, known as the “Guidelines in Surveillance and Response to Adverse Events Following Immunization”, as part of its commitment to enhance its AEFI surveillance system and ensure the provision of safe and effective vaccines and immunization services at all levels. The guideline was developed and disseminated to guide stakeholders on the early detection, reporting, investigation of and appropriate response to AEFIs. The Philippines has since maintained a functional AEFI surveillance system.

As part of the COVID-19 vaccine roll-out, the DOH is drafting the Interim Omnibus Guidelines on the Adverse Events Following Immunization Surveillance for COVID-19 Vaccines. These guidelines aim to ensure the safety of COVID-19 vaccines by establishing vaccine safety surveillance and responses accessible to all stakeholders. Furthermore, it promotes vaccination confidence through the reporting of AEFIs as mandated by Republic Act 11332, the Mandatory Reporting of Notifiable Diseases and Health Events of Public Health Concern Act, and its revised implementing rules and regulations of 2020.

The Philippines is a member of the WHO Programme for International Drug Monitoring and the Uppsala Monitoring Centre (UMC). For reporting AEFIs related to the COVID-19 vaccine, the VigiFlow system (managed by UMC) has been widely used at the local level, though paper reporting forms are also used, especially in areas with limited information technology (IT) infrastructure. Once AEFI reports are logged into VigiFlow, they can be accessed by both the FDA and the Epidemiology Bureau (EB) of the DOH. However, since 2018, the EB and the FDA have been operating separate AEFI surveillance systems, with limited coordination.

Strengths and achievements

The AEFI reporting system, utilizing VigiFlow and a standardized reporting form, has been enhanced with the addition of newly hired staff tasked with completing the AEFI reporting form and/or entering data into the VigiFlow system. AEFIs reported in VigiFlow are analysed and updated weekly by the FDA.

Functional Regional AEFI Committees (RAEFICs) have been established, fostering strong collaboration with medical societies and Regional Epidemiology and Surveillance Units (RESUs) to conduct causality assessments. Various medical societies support the review and assessment process through consultation, especially when AESI cases require specific clinical expertise. RESUs play a secretariat role by compiling relevant documents for case summary to be presented to the RAEFICs.

Some regions, such as regions 11 and 12, have systems in place to monitor and manage serious AEFIs. An AEFI emergency kit and a referral system for follow-up treatment are available at vaccination sites. Newly hired staff at vaccination sites also receive virtual training prior to and during the COVID-19 vaccine roll-outs.

National AEFI surveillance guidelines are in place for COVID-19 vaccines as well as routine immunization vaccines, although a COVID-19-specific guideline is still under development. The structure, function and expertise of the NAEFIC have been enhanced to conduct causality assessments for COVID-19-related serious AEFIs/AESIs. NAEFIC meetings, which were previously on hold, have been revitalized as regular/frequent meetings to meet the needs of causality assessments due to an increased volume of reports. The members of NAEFIC were supplemented with clinical experts to review and assess serious AEFIs/AESIs following COVID-19 vaccines; target populations were expanded beyond children and included older people and adults with comorbidities.

Challenges

Although the overall AEFI reporting system has been enhanced, areas for further improvement have been identified in some regions. The capacity of staff and health workers at vaccination sites and healthcare facilities is limited in recognizing and detecting the symptoms and key clinical characteristics of AESIs, particularly anaphylaxis. In some regions,
AEFIs are under-reported due to the length of AEFI forms and the requirement to upload the AEFI to various reporting platforms, given the multiple responsibilities of surveillance officers. Recovering previously uploaded reports in VigiFlow can be challenging, leading to duplicate or incomplete data entry. AEFI reporting is delayed in geographically isolated areas with limited IT infrastructure, as VigiFlow is web-based.

Case investigation is yet to be further enhanced. Improvements are needed in case investigations, including increasing awareness and knowledge about AEFIs/AESIs at health facilities, availability of clinical specialists and laboratory test capacity, and simplification of the lengthy case investigation form. Managing serious AEFIs/AESIs remains a challenge in some regions, mainly due to the limited availability of AEFI emergency kits and the limited capacity of local staff in recognizing symptoms and responding to emergencies. AESI surveillance relies on a passive surveillance system, which is based on spontaneous reporting and has limitations on AESI detection.

Managing serious AEFIs/AESIs (including anaphylaxis) remains a challenge in some regions mainly due to the limited availability of AEFI emergency kits (including adrenalin) and limited capacity of local staff to recognize the initial symptoms of serious AEFIs/AESIs and respond with emergency treatment. Local staff were only provided virtual training, which might affect knowledge gained, such as situations where even if adrenaline is available, staff at a vaccination site do not know how to use it.

AESI surveillance currently relies on a passive surveillance system, which is based on spontaneous reporting by those who are being vaccinated, their parents, health-care providers, etc. A passive surveillance system has limitations for AESI detection, which includes under-reporting or compromised accuracy of reporting, selection bias depending on the source of reports, etc. Lack of technical capacity in signal detection at national level was also identified as a challenge, both by the FDA and the EB.

