

Implementation guide for vaccination of health workers



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Abbreviations and acronyms

ACSM	advocacy, communication and social mobilization
AEFI	adverse event following immunization
BCG	Bacillus Calmette–Guérin vaccine
BeSD	behavioural and social drivers (of vaccine uptake)
EHR	electronic health record
EIR	electronic immunization registry
EPI	Essential Programme on Immunization
EUA	emergency use authorization
EUL	emergency use listing
HBR	home-based record
HepB	hepatitis B vaccine
HeRAMS	Health Resources and Services Availability Monitoring System
HMIS	health management information system
IEC	information, education, and communication
IGRA	interferon gamma release assay
ILO	International Labour Organization
IPC	infection prevention and control
ISIC	International Standard Industrial Classification of All Economic Activities
KAP	knowledge, attitudes and practices
MOH	ministry of health
NHWA	National Health Workforce Accounts
NIP	national immunization programme
NITAG	National Immunization Technical Advisory Group
NRA	national regulatory authority
OHS	occupational health and safety
PPE	personal protective equipment
SAGE	WHO's Strategic Advisory Group of Experts on Immunization
SARA	service availability and readiness assessment
SOPs	standard operating procedures
Td	tetanus-diphtheria vaccine
Tdap	tetanus-diphtheria-acellular pertussis vaccine
TST	tuberculin skin test
UNICEF	United Nations Children's Fund
VPD	vaccine-preventable disease
WHO	World Health Organization

Executive summary

Health workers are at an increased risk of exposure to some communicable diseases because of their contact with patients or infective material in their working environment. There is also a risk that infected health workers could contribute to nosocomial transmission of disease to vulnerable patients at higher risk for severe illness, complications and death. Protection of health workers through vaccination is therefore an important part of infection prevention and control (IPC) programmes in health-care settings, as well as a cornerstone of occupational health and safety (OHS) programmes.

The World Health Organization has issued specific recommendations for vaccines of particular importance to health workers, against vaccine-preventable diseases (VPDs) for which there is a higher risk of transmission within health-care settings. These recommendations include vaccines that are part of the routine immunization schedule that all health workers should receive ideally prior to entering the workforce, as well as annual vaccinations and, in some circumstances, emergency or outbreak response vaccination. Programmatic implications for vaccine delivery to health workers will differ across each of these vaccine categories.

This implementation guidance is intended to summarize current global recommendations and programmatic considerations for establishing and/or strengthening platforms for the vaccination of health workers. It is intended for policy decision-makers in ministries of health (MOHs) and ministries of employment and labour, immunization managers and managers of health facilities, professional associations of various groups of health workers, and organizations of workers and employers in the health sector.

This guide will be useful for countries that do not yet have a policy and programme in place, as well as for those seeking to expand or improve their existing health worker vaccination activities.

Key messages

- Health workers are at an increased risk of exposure to VPDs, affecting the health and safety of both health workers and patients.
- Protecting health workers and ensuring OHS is fundamental for well-functioning and resilient health systems.
- Vaccinated health workers are more likely to recommend vaccination to patients and caregivers and to be advocates for immunization.
- Vaccination for health workers is an important aspect of IPC and should be incorporated into comprehensive, gender-responsive programmes on OHS for health workers, in line with national immunization and OHS policies and laws.

About this guide



Objectives

The purpose of this guide is to summarize the latest recommendations and programmatic considerations for the vaccination of health workers (defined very broadly as **all people engaged in work actions whose primary intent is to improve health**). It is useful for countries that do not yet have a policy and programme in place, as well as for those seeking to expand or improve their existing health worker vaccination activities.

This guide outlines:

- key considerations for developing a policy framework for health worker vaccination;
- the importance of integrating health worker vaccination into existing national OHS policies and programmes as well as into the management practices of health facilities; and
- how health worker vaccination strategies and practices can be implemented, communicated, delivered and monitored.



