Influenza Health Worker Vaccination Programmes: Platforms for Pandemic Preparedness
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## Abbreviations and acronyms

<table>
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<th>Abbreviation</th>
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<tr>
<td>COVID-19</td>
<td>coronavirus disease 2019</td>
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<tr>
<td>DiCEI</td>
<td>Directorate for the Control of Immuno-preventable Diseases (Argentina)</td>
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<td>EPI</td>
<td>Expanded Programme on Immunization</td>
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<td>Gavi</td>
<td>Gavi, the Vaccine Alliance</td>
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<td>HWs</td>
<td>health and care workers</td>
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<tr>
<td>KAP</td>
<td>knowledge, attitudes and practices</td>
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<tr>
<td>MMR</td>
<td>measles, mumps and rubella</td>
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<tr>
<td>NCCD</td>
<td>National Center for Communicable Diseases (Mongolia)</td>
</tr>
<tr>
<td>NomiVac</td>
<td>Nominalized Federal Vaccination Registry (Argentina)</td>
</tr>
<tr>
<td>Tdap</td>
<td>tetanus, diphtheria and acellular pertussis</td>
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<td>WHO</td>
<td>World Health Organization</td>
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Introduction

From January 2021 to January 2023, Gavi, the Vaccine Alliance has supported the World Health Organization (WHO) in a learning agenda to assess the feasibility and impact of seasonal influenza and routine immunization of health and care workers (HWs) on epidemic and pandemic preparedness. As Gavi considers the potential for HW vaccination platforms, this document provides information on countries’ experiences leveraging HW vaccination for coronavirus disease 2019 (COVID-19) vaccine introduction. WHO recommends that HWs be vaccinated against a number of antigens (1). Globally, countries have most frequently reported vaccinating HWs against hepatitis B, seasonal influenza and measles (2).

As part of this learning agenda, WHO headquarters and regional and country offices have worked closely with ministries of health to document examples of seasonal influenza vaccination programmes for HWs. Focal points in WHO regional offices were asked to nominate one or two countries to provide a detailed qualitative review of the context of their programme, the motivation for the programme, the programme structure and how seasonal influenza vaccination programmes were used to help with COVID-19 roll-out. A series of case studies were developed based on review of existing policies and guidelines, analysis of quantitative data sources and collection of qualitative data via interviews with key informants.

These case study vignettes serve as national snapshots of HW vaccination programmes. The audience for the vignettes includes Gavi, national governments, WHO and other partners interested in supporting development of robust national HW vaccination programmes. More information on how vaccination programmes for HWs supported COVID-19 vaccine introduction are currently in development.
Argentina

Context

The first example of an HW vaccination policy was Law 24151, enacted in 1992, which established mandatory vaccination against hepatitis B for HWs. As a result of this law, HW vaccination against hepatitis B is a prerequisite for working in health institutions. Influenza vaccination was first incorporated into the vaccination schedule of HWs in 2011.

In 2012, the Argentina Ministry of Health published its national recommendations for vaccination. This document includes a section specifically focused on HW vaccination which explains the policy, recommended vaccines and the responsibilities of health institutions for implementing HW vaccinations. The policy reaches “the group composed of all those persons who have contact with patients or with potentially infectious materials. This group includes, therefore, physicians, nurses, kinesiologists, biochemists, laboratory personnel, maids, administrative personnel and all other personnel who perform functions in the health area”. The HW vaccinations listed in the national recommendations include hepatitis B; measles, mumps and rubella (MMR); varicella; and seasonal influenza vaccine for all HWs. In addition, tetanus, diphtheria and acellular pertussis (Tdap) vaccination is recommended for HWs working with children under 1 year of age, and meningococcal vaccination is recommended for HWs who handle laboratory samples. The COVID-19 vaccine is recommended but is not yet included in the national vaccination schedule.

Despite the fact that vaccination of HW is technically mandatory, no enforcement mechanisms are in place, with the exception of hepatitis B vaccine.

Argentina’s current national vaccination law (Law 27491) was enacted in 2018. It provides a legal framework for the country’s vaccination policies and establishes free vaccination for antigens included in the national immunization schedule.

Motivations

The section of the national recommendations that explains the vaccination policy for HWs also lists the motivations for the HW vaccination programme. These include: protecting this essential workforce, reducing nosocomial infections and protecting health system functioning by minimizing absenteeism.

Structure

The Argentina Ministry of Health's Directorate for Control of Immuno-preventable Diseases (DiCEI) is responsible for the immunization programme. The DiCEI designs the vaccination programmes; purchases vaccines and other supplies and distributes them to different subsectors, such as the public sector, social security and prepaid medicine; and monitors implementation. The provincial Expanded Programme on Immunization (EPI) managers and municipal focal points are responsible for implementing vaccination policy. Other actors and stakeholders include scientific and health professional societies that support vaccination campaigns. There is a vaccination focal point at each central hospital who works together with the hospital director and management team to prepare and implement the vaccination programme.