AEFI surveillance, including vaccine pharmacovigilance system, is divided into two government agencies – FDA and EB. Two separate data sets managed by two separate government entities with limited collaboration negatively affects the quality and function of AEFI surveillance. VigiFlow can be accessed by both the FDA and the EB but the EB has established and manages a separate data set of serious AEFIs/AESIs in particular. The EB-managed data set can be shared with the FDA upon request. The EB mainly manages serious AEFIs/AESIs by facilitating necessary follow-up processes, including investigation and causality assessments.

Recommendations

- Detection and reporting of AEFIs/AESIs can be improved by:
  - Improving detection and reporting of AEFIs/AESIs through refresher training, including offline/hands-on options when possible, for both retained and newly hired staff, particularly in regions with high staff turnover, such as region 11. In addition, post-training evaluations should be conducted to ensure application of knowledge and skills gained from training.
  - Ensuring standardized encoding/data entry processes (such as transferring information from paper reporting forms to VigiFlow), especially in regions where IT infrastructure is limited.

- Enhance overall capacity and collaboration among health workers/facilities to further strengthen the AEFI surveillance system. All health-care providers should be aware of AEFIs to ensure proper diagnosis and record-keeping, thereby supporting investigation and causality assessment.

- Strengthen investigation teams in each region, allowing them to identify essential information for AEFI investigations and conduct preliminary reviews/assessments based on this information, thereby supporting RAEFICs.

- Designate an individual at each vaccination site to ensure availability of AEFI emergency kits and to request supplies when necessary. Also, post-training evaluations should be used to ensure trained staff can identify the location of the AEFI emergency kit and understand its use.

- Health workers and local staff should be made aware of key characteristics of AESIs, including anaphylaxis, and be prepared to respond to and manage these situations. Anaphylaxis – while not restricted to COVID-19 vaccines and manageable with timely detection and clinical management – can nevertheless be life-threatening.

Prevention, Diagnosis and Management of Immediate Severe Allergic Reactions to COVID-19 Vaccines, 2021”. The job aid should include key AESI characteristics and response strategies, and be applicable and feasible in regional contexts.

- Extend and enhance AESI surveillance capacity beyond passive surveillance for more reliable and consistent AESI and signal detection. As recommended in the WHO COVID-19 Vaccines: Safety Surveillance Manual (2020), the next step for countries with a fully functional passive surveillance system is to plan and implement an active surveillance system.

- Signal detection capacity needs to be built up at the national level with strong collaboration between the FDA pharmacovigilance team and the EB. Both agencies are also responsible for the disease surveillance system, not only on VPDs but also on NCDs, which would become a foundation for background rates to be used in signal detection.

- It is significant to establish the integrated AEFI surveillance system particularly with clarified roles and responsibilities of the FDA and the EB to serve the ultimate purpose of AESI surveillance, which is to protect the public and preserve the integrity of immunization programmes not only for COVID-19 vaccines but also routine immunization vaccines.

### 4.1.9. Monitoring and Evaluation

#### Background

The NDVP describes that a COVID-19 vaccine monitoring system is in place that enables the country to (i) measure equitable uptake and coverage over time by geography, population and risk groups; (ii) monitor to what extent national policies prioritizing such risk groups are effectively implemented; (iii) provide a personal vaccination record or certificate for health, occupational, educational and travel purposes; (iv) provide the necessary records and documentation for use in surveys, disease surveillance and vaccine effectiveness studies; and (v) ensure that individuals can be monitored for the entire vaccination course to minimize dropout.

The system’s key programme indicators used for monitoring and evaluation of the immunization programme are shown in Table 3.
## Table 3. Dimensions for disaggregating vaccine uptake and coverage

<table>
<thead>
<tr>
<th>Disaggregation</th>
<th>Definition</th>
<th>Use</th>
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</table>
| Vaccine product | By each vaccine product in use in a country | ● Calculate uptake and coverage with a last recommended dose  
● Evaluate protection in a population, given differences in effectiveness  
● Evaluate vaccine safety issues that are specific to the different products in use |
| Geography (required) | By district, province, state, etc. | ● Monitor equitable distribution across regions in a country |
| Sex (required) | By sex of the vaccinated person | ● Monitor equitable distribution by sex |
| Age group (required, at a minimum younger than 60, 60–69, 70–79, 80+) | By age group of the vaccinated person according to national policy for vaccine prioritization | ● Age is a risk factor for severe COVID-19. Monitoring uptake among specific age groups is required to evaluate whether prioritization policies are implemented |
| Occupation (optional, where feasible) | By prioritized occupational group: definition/characteristics to be decided at the country level by national health experts/NITAGs | ● Occupation is a risk factor for transmission of SARS-CoV-2, and country policies will need to ensure that essential front-line workers are protected first  
● Evaluate whether prioritization policies are implemented |
| Other risk factors (optional, where feasible) | Among people with comorbidities or other risk factors for COVID-19, such as pregnancy | ● Evaluate whether prioritization policies are implemented. Note: this may not be feasible in all countries; foresee challenges disaggregating doses as well as establishing targets for these at-risk groups. |
| Context (optional, where feasible) | In long-term care facilities, prisons, universities and schools | ● Evaluate whether these strategies are implemented |
| Other equity dimensions (optional, where feasible) | By socioeconomic, ethnic, linguistic, religious, or any socially disadvantaged populations | ● Monitor equitable distribution across different populations in a country. Note: this may only be feasible to measure using surveys. |


The NDVP also indicates the use of dashboards to provide situational awareness for officials and the public, including a weekly COVID-19 vaccination dashboard and a COVID-19 vaccine distribution planning, tracking, modelling and analysis application. Prior to the COVID-19 pandemic, the DOH developed the Integrated Clinic Information System (iClinicSys) that supports PHC facilities in effectively and efficiently monitoring patient care. It generates the required national health statistical requirements such as the Field Health Services Information System and disease registry reports, and allows health-care providers to track patient data.

**Strengths**

The Philippines promptly developed and implemented digital tools for monitoring the COVID-19 vaccine roll-out at the onset of the pandemic in 2020. The Vaccine Information Management System (VIMS) was established with external private support, incorporating two major components:

- Vaccine Administration System (VAS): This has the capability to create vaccination certificates (VaxCerts). VAS collects key vaccine recipient identifiers such as name, date of birth, gender, residence, phone number, among others. Presently, the VAS database hosts information on approximately 70 million Filipinos, drawn from 138 million vaccination events.
● Vaccine Operations Reporting System (VORS): This mainly presents aggregate reports of vaccinations by priority group to the municipal level and dose consumption.

Appropriate funding and additional partner support were available to support implementation of VIMS. VORS has been launched in more than 1700 LGUs where it is actively used, providing almost real-time reporting of granular data from the health facility level. It also incorporates data from private vaccination providers. Data are typically consolidated every evening from different sources (paper and other electronic databases) and supplied to the VOC every morning at 08:00. The data are also used locally in regular briefings with city mayors and other decision-makers, and occasionally used to stimulate healthy competition between municipalities.

A master list of priority groups targeted for supplementary immunization activities and other public health campaigns is maintained and updated at the barangay level. Data from this list partially overlap with, and complement, the VAS database.

Dedicated data management teams are operational at all three health service levels, with satisfactory availability of hardware and software.

Challenges

Initial modifications and necessary updates to the data systems imposed strains on both systems and health workers. Crucially, as the VAS lacks a unique identifier, the data between the VAS (which contains vaccine recipient information) and the VORS (which features aggregate reports and dose consumption information) are unlinked. Given that VORS only provides numerators, and considering the missing integration of these data with available denominators (VAS or barangay master lists), there is a limited possibility of using VORS/VAS data for estimating COVID-19 vaccine coverage, for tracking vaccine recipients, and for identifying possible defaulters or missed target groups. Currently, numerous local bespoke COVID-19 vaccination data systems are in operation at various health service levels, with the parallel use of paper and electronic options. Data from these systems are eventually integrated into the VIMS. There is also a lack of standardized national vaccination cards and VaxCerts, such that a variety of local makeshift vaccination cards and certificates are in circulation. Overall, Internet connectivity is intermittent or difficult to obtain in some areas of the country.

There are multiple data demands at the LGU, provincial and regional levels, which make data collection and management very time-consuming for front-line health workers. VAS data quality is perceived to be poor (incomplete and untimely). However, a formal data quality assessment has not yet been conducted to determine the data quality. VORS data are generated by location of the health facility administering the vaccines and not by the vaccine recipient’s residence, thus reflecting health facility performance rather than providing the basis for unbiased geographical coverage estimations. Also, VORS data provide limited information on inventory stock, as this would require repeated physical inventory to verify stock levels, which most service delivery staff do not have the time to do.

There is an acknowledged divergence between census-based projected and actual population numbers (denominators) which makes it difficult to determine the actual vaccination coverage. There is also varying use of data for action, with anecdotal use of the data to guide delivery strategies at the municipal level.

The impact of the COVID-19 pandemic and its public health response is reflected by the significantly reduced routine immunization coverage in 2021 and was reflected in the interviews (see Fig. 13).
**Fig. 13. Number of provinces and health facilities that experienced disruptions in routine immunization programs**

<table>
<thead>
<tr>
<th>% Provinces</th>
<th>Have existing childhood routine immunization programmes been affected by the introduction of COVID-19 vaccine?</th>
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<tbody>
<tr>
<td></td>
<td>Some disruptions</td>
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<td></td>
<td>Some improvements</td>
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<td></td>
<td>Don’t know</td>
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<td>No effect</td>
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<table>
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<tr>
<th>% Health Facilities</th>
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<tr>
<td></td>
<td>Some improvements</td>
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<tr>
<td></td>
<td>Some disruptions</td>
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<td></td>
<td>Don’t know</td>
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<td></td>
<td>No effect</td>
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</tbody>
</table>