Target audience

Target audiences for this guide include:

- national policymaking bodies and health planners, including national immunization technical advisory groups (NITAGs);
- programme managers for immunization, OHS, patient safety, IPC, and related communicable disease elimination programmes at national and subnational levels;
- health and care facility managers and those responsible for occupational health and infection control in health-care settings; and
- advocacy, communication and social mobilization (ACSM) professionals.



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Related resources

This guide outlines the key components needed to establish, implement, strengthen and monitor a health worker vaccination platform. Various complementary resources provide additional important details and vaccine-specific information to consider, and these resources are referenced throughout this document. A consolidation of WHO resources related to health worker vaccination is also available in Web Annex A, available at www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/integration/health-worker-vaccination.

In addition to suggested resources referenced throughout the guide, the following general resources should also be consulted, as applicable:

- [Table 4: summary of WHO position papers – immunization of health care workers](#) (WHO)
- [Principles and considerations for adding a vaccine to a national immunization programme: from decision to implementation and monitoring](#) (WHO)
- [Caring for those who care: Guide for development and implementation of occupational health and safety programmes for health workers](#) (ILO and WHO)

The following references are specific to vaccines:

- [How to implement seasonal influenza vaccination of health workers](#) (WHO)
- [GAP: guidance on development and implementation of a national deployment and vaccination plan for pandemic influenza vaccines](#) (WHO)
- Viral hepatitis operational guide on testing and vaccination of health workers in the Western Pacific Region (WHO Regional Office for the Western Pacific, forthcoming)
- [Guidance on developing a national deployment and vaccination plan for COVID-19 vaccines](#) (WHO)
- [Health workers in focus: policies and practices for successful public COVID-19 vaccination uptake](#) (WHO Regional Office for Europe)
- [Introducing COVID-19 vaccination: guidance for determining priority groups and microplanning](#) (Pan American Health Organization)

Section 1

INTRODUCTION



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Context

WHO defines health workers as all people engaged in work actions whose primary intent is to improve health. This includes health service providers such as doctors, nurses, midwives, public health professionals; lab, health, and medical and non-medical technicians; personal care workers; community health workers; healers and practitioners of traditional medicine; and pre-service providers (e.g. students, trainees and volunteers). It also includes health management and support workers such as cleaners, drivers, hospital administrators, district health managers and social workers, and other occupational groups in health-related activities. Health workers include not only those who work in acute care settings but also those employed in residential long-term care facilities, public health, community-based care, social care and home care, and other occupations in the health and social work sectors as defined by the *International standard industrial classification of all economic activities* (ISIC), revision 4, section Q: *Human health and social work activities* (1).

Health workers are the backbone of any functioning and resilient health-care system. Without health workers, health services simply cannot be delivered: health workers heal and care for people, ease pain and suffering, prevent disease and mitigate risk. The number and quality of health workers per population is positively associated with immunization coverage, outreach of primary care, and infant, child and maternal survival (2). Health workers are, arguably, the most valuable resource for good health and are central to achieving the global vision of universal health coverage. In recognition of the critical role of health workers in boosting health outcomes for all populations, the World Health Assembly has designated 2021 as the International Year of Health and Care Workers (3).

Health workers as a group are at greater risk of exposure to some communicable diseases than the general population (4) because of their contact with patients or infective material in their working environment. There is also a risk that infected health workers could contribute to nosocomial transmission of disease to vulnerable patients at higher risk for severe illness, complications and death. Protection of health workers through vaccination is therefore an important part of patient safety and IPC programmes in health-care settings, as well as a cornerstone of OHS programmes (vaccinated health workers protect themselves and their family/friends) (see **Box 1**).

Furthermore, health workers who have themselves been vaccinated are more likely to be knowledgeable about vaccination and be more effective in communicating and improving public confidence and demand for vaccination. Many studies have found that a strong recommendation from health workers to patients about vaccination is likely to increase uptake of vaccination (5, 6, 7, 8).