Vaccinating HWs at their workplace is a key strategy for ensuring access to seasonal influenza vaccination. Communication activities include announcing the start of influenza vaccination campaigns to the priority risk groups, such as HWs.
Argentina has a national electronic nominal registry, the Nominalized Federal Vaccination Registry (NomiVac). Due to the federal nature of the country, some provinces register vaccines administered in the national registry, and others have provincial registries that are interoperable with the national registry. Influenza has an active monitoring programme which enables weekly reporting of coverage. For the influenza HW vaccination programme, the denominator is estimated based on the number of HWs vaccinated in previous campaigns.

**HW vaccination platform**

The COVID-19 vaccination campaign benefited from previous experience in implementing mass campaigns, such as vaccination during the 2009 A(H1N1) influenza pandemic, annual influenza vaccination and vaccination of HWs. The 2009 A(H1N1) vaccination campaign was particularly helpful in this.

Annual seasonal vaccination against influenza provides an opportunity to annually check the vaccination status of HWs (for other antigens as well) and to streamline the process of obtaining vaccines that have not been given to HWs.

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**Mongolia**

**Context**

Mongolia recommends seven vaccines for HWs: hepatitis B, tuberculosis, polio, tetanus, diphtheria, pertussis and influenza (3). Seasonal influenza vaccines were first available for Mongolian HWs in 1978, although doses were provided on an ad hoc basis, depending on funding and availability. In 2001, the introduction of a national immunization law formalized seasonal influenza as a vaccination programme. In 2014, Mongolia’s National Immunization Technical Advisory Group provided a recommendation that HWs be vaccinated against seasonal influenza annually. This recommendation was informed by the country’s experience and lessons learned during the 2009 A(H1N1) pandemic.

Mongolia has received financial and technical support for seasonal influenza vaccination from the Partnership for Influenza Vaccine Introduction since 2016. Further studies of the programme include a knowledge, attitudes and practices (KAP) survey, and burden of disease, cost of illness and cost–effectiveness studies (ongoing, as of June 2023). Over the last several years, the Government of Mongolia has increased the amount of financing it provides for procuring seasonal influenza vaccines. The country is currently working to include seasonal influenza vaccination funding into its routine immunization state budget to ensure sustainable long-term financing.

**Motivations**

In line with WHO recommendations, the Government of Mongolia prioritizes HWs for seasonal influenza vaccination because of their risk of transmitting infection to patients. HWs are also important drivers of seasonal influenza vaccination uptake, as they can communicate the importance and safety of annual seasonal influenza vaccination to their patients. In addition, seasonal influenza vaccination reduces workplace absenteeism, resulting in a more effective and accessible health workforce during seasonal influenza outbreaks. The Government of Mongolia considers seasonal influenza vaccination to be a critical tool in maintaining health system capacity during outbreaks.
Programme structure

Within the Mongolia Health Law issued on 5 May 2011, the Government defines HWs as individuals who provide health care and other staff working in health care facilities. Although frontline HWs are prioritized for seasonal influenza vaccination, all HWs are eligible. To plan for the annual seasonal influenza vaccination campaign, the National Center for Communicable Diseases (NCCD) collects the number of doctors, nurses and other staff (e.g. administrators, logistics employees, first responders) working in each health facility. The doses are allocated based on this annually updated registration. Unused doses are given to other influenza risk groups (e.g. pregnant women, older adults and people with underlying health conditions) to avoid waste.

Prior to the influenza season, HWs receive annual training on influenza epidemiology, sentinel surveillance and vaccination (including both the benefits of vaccination as well as potential adverse events following immunization) as part of the national seasonal influenza vaccination campaign. The campaign also includes communication materials, including social media, leaflets, booklets and stories. The key messages for HWs focus on vaccination as a tool for protecting themselves, their loved ones and their patients. The training and campaign materials contribute to the willingness of HWs to get vaccinated, with an overall high uptake of seasonal influenza vaccination in Mongolia.

Mongolia uses a combined approach of friendly competition for vaccination coverage rates among health facilities, supportive supervision by influenza experts and KAP findings to inform and improve vaccination campaigns. During the 2019/2020 influenza season, the National Influenza Centre and the NCCD collaborated to conduct a KAP survey for HWs. While the survey showed that HWs in Mongolia had adequate knowledge related to seasonal influenza vaccine, training is needed for newly recruited HWs.