**Recommendations**

- Ensure regular analysis of the data collected at all levels to guide vaccination strategies and resource allocation – specifically during the transition from a pandemic to an endemic situation.
- Establish interoperability of VAS and VORS to allow for the estimation of coverage and follow-up of vaccine recipients across municipalities.
- Integrate barangay master lists with the new VIMS and enhance data collection by location of vaccine recipient and by specific vaccine.
- Further align bespoke data systems in use with the new VIMS and complete roll-out of the national vaccination card and certification system.
- Consider deep-dive evaluation of coverage at primary service level, including conducting LGU-based cluster coverage surveys.
- Enhance capacity-building (repeated refresher training) of data managers across levels to strengthen data triangulation and use of data for decision-making.
- For mid- to long-term implementation:
  - Potentially link the iClinicSys with the new VAS to include routine immunization data.
  - Consider consolidating the new VIMS into a manageable electronic immunization registry and eLMIS for routine and emergency use to the health facility level.

### 4.1.10. Surveillance

**Background**

Surveillance plays a pivotal role in the pandemic response. It assists in detecting COVID-19 cases, understanding disease patterns and trends, and pinpointing areas of high disease transmission. The DOH promptly included COVID-19 in the roster of nationally notifiable diseases during the early stage of the outbreak to ensure that critical information was gathered to guide appropriate response measures. Existing surveillance systems were utilized to expedite the identification of cases and the detection of unusual clusters.
Strengths

The COVID-19 surveillance system, under the jurisdiction of the EB of the DOH, reports suspected, probable and confirmed COVID-19 cases, as well as hospitalizations and deaths. It also facilitates the identification of case contacts. When the vaccination status of cases is documented, the data can be leveraged to estimate the proportion of unvaccinated cases, which is valuable for conducting vaccine effectiveness analyses and for facilitating public communication efforts regarding COVID-19. The COVID-19 surveillance data are routinely used to inform mayors and local decision-makers, the Regional Interagency Task Forces and regional VOCs. In certain areas, governors use surveillance data to publicly acknowledge LGUs with high COVID-19-related morbidity and mortality to foster a competitive environment between provinces and municipalities. This is a similar approach to the use of vaccination data.

Challenges

The COVID KAYA electronic surveillance system, which was implemented in 2020 for uploading COVID-19 case investigation forms, was adapted swiftly from a similar system used by the Tuberculosis programme. The KAYA system, however, has a limited capacity to expand, leading to significant downtime once it exceeded a million case entries. The unresolved limitations of the system have resulted in low reporting compliance by the Disease Reporting Units. Furthermore, not all the Disease Reporting Units are submitting regular zero reports. In response to this challenge, some regions developed more user-friendly KAYA-like systems and dashboards for the collection of COVID-19 surveillance data. However, these data are irregularly uploaded into KAYA. In light of emerging reporting delays, the EB shifted its focus from KAYA to RT-PCR laboratories as the primary source of case data. Naturally, this shift carries the risk of significant under-reporting. Like all electronic reporting systems, limited Internet connectivity hampers its performance, with even SMS reporting proving challenging in some locations.

Some regions experienced challenges in accessing surveillance data. The technical informatics capacity of the EB is inadequate, and the Bureau experiences high staff turnover. There is also difficulty in collecting the vaccination status of cases, particularly from death reports.

Approximately 50% of provinces and 20% of health facilities visited encountered some disruptions in regular VPD surveillance systems (see Fig. 14).

Fig. 14. Number of provinces and health facilities visited that experienced disruptions of VPD surveillance
Recommendations

- Encourage consistent reporting of COVID-19 data, especially case vaccination status, and ensure zero-reporting from all Disease Reporting Units.
- Provide all regions with consistent access to all surveillance data.
- Revive active VPD surveillance, focusing on the LGU level, to facilitate early detection of epidemic indicators and prevent potential outbreaks.
- Reinstate rigorous onsite monitoring and supervision at local levels and restore full capacity of health workers in VPD surveillance.
- Enhance the technical informatics capacity of the EB.
- For mid- to long-term implementation:
  - Develop further integrated respiratory disease surveillance solutions, including data for COVID-19 cases and laboratory data, severe acute respiratory infection, and influenza and influenza-like illness. This development could be facilitated through the new TANOD system currently under construction.
  - Partner with academic institutions to develop integrated respiratory disease surveillance solutions and other technical strategies, and to incorporate some of the innovative local solutions (such as KAYA-like systems).

Strengths

The Philippines has established partnerships at multiple levels to facilitate collaborative research studies and leverage technical expertise. For example, the Philippine Department of Science and Technology actively collaborates with academic and scientific partners across a range of research areas. The country also has a history of using research to inform COVID-19 vaccine policy. Early prioritization of vaccines was conducted using an evidence-based approach, leveraging scientific evidence and support from academia and scientific partners to select 11 potential vaccines from more than 100 pipeline vaccines.

A national, multi-site study of vaccine effectiveness among health workers and the general adult population is currently being conducted by the University of the Philippines Manila, through the National Institutes of Health – Institute of Clinical Epidemiology. Additional vaccine effectiveness studies by other partners, such as Nagasaki University, are also planned or in progress.

Quantitative and qualitative research studies, including knowledge, attitudes and practices surveys, focus group discussions and rapid qualitative assessments, have been undertaken by the DOH and partners (e.g. UNICEF, United States Agency for International Development) to understand vaccine demand among key populations.

Challenges

Significant knowledge gaps persist regarding the effectiveness of less studied products, such as non-mRNA vaccine products, both in the Philippines and globally. Data are limited regarding the effectiveness, safety and immunogenicity of heterologous regimens of COVID-19 vaccines, also known as “mix-and-match” regimens, which have been occasionally implemented in the country.

While cohort studies on vaccine effectiveness possess numerous strengths, they demand substantial time, effort and resources. Additional data are needed to further build upon findings from demand generation research over time and at more detailed levels, such as within barangays and communities.

4.1.11. Research

Background

Research into post-introduction vaccine effectiveness can offer crucial insights into the performance of COVID-19 vaccines in real-world scenarios. Although vaccine efficacy data from clinical trials are available, such data cannot account for evolving variables such as the emergence of variants of concern, changing COVID-19 epidemiology, extended follow-up durations, and variability among global populations. Additionally, research into other vaccine properties, such as immunogenicity and duration of protection, can provide valuable data to inform evidence-based policy, including booster dose recommendations. Community-level evidence generation on public perceptions and interventions for vaccine acceptance and hesitancy can guide demand strategies. A comprehensive, well-defined research agenda can assist in identifying key questions to be addressed through research in the local context.
Recommendations

- Formulate a national priority research agenda for COVID-19 vaccines to identify key gaps that need to be addressed to guide evidence-based policy. This research agenda can be used to direct the scope of work for academic and research partners and to prioritize national research funding needs. Research topics that could be considered for inclusion on the agenda include:
  - Evaluating the safety, immunogenicity and vaccine effectiveness of mixed-product regimens and less studied products.
  - Exploring how standardized vaccine effectiveness protocols (such as WHO-developed protocols: https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/early-investigations) can be utilized to aggregate data nationally or with international vaccine effectiveness networks to evaluate less studied vaccine products or regimens.
  - Complementing longitudinal cohort vaccine effectiveness studies with other study designs using existing data gathered at the national, subnational or health-facility levels.
  - Assessing the duration of immune protection, particularly during the emergence of novel variants.
  - Evaluating strategies and continuing community-based evidence generation to increase vaccine demand.
  - Assessing changes in routine immunization and incidence of VPDs during the COVID-19 pandemic.

Example research agendas include:


- For mid- to long-term implementation and as described in the surveillance topic section, work on development of COVID-19 and other respiratory disease surveillance systems with an eye towards how data can be used for analyses and evidence-based policy.

4.2. Impact of COVID-19 vaccination on routine immunization and opportunities for the future

The influence of the COVID-19 pandemic and the vaccination response is apparent in the considerable reduction of routine immunization coverage in 2021. Coverage of fully immunized children and MCV1 declined from 65.2% in 2020 to 48% in 2021, and from 76.7% in 2020 to 53.5% in 2021, respectively. Surveillance performance for VPDs was below par, posing a significant risk of overlooked emerging outbreaks. Factors contributing to this included health worker reassignments and financial resource reallocation for COVID-19 response activities, along with a decline in health facility attendance rates. Parents hesitated to venture out and vaccinate their children due to the risk of COVID-19 exposure. Community quarantines and transport and border restrictions also hindered health service access and delivery.

While the country’s COVID-19 response and vaccination have tested the implementation of routine immunization, they have also underscored several opportunities for enhancing the overall immunization system, such as:

- The strong political commitment, governance and leadership resulted in a well-established and managed structure for COVID-19 response and vaccination, displaying consistent adherence to policies, strategies and guidance at all levels. Successful multisectoral collaboration and coordination from different government agencies, development partners, private sectors,
nongovernment organizations and civil society organizations were utilized for planning, service delivery, logistics and communication. This political commitment and leadership can be harnessed for delivering routine immunization programmes.

- The effective allocation of funding for COVID-19 vaccination, achieved through government appropriations and a funding model, may be extended to routine immunization activities.
- Various innovative and efficient service delivery strategies were employed to reach all targeted groups, such as national vaccination days, mega-vaccination sites, transportation to sites, house-to-house visits, office hoppers, drive-thru and night vaccination. Most of these strategies were based on the successful polio outbreak response vaccination and measles-rubella supplementary immunization activities conducted in 2019–2021.
- The expansion of cold chain and storage capacity, including the implementation of a reverse cold chain system, could be applied to vaccines and vaccine supplies used in routine immunization.
- A considerable amount of creativity and initiative was demonstrated by using multiple communication platforms and approaches to reach all segments of the population and address vaccine hesitancy. These same initiatives and communication platforms can be used to reach the target population for routine immunization.
- Master listing at the barangay level and the rapid development of digital tools for real-time reporting of vaccination coverage can be adapted for identifying the target population and for monitoring routine immunization coverage.
5. Conclusion and way forward

The COVID-19 response and vaccination programme in the Philippines have been successful, with 60% of the entire population and over 90% of health workers receiving their final dose of the primary series within one year of commencement of vaccination. Additionally, a booster dose has been introduced, and vaccination has been expanded to other priority groups such as front-line workers in other essential sectors and the poor population. However, this success has resulted in disruptions to routine immunization services, and there is a risk that low immunization coverage could lead to outbreaks of VPDs.

The successes achieved through the COVID-19 vaccination initiatives should be utilized promptly to further bolster and expand routine immunization, capitalizing on the investments and gains made. These include multisectoral partnerships, innovative financing, micro-planning, expansion of immunization targets, increased cold chain and storage capacity, advanced information systems and creative vaccine demand generation.

The country may consider the following ways forward:

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<td>1</td>
<td>Narrow the immunity gaps that have widened during the COVID-19 pandemic through accelerated immunization activities and preventative catch-up immunization activities for measles, rubella and polio as soon as possible</td>
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<tr>
<td>2</td>
<td>Continue employing innovative strategies, the population master list and the COVID-19 vaccination information system to locate and vaccinate remaining vulnerable populations, such as older adults and individuals with comorbidities.</td>
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<tr>
<td>3</td>
<td>Develop and implement a national strategy for integrating COVID-19 vaccination into routine immunization as soon as possible.</td>
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<tr>
<td>4</td>
<td>Analyse the full cost of the COVID-19 vaccination response, including cost of vaccines, vaccine supplies, logistics, human resources and campaigns, among others, to support future investment plans and scenarios for COVID-19 vaccination and its integration into routine immunization.</td>
</tr>
<tr>
<td>5</td>
<td>Reassign health workers engaged in COVID-19 efforts to routine immunization by integrating COVID-19 activities with routine immunization and other health service delivery.</td>
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<td></td>
<td>Use reliable and current data to guide service delivery strategies, especially in geographically low-performing areas.</td>
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<tr>
<td>7</td>
<td>Integrate the COVID-19 vaccine and routine immunization supply chains under one cold chain team and implement a standard logistics tracking and monitoring system (eLMIS) for both COVID-19 and routine immunization.</td>
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<tr>
<td>8</td>
<td>Merge the paper-based barangay master list with newly developed electronic registry tools to enhance the immunization registry for routine immunization monitoring and evaluation.</td>
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<tr>
<td>9</td>
<td>Increase active surveillance of VPD cases, onsite monitoring and supervision at the LGU level, and further development of integrated respiratory disease surveillance solutions.</td>
</tr>
<tr>
<td>10</td>
<td>Re-evaluate demand strategies to prioritize vulnerable groups and areas of low coverage and strengthen front-line workers’ capacity for risk communication.</td>
</tr>
<tr>
<td>11</td>
<td>Strengthen immunization safety monitoring (AEFI surveillance) and promote research to drive evidence-based policy</td>
</tr>
</tbody>
</table>
### Annex 1. Criteria used for the selection of regions and provinces

<table>
<thead>
<tr>
<th>Region</th>
<th>Coverage in % Main indicators</th>
<th>Province 1/City</th>
<th>Province 2/City</th>
<th>Other characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Capital Region</td>
<td>A2: 84.2% A3: 96.5%</td>
<td>Navotas</td>
<td>Pasay</td>
<td>Highly urbanized cities, mobile population, highly populated, mixed socioeconomic groups</td>
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<tr>
<td></td>
<td></td>
<td>A2: 85.9% MCV1 (2021): 87.6% Penta3: 86% Mandaluyong A2: 88.2% MCV1 (2021): 58.7% Penta3: 66.4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region 1</td>
<td>A2: 81.2% (all provinces above 75%) A3: 98% MCV1 (2021): 55.4% vs 83.2% (2020) Penta3: 50.7%</td>
<td>Ilocos Sur A2: 90.8% MCV1 (2021): 70.4% Penta3: 58.2%</td>
<td>La Union A2: 77.5% MCV1 (2021): 56.1% Penta3: 49.9%</td>
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<tr>
<td>Region 3</td>
<td>A2: 72.4% (all provinces 70% above) MCV1 (2021): 62.7% vs 89.6% (2020) Penta3: 64.5%</td>
<td>Tarlac A2: 75.9% MCV1 (2021): 81.8% Penta3: 86.2%</td>
<td>Zambales A2: 75.1% MCV1 (2021): 45.9% Penta3: 47.3%</td>
<td>Many indigenous communities</td>
</tr>
<tr>
<td>Region 4B</td>
<td>A2: 63.9% MCV1 (2021): 22.1% Penta 3: 22.7%</td>
<td>Palawan A2: 50.9% MCV1 (2021): 23.8% Penta3: 22.3%</td>
<td></td>
<td>137 GIDA barangays in Palawan only Many indigenous communities Good C19 but poor RI</td>
</tr>
<tr>
<td>Region 11</td>
<td>A2: 58.9% (all provinces ~50%) MCV1 (2021): 66% Penta3: 61.7%</td>
<td>Davao City (no data available) Davao Del Norte A2: 54.8% MCV1 (2021): 76.2%; (2020) 92.7% Penta3: 71.4%</td>
<td>Davao Occidental A2: 49.2% MCV1 (2021): 36.3% Penta3: 35.1%</td>
<td></td>
</tr>
<tr>
<td>Region 7</td>
<td>A2: 45.8% (all provinces below 50% except Siquijor) MCV1 (2021): 63.5% vs 81.8% (2020)</td>
<td>Cebu A2: 45.2% MCV1 (2021): 72.9% Penta3: 72.2%</td>
<td>Negros Oriental A2: 41.7% MCV1 (2021): 38.4% vs 86.3% (2020) Penta3: 40.5%</td>
<td>Poor C19 but good RI vaccination coverage</td>
</tr>
<tr>
<td>Region 12</td>
<td>A2: 56.5% (all provinces ~50%) MCV1 (2021): 37.3% Penta3: 35.8%</td>
<td>Cotabato City A2: 53.6 MCV1 (2021): 56.8% Penta3: 60.3%</td>
<td>North Cotabato A2: 58.5% MCV1 (2021): 25.8% Penta3: 22.2%</td>
<td>Islamic culture</td>
</tr>
</tbody>
</table>

A2: Senior citizens 60 years old and above; A3: Individuals with comorbidity/ immunocompromised/ immunocompetent; C-19: COVID-19; GIDA: geographically isolated and disadvantaged areas; MCV1: first dose of measles-containing vaccine; Penta3: third dose of pentavalent vaccine; RI: routine immunization.
Annex 2. Sites visited for the evaluation

<table>
<thead>
<tr>
<th>Region</th>
<th>Province/City/Municipality visited</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Capital Region</td>
<td>City of Manila (DOH Office), Caloocan City, Mandaluyong City, Navotas City, and Pasay City</td>
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<tr>
<td>Region 1 (Ilocos Region)</td>
<td>La Union Province: San Fernando City and Municipality of Santol</td>
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<td>Ilocos Sur Province: Vigan City and Municipality of Suyo</td>
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<tr>
<td>Region 3 (Central Luzon Region)</td>
<td>Pampanga Province: San Fernando City</td>
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<td>Tarlac Province: Tarlac City and Municipality of La Paz</td>
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<td>Zambales Province: Municipality of Candelaria and Municipality of Botolan</td>
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<tr>
<td>Region 4B (MIMAROPA Region)</td>
<td>Palawan Province: Puerto Princesa City and Municipality of Aborlan</td>
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<tr>
<td>Region 7 (Central Visayas Region)</td>
<td>Cebu Province: Cebu City, Mandaue City and Carcar City</td>
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<td>Negros Oriental Province: Dumaguete City</td>
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<tr>
<td>Region 11 (Davao Region)</td>
<td>Davao del Sur Province: Davao City, Digos City, Municipality of Hagonoy and Municipality of Sulop</td>
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<tr>
<td>Region 12 (SOCCKSARGEN Region)</td>
<td>South Cotabato Province: Koronadal City</td>
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<td></td>
<td>North Cotabato Province: Kidapawan City and Municipality of Aleosan</td>
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<td>Maguindanao Province: Cotabato City</td>
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</tbody>
</table>
## Annex 3. Evaluation team members and roles

<table>
<thead>
<tr>
<th>WHO</th>
<th>Headquarter</th>
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<tbody>
<tr>
<td></td>
<td>Mr Alejandro Ramirez Gonzalez, team and topic lead</td>
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<tr>
<td><strong>Western Pacific Regional Office</strong></td>
<td></td>
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<tr>
<td>Dr Masamitsu Takamatsu, team lead</td>
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<tr>
<td>Ms Glenda Gonzales, team lead</td>
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<tr>
<td>Dr Heeyoun Cho, topic lead</td>
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<tr>
<td>Dr SweetC Alipon, team lead</td>
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<tr>
<td>Ms Angel Grace Zorilla, evaluator</td>
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<tr>
<td>Ms Cheryl Valerie Legaspi, evaluator</td>
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<tr>
<td>Mr Oscar Vic Sto. Nino, evaluator</td>
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<tr>
<td>Mr Benjamin Bayutas, evaluator</td>
<td></td>
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<tr>
<td>Ms Kayla Mariano, evaluator</td>
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<tr>
<td><strong>Philippine Country Office</strong></td>
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<tr>
<td>Dr Achyut Shrestha, evaluator</td>
<td></td>
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<tr>
<td>Dr Sukadeo Neupane, team lead</td>
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<tr>
<td>Mr Wendwosen Teklemariam Nibabe, evaluator</td>
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<tr>
<td>Ms Charisse Tan, evaluator</td>
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<tr>
<td>Mr Venjie Benito, evaluator</td>
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<tr>
<td>Mr Dan Henry Garcia, evaluator</td>
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<tr>
<td>Ms Rowena Capistrano, evaluator</td>
<td></td>
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<tr>
<td>Ms Rosanna Rosell, evaluator</td>
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<tr>
<td>Dr Wendell Asuncion, evaluator</td>
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<tr>
<td>Mr Woody Apa, evaluator</td>
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<tr>
<td>Ms Ava Sharon Batay-An, evaluator</td>
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<td>Ms Roan Kathleen Vitug, evaluator</td>
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<tr>
<td>Mr Albert John Enrico Dominguez, evaluator</td>
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<td>Mr Juan Paolo Tonolete, evaluator</td>
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<tr>
<td>Ms Julia Friederike Pia Neufeind, evaluator</td>
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<tr>
<td>MM Global Health Consulting</td>
<td>Dr Karen Hennessey, team and topic lead</td>
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<td>Dr Carsten Mantel, topic lead</td>
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<td></td>
<td>Ms Claire Hugo, evaluator</td>
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<tr>
<td>UNICEF</td>
<td>Headquarters</td>
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<td></td>
<td>Mr Eric Laurent, team and topic lead</td>
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<tr>
<td><strong>East Asia and Pacific Regional Office</strong></td>
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<tr>
<td>Dr Michelle Dynes, topic lead</td>
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</tbody>
</table>
### UNICEF

**Philippine Country Office:**
- Dr Malalay Ahmadzai, evaluator
- Dr Carla Orozco, evaluator
- Dr Maria Marisa Ricardo, team lead
- Dr Amador Catacutan, evaluator
- Dr John Manuel Flores, evaluator
- Mr Bernardo Bersola, evaluator
- Ms Ma Lucila Agripa, evaluator
- Ms Kathleen Solis, evaluator
- Ms Kimberly Bernardo, evaluator
- Ms Nancy Pastrana, evaluator
- Ms Ma Teresita Hilario, evaluator
- Ms Aly Joy Narvaez, evaluator

### CDC

- Dr Sara Clements, topic lead
- Dr Radhika Gharpure, topic lead
- Dr Meng-Yu Chen, evaluator
Annex 4. National stakeholders interviewed

National meetings held and stakeholders met
Philippines COVID-19 Post Introduction Evaluation (cPIE)
18 to 23 April 2022

Sorted by chronological order in which interviews took place.

1. Dr Beverly Ho, Director, Disease Prevention and Control Bureau and Health Promotion Bureau, DOH
2. Dr Alfonso Regala, Chief, Program Implementation and Outreach Division, Health Promotion Bureau, DOH
3. Dr Carol Taino, Undersecretary, Procurement and Supply Chain Management Team, DOH; Dir. Joyce Ducusin, Director, Supply Chain Management Service, PSCMT, DOH; Engr. Luzviminda Garcia, Division Chief, Supply Chain Management Service, PSCMT, DOH; Engr. Max Adan, Supply Chain Management Service, PSCMT, DOH
4. Dr Kim Patrick Tejano, National Immunization Program, Disease Prevention and Control Bureau, DOH
5. Dr Soledad Antonio, Director, Bureau of International Health Cooperation, DOH
6. Dr Maria Rosario Vergeire, Undersecretary, Public Health Services Team, DOH
7. Dr Alethea De Guzman, Director, Epidemiological Bureau, DOH; Mr Geovin Uy, Deputy, AEFI Unit, EB, DOH
8. Dr Kezia Lorraine Rosario, Dr Shaymae Pearl Ufano, Field Implementation and Coordination Team, DOH
9. Dr Quen Raagas, Chief Division, Health Human Resource Development Bureau
10. Dr Malalay Ahmadzai, Dr Mariella S Castillo, Mr John Philip Perez, UNICEF Philippine Country Office
11. Ms Joyce Cirunay, Director, Food and Drug Administration, DOH
12. Dr Shrestha Achyut, Ms Capistrano Rowena, Mr Garcia Dan Henry, Dr Graham Harrison, Dr Jacqueline Kitong, WHO Country Office in the Philippines
13. Dr Eric Tamayo, Asec., Department of Foreign Affairs
14. Dr Myrna Cabotaje, Undersecretary, Field Implementation and Coordination Team, DOH
15. Secretary Carlito Galvez Jr, Chair, National COVID-19 Task Force
16. Dr Adriel Pizarra, Field Implementation and Coordination Team, DOH
17. Mr Christian Chua, Representative, Department of Information and Communication Technology
18. Ms Rowena Guevara, Undersecretary, Department of Science and Technology