WHO has issued specific recommendations for vaccines of particular importance to health workers (see **Table 1**). The implementation of health worker vaccination is also an important part of several disease-specific global health strategies, including the WHO *Global health sector strategy on viral hepatitis 2016–2021* (9), *Global influenza strategy 2019–2030* (10) and *Measles and rubella strategic framework 2021–2030* (11). In addition, health workers are among the highest priority groups for COVID-19 vaccines (12, 13).

While there is a growing understanding of the global status of national policies for the vaccination of health workers, data remain limited on vaccination coverage among health workers for most vaccines, and less is known about the various delivery mechanisms of such programmes. In low-income settings, in particular, there is currently a lack of understanding regarding the capacity, resources and staffing available to deliver on-site vaccine programmes to health-care staff members. A further challenge is the verticalization of immunization, OHS, IPC and other communicable disease elimination programmes in many countries.

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Box 1

Benefits of health worker vaccination

Health worker safety:

vaccinated health workers are protected against occupational exposure to VPDs. This reduces risks to health workers themselves, their families and their communities.

Patient safety:

health worker vaccination represents an essential contribution to IPC of nosocomial infections.

Health system strengthening:

health worker vaccination adds resiliency to health systems by protecting the workforce, especially in the context of outbreaks or epidemics.

Positive health behaviour

modelling: vaccinated health workers are more likely to recommend vaccination to patients and caregivers and to be advocates for immunization issues.



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Global recommendations on occupational health and safety

A safe and healthy work environment is a key element of human dignity, a fundamental human right [\(14\)](#) and a responsibility of governments and other stakeholders as part of the 2030 Agenda for Sustainable Development and Its Sustainable Development Goals [\(15\)](#).

The health care sector, in particular, is a high-hazard sector. Health workers are exposed to a variety of occupational risks, not only diseases that can be prevented by vaccination but also other infection risks; chemical exposure, physical and ergonomic risks; and psychosocial vulnerabilities [\(16\)](#). The COVID-19 pandemic highlighted the extent to which protecting health workers is key to ensuring a functioning and resilient health system and overall society; however, it also emphasized

the heightened stress, risk and threats to health, safety and well-being that health workers face every day. Preserving the physical and mental health of health workers is essential to ensure the delivery of safe care and avoid patient safety incidents. Physically and psychologically sound health workers are less prone to making errors, thereby contributing to safer care. The safety of health workers therefore has a direct impact on the safety of patients.

Health workers are the backbone of any functioning and resilient health-care system.

WHO's Health Worker Safety charter, launched on World Patient Safety Day in September 2020, reminds Member States that they have a legal and moral responsibility to ensure the health, safety and well-being of health workers (see Box 2). Furthermore, given that women make up approximately 70% of the global health workforce, promoting health worker safety facilitates eliminating discriminatory work practices and improving gender equality in the health workforce.

Box 2

WHO Health Worker Safety charter calls on Member States and relevant stakeholders to take five key steps to improve health worker safety and patient safety

1. Establish synergies between health worker safety and patient safety policies and strategies.

- Develop linkages between OHS, patient safety, quality improvement and IPC programmes.
- Include health and safety skills in personal and patient safety in education and training programmes for health workers at all levels.
- Incorporate requirements for health worker and patient safety into health-care licensing and accreditation standards.
- Integrate staff safety and patient safety incident reporting and learning systems.
- Develop integrated metrics of patient safety, health worker safety and quality of care indicators, and integrate with health information system.

2. Develop and implement national programmes for occupational health for health workers in line with national OHS policies.

- Review and upgrade, where necessary, national regulations and laws for OHS to ensure that all health workers have regulatory protection of their health and safety at work.
- Appoint responsible officers with authority for OHS for health workers at both the national and facility level.
- Develop standards, guidelines and codes of practice on OHS.
- Strengthen intersectoral collaboration on health worker and patient safety, with appropriate worker and management representation, including gender, diversity and all occupational groups.

3. Protect health workers from violence in the workplace.

4. Improve mental health and psychological well-being of health workers.

5. Protect health workers from physical and biological hazards.

- Ensure the implementation of minimum patient safety, IPC and occupational safety standards in all health-care facilities across the health system.
- Ensure availability of relevant/ appropriate personal protective equipment (PPE) at all times, as relevant to the roles and tasks performed, in adequate quantity and appropriate fit, and of acceptable quality.
- Ensure adequate environmental services such as water, sanitation and hygiene, disinfection and adequate ventilation at all health-care facilities.
- Ensure vaccination of all health workers at risk against all vaccine-preventable infections, including hepatitis B and seasonal influenza, in accordance with the national immunization policy, and in the context of emergency response, priority access for health workers to newly licensed and available vaccines.

**Select relevant sections reproduced above. For full text of the charter, see Charter. Health worker safety: a priority for patient safety (17).*

The charter recommendations are in line with the International Labour Organization (ILO) Promotional Framework for Occupational Safety and Health Convention of 2006, which urges all Member States to develop national OHS programmes. Among other things, these programmes should aim to prevent occupational diseases and injuries [\(18\)](#).

The 2010 WHO–ILO Global Framework for National Occupational Health Programmes for Health Workers specifically includes **immunization against VPDs – at no cost to the employee** – as a key building block for such national programmes (see Box 3). The framework puts the onus on employers to ensure the availability of vaccines for health workers (including cleaners, waste handlers and other workers at risk of exposure to blood or other infectious materials).

Box 3

WHO–ILO Global Framework for National Occupational Health Programmes for Health Workers [\(19\)](#)

Appendix II (7): “Provide pre-service and ongoing immunization against hepatitis B and other vaccine preventable diseases in the workplace at no cost to the employee and ensure all three doses of the hepatitis B immunization have been received by all workers at risk of blood exposure (including cleaners and waste handlers).”



WHO and ILO have developed a technical guide on the development and implementation of occupational health and safety programmes for health workers which highlights the importance of health worker vaccination programmes as a key component of national, subnational and facility OHS programmes [\(20\)](#). The guide recommends for health facilities to develop policies for the necessary vaccinations of health workers according to the national immunization policy and the specific occupational health hazards in the health sector. WHO has also issued an e-tool on prevention of occupational hazards in the health sector with recommendations on health workers' vaccinations to prevent VPDs in the health sector [\(21\)](#). A comprehensive checklist for health facilities to identify and prioritize areas of action for improving the protection of health and safety of health workers is also available [\(22\)](#).



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WHO recommendations for vaccination of health workers

Table 1 is adapted from “Table 4: WHO recommendations for routine immunization”[\(23\)](#) which outlines the WHO recommendations for vaccines of particular importance for health workers because of a higher risk of transmission in health facilities and other health-care settings.

In addition, to ensure protection for themselves, their patients and communities, all health workers should be fully vaccinated with any additional vaccines as per the national schedules for adult immunization in use in their country. For recommended vaccines, all HWs should have documented proof of immunity or immunization. This should be required as a condition of employment and enrolment into training.



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Table 1
WHO recommendations for vaccination of health workers

Vaccine¹	WHO recommendation
Bacillus Calmette–Guérin (BCG)	BCG vaccination is recommended for unvaccinated TST- or IGRA-negative persons at risk of occupational exposure in low and high TB incidence areas (e.g. health workers, laboratory workers, medical students, prison workers, other individuals with occupational exposure). BCG vaccines: WHO position paper – February 2018. Weekly Epidemiol Rec. 2018;93:73–96 (https://apps.who.int/iris/bitstream/handle/10665/260306/WER9308.pdf , accessed 5 March 2022).
Diphtheria	Health workers who may have occupational exposure to <i>C. diphtheriae</i> should be vaccinated. Diphtheria vaccine: WHO position paper – August 2017. Weekly Epidemiol Rec. 2017;92:417–36 (https://apps.who.int/iris/bitstream/handle/10665/258681/WER9231.pdf , accessed 5 March 2022).
Hepatitis B	Immunization is suggested for groups at risk of acquiring infection who have not been vaccinated previously (for example health workers who may be exposed to blood and blood products at work). Hepatitis B vaccines: WHO position paper – July 2017. Weekly Epidemiol Rec. 2017;92:369–92 (https://apps.who.int/iris/bitstream/handle/10665/255841/WER9227.pdf , accessed 5 March 2022).
Influenza	Health workers are an important group for influenza vaccination. Annual immunization with a single dose is recommended. Vaccines against influenza: WHO position paper – November 2012. Weekly Epidemiol Rec. 2012;87:461–76 (https://apps.who.int/iris/bitstream/handle/10665/241994/WER8747.PDF , accessed 5 March 2022).
Measles	All health workers should have immunity or be vaccinated against measles. Measles vaccines: WHO position paper – April 2017. Weekly Epidemiol Rec. 2017;92:205–28 (https://apps.who.int/iris/bitstream/handle/10665/255149/WER9217.pdf , accessed 5 March 2022).
Meningococcal	One booster dose 3–5 years after the primary dose may be given to persons considered to be at continued risk of exposure, including health workers. Meningococcal vaccines: WHO position paper, November 2011. Weekly Epidemiol Rec. 2011;86:521–40 (https://apps.who.int/iris/bitstream/handle/10665/241847/WER8647.PDF , accessed 5 March 2022).
Pertussis	Health workers should be prioritized as a group to receive pertussis vaccine. Pertussis vaccines: WHO position paper – August 2014. Weekly Epidemiol Rec. 2015;90:433–60 (https://apps.who.int/iris/bitstream/handle/10665/242416/WER9035.PDF , accessed 5 March 2022).
Polio	All health workers should have completed a full course of primary vaccination against polio. Polio vaccines and polio immunization in the pre-eradication era: WHO position paper. Weekly Epidemiol Rec. 2016;91:145–68 (https://apps.who.int/iris/bitstream/handle/10665/241581/WER8523.PDF , accessed 5 March 2022).
Rubella	If rubella vaccine has been introduced into the national programme, all health workers should have immunity or be vaccinated against rubella. Rubella vaccines: WHO Position Paper – July 2020. Weekly Epidemiol Rec. 2020;95:301–24 (https://apps.who.int/iris/bitstream/handle/10665/332950/WER9527-eng-fre.pdf , accessed 5 March 2022).
SARS-CoV-2	Health workers should be included in [the highest priority group for vaccination] against COVID-19. WHO SAGE roadmap for prioritizing use of COVID-19 vaccines: An approach to optimize the global impact of COVID-19 vaccines, based on public health goals, local and national equity, and vaccine access and coverage scenarios. 21 January 2022. Geneva: World Health Organization; 2022 (https://www.who.int/publications/i/item/who-sage-roadmap-for-prioritizing-uses-of-covid-19-vaccines , accessed 5 March 2022).
Varicella	Countries should consider vaccination of potentially susceptible health workers (i.e. unvaccinated and with no history of varicella) with two doses of varicella vaccine. Varicella and herpes zoster vaccines: WHO Position Paper, June 2014. Weekly Epidemiol. Rec. 2014;89:265–88 (https://apps.who.int/iris/bitstream/handle/10665/242229/WER8925.PDF , accessed 5 March 2022).

¹ In appropriate high-incidence settings, such as emergencies, cholera vaccine (24) or Ebola vaccine (25) should also be considered.

Section 2

POLICY FRAMEWORK



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Establishing a policy for vaccinating health workers

The country decision to establish a policy to vaccinate health workers should involve the NITAG as well as the bodies that advise on and establish national OHS policies.

In addition, to ensure coordinated implementation, it is important to engage early on and secure the endorsement of the many other stakeholders who will be affected by or involved in operationalizing the policy. These stakeholders include the following:

- medical and nursing schools, and other health worker training institutions;
- medical and nursing councils and other health worker regulatory bodies;
- national disease control and elimination programmes;
- national IPC, patient safety and quality programmes, since health worker immunization should also be regarded as a patient safety and quality of care issue;
- professional associations and societies representing different health worker groups such as medical, nursing and allied health service associations, as well as representatives of private health-care providers;²
- professional associations for IPC and patient safety, and organizations representing patients, where they exist;
- health worker unions, where they exist, and when their participation is likely to be useful in promoting vaccination uptake;
- women's professional associations, as women represent a significant majority of health workers in most settings;
- entities responsible for accreditation/licensing;
- health facility managers;
- purchasers (health insurers), where applicable; and
- partners and donors.

In most countries, health workers are not typically included as a target population for the national immunization programme (NIP). Where health worker vaccination does exist, it is often considered in the context of occupational health services, and national or subnational policies often place the responsibility on health institutions to establish and implement these programmes.

National policies for health worker vaccination should align with national frameworks for OHS, and ideally, implementation of health worker vaccination programmes should be integrated into the occupational health management systems of health facilities, and the programme for IPC.

In most countries, health workers are not typically included as a target population for the national immunization programme.

2. The private health sector is defined as individuals and organizations that are neither owned nor directly controlled by governments and are involved in the provision of health services. The sector can be classified into subcategories as for profit and not for profit, formal and informal, domestic and international. See Kinton J. The private health sector: an operational definition. Geneva: World Health Organization; 2020 (<https://www.who.int/docs/default-source/health-system-governance/private-health-sector-an-operational-definition.pdf>, accessed 5 March 2022).

Policies that recommend or require vaccination of students or health workers prior to service entry (see **section 3**) will require integration and alignment with the regulatory frameworks governing medical training programmes and/or licensing bodies, and with entities responsible for accreditation of health facilities, where applicable.

Policy considerations

Policy rationale

There are many benefits to vaccinating health workers, and it is important to clearly articulate these benefits when developing the national policy. The benefits include:

- protecting health workers from infection due to occupational exposure to VPDs;
- preventing transmission of infection from health workers to vulnerable patients, including those at high risk of severe disease, complications and death;
- sustaining health systems and services by protecting the workforce (especially during outbreaks, epidemics and pandemics);
- promoting uptake of vaccination among other target groups and enhancing public trust for vaccination; and
- contributing to pandemic preparedness by establishing a mechanism for rapidly immunizing health workers during future pandemics.



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Risk categorization of health workers

Ideally, all health workers should be fully vaccinated to protect themselves, their co-workers/families/friends and their patients. However, certain health workers (e.g. those in constant contact with patients and/or body fluids) have a higher risk of acquiring or transmitting disease than those who have only occasional contact with patients/clients. This requires an occupational health risk assessment to determine the level of exposure of the different jobs and tasks of health workers to pathogens causing VPDs [\(26\)](#).

Health worker vaccination policies may recommend more strongly, or even require, vaccination against certain VPDs for categories of health workers who have contact with specific high-risk patient groups (e.g. paediatric, immunocompromised or intensive care patients) – see “Mixed approach” in this section.

Such policies can present challenges (e.g. appropriate human resource systems must be in place to identify and appropriately categorize health workers and to manage issues if health workers do not agree with the risk category they have been placed in). However, when faced with resource constraints or limited vaccine supply, it may be necessary to initially prioritize certain categories of health workers, based on the risk of infection among themselves and transmission to the people they care for.

Example frameworks for risk categorization of health workers are provided in [Annex 1](#).

Voluntary vs mandatory policy

A policy decision must be made about whether health worker vaccination will be voluntary (i.e. recommended but optional), mandatory (i.e. legally required) or some mixed combination. A mixed policy may state that all vaccines are recommended but that certain ones are mandatory, and/or that vaccination is mandatory for specified categories of health workers, or in specified health settings