HW vaccination platform

The foundation created by the seasonal influenza surveillance and vaccination programmes was leveraged during the COVID-19 pandemic. Mongolia was able to rapidly use the systems developed for sample collection, transportation and vaccination, as well as infection prevention and control. Adapting these systems, protocols and programmes allowed Mongolia to rapidly coordinate with relevant stakeholders and respond to the emergency. In addition, Mongolia’s National Deployment and Vaccination Plan for influenza was adapted during the pandemic to streamline logistics, communications, storage and resource management during COVID-19 vaccine introduction. The COVID-19 pandemic experience has reinforced the value of Mongolia’s seasonal influenza vaccination programme as a foundation for future pandemic preparedness.
Oman

Context
Oman first introduced seasonal influenza vaccination in 2005 with a focus on high-risk groups such as Hajj pilgrims, HWs, adults over 65 years old and immunocompromised individuals. Seasonal influenza vaccination for HWs was formally put into a national policy in 2011, with the first phase of implementation in 2013, focusing on HWs working in critical care. In 2014, the vaccination programme expanded to include HWs in non-critical care areas and has since been expanded to be an annual vaccination for all HWs. In 2016, the seasonal influenza vaccination programme expanded to include pregnant women, people with chronic disease and travellers. The programme is anticipated to add seasonal influenza vaccination for children in 2024.

In Oman, MMR, Tdap, varicella, and hepatitis B vaccinations1 are required for all HWs. These vaccines are provided free of charge to the HWs as part of pre-employment screening.2

Motivations
Oman is committed to reducing mortality and morbidity caused by seasonal influenza, especially among high-risk groups. The Oman Ministry of Health’s goals for the seasonal influenza vaccination programme are to: achieve and maintain at least 95% coverage among high-risk groups, sustain the vaccine supply chain and maintain quality, expand target groups for vaccination based on influenza epidemiology and integrate seasonal influenza vaccination with routine national immunization services. HW vaccinations are provided to protect HWs, patients, their families and the community against vaccine-preventable diseases.

Programme structure
Oman’s seasonal influenza vaccination policy was revised in 2019. The policy provides the framework for implementing the national programme. The Oman Ministry of Health provides an annual circular to all health institutions (public and private) that emphasizes this policy. To ensure accessibility to the vaccine for all HWs, the Government of Oman is involved in procuring vaccine for both the public and private sector. The Ministry of Health provides educational materials to increase awareness of the vaccination programme and generate demand for the vaccine. Regular reminders and positive feedback from supervisors through calls and messages have helped to improve coverage.

The immunization focal point in each health institution provides the vaccine to HWs. Doses are recorded through the national electronic immunization database. HWs who choose not to be vaccinated against seasonal influenza are required to sign a refusal form. They are also moved from critical care functions to non-critical care functions. If these HWs become sick with influenza, they must use their annual leave instead of their sick leave in case they are unable to come to work.

The key factors for the success of Oman’s HW vaccination programme include its clear national policy and guidelines as well as integration of HW vaccination into routine national immunization services. The main challenges include HW reservations regarding the composition and effectiveness of the seasonal influenza vaccine.

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1 Varicella and hepatitis B antibody testing is recommended for all HWs before vaccination with these antigens.
2 Health and care workers are defined as all medical and paramedical staff of health facilities.
**HW vaccination platform**

Oman’s national and subnational experience with seasonal influenza vaccination supported their COVID-19 preparedness and response. Oman used the electronic platform that was developed for influenza-like illness and severe acute respiratory infection surveillance for COVID-19 surveillance. In addition, Oman leveraged their experience conducting seasonal influenza vaccination for COVID-19 vaccination. As the risk groups are similar, Oman applied the same structure and systems used for influenza vaccination to their COVID-19 vaccine roll-out. This included the supply chain methodology and strategy, deployment plan and campaign-style approach.

**Paraguay**

**Context**

In Paraguay, the HW vaccination schedule is part of the special vaccination schedules for specific risk groups defined in the 2017 national vaccination standards and supplemented by EPI circulars. The legal framework of the national vaccination policy (Law 4621) was enacted in 2012 and establishes that both routine and special vaccination schedules are free of charge. HWs should be vaccinated against hepatitis B, seasonal influenza and COVID-19. Meningococcal, yellow fever, Tdap and MMR vaccines may also be provided to HWs with specific responsibilities.

**Motivations**

HW vaccination is a priority because of the risk of HWS being infected and spreading the diseases to vulnerable patients.

**Programme structure**

The Paraguay Ministry of Health has a guiding role in the country’s vaccination policy. It is responsible for acquiring and providing the Paraguayan population with free vaccines that are distributed through the public, social security and private sectors. The technical advisory committee on immunization is a multidisciplinary committee that provides an advisory role for the development of immunization policies as well as the monitoring and control of diseases. The EPI focal point in each region receives the guidelines and supplies from the national EPI programme and distributes these resources to the districts and health institutions in their jurisdiction. At the district level, the health institutions (generally hospitals) have a vaccinator and a person in charge of the EPI who are responsible for checking the vaccination status of HWS, promoting uptake of the vaccines and providing vaccination. In addition, the regional level coordinates with those responsible for vaccination policies in the social security and private sectors, which can be the vaccination, epidemiology or infection control departments.

To ensure accessibility of the vaccine to HWs, vaccination is provided during both day and night shifts at health facilities. To increase uptake, some health facilities provide nonmonetary small gifts to vaccinated HWS. Occasional sweeps are also conducted, with vaccinator teams bringing all of the antigens with them, checking HWS’ vaccination records and providing any missed vaccines or boosters needed. However, there are no enforcement mechanisms for HW vaccination.
At the regional level, there are training sessions on vaccination policies and talks with teams on the importance of vaccination of health personnel, especially with professionals who are reluctant to be vaccinated. At the district level, chiefs of health institutions receive information on the vaccination schedule and are asked to facilitate the vaccination of their staff (e.g. by giving permission to go to the vaccination clinic during working hours) or by having conversations with colleagues to remind them of the recommended vaccination schedules. In addition, posters are placed in the health institutions to remind HWs to get vaccinated.

**HW vaccination platform**

Paraguay improved its national electronic registry of health personnel by requiring all HWs to register. This registry provides the number of HWs in the country and their geographic distribution and has been helpful in calculating the coverage of other antigens, such as seasonal influenza vaccination. During COVID-19, Paraguay used the national electronic registry to determine the number and location of HWs throughout the country as well as their vaccination status.

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**Thailand**

**Context**

In Thailand, priority HWs have been vaccinated against seasonal influenza since 2004. Seasonal influenza vaccine delivery was later expanded to cover additional risk groups, including pregnant women, children aged 6 months to 2 years old, people with chronic diseases, adults over 65 years old, people with disabilities, individuals with autoimmune deficiency or disorder and obese individuals. Since December 2021, people living in overcrowded settings and other high-risk populations are also eligible to receive seasonal influenza vaccination in Thailand. Currently, 5 million doses of seasonal influenza vaccine are provided free of charge nationwide during the annual seasonal influenza vaccination campaign.

Thailand does not provide any other vaccinations for HWs, but does recommend that HWs be vaccinated against tetanus, Tdap, hepatitis B, MMR and varicella.

**Motivations**

Thailand’s seasonal influenza vaccination programme was developed as a response to avian influenza A(H5N1) as part of the pandemic preparedness efforts articulated in the first National Strategy Plan for Pandemic Influenza Preparedness which was published in 2005. In line with WHO recommendations, seasonal influenza vaccination for HWs is intended to limit the risk of disease transmission between HWs and patients and to reduce morbidity and mortality for HWs.

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3 Priority HWs for seasonal influenza vaccination include those in direct contact with patients, outbreak investigation team members, health officers who have contact with poultry and wild birds, laboratory staff and medical/health care students.
Programme structure

Thailand has a clear national policy for HW influenza vaccination. The Ministry of Public Health has sent these national guidelines to all provinces. Influenza vaccine for HWs is purchased by the Ministry and delivered by a vendor-managed inventory system to hospitals. While the influenza vaccination programme is national, the provincial health authorities are responsible for outreach to the target populations.

At the national level, the seasonal influenza vaccination campaign is tracked by the Division of Communicable Diseases, Department of Disease Control, Ministry of Public Health. At the health facilities, the seasonal influenza vaccination campaigns are coordinated by the local department of occupational health, department of infection prevention and control or other department (e.g. epidemiology) depending on hospital structure.

Influenza vaccination is administered to HWs primarily at the health facilities where they work. Each hospital has a database in which the seasonal influenza vaccinations are recorded. While the influenza vaccination is free of charge in public health facilities, it is available at a cost in private health facilities.

Thailand’s seasonal influenza vaccination programme began with the trivalent vaccine, but public health facilities have been using quadrivalent vaccine since 2017. There is strong demand for the vaccine among HWs, with approximately 400 000 doses delivered each year between May and August. A demand assessment is conducted annually to determine how many doses each hospital will receive. Reports from 2019 indicate that 90% of the vaccines allocated for HWs were administered. Acceptance has been higher among certain medical professions (e.g. nurses and support staff) but lower among physicians.

HW vaccination platform

Thailand leveraged its experience with seasonal influenza vaccine delivery for COVID-19 vaccine introduction. Using existing influenza vaccine management strategies and structures enabled Thailand to quickly reach high coverage rates for COVID-19 vaccination as soon as the COVID-19 vaccine supply was sufficient.

Conclusion

The COVID-19 pandemic has drawn global attention to the importance of vaccinating HWs. Countries are interested in building from their experiences deploying COVID-19 vaccination to develop or strengthen national HW vaccination programmes. In this document, Argentina, Mongolia, Oman, Paraguay and Thailand have provided snapshots of their HW vaccination programmes and how seasonal influenza vaccination was used as a platform for pandemic preparedness and response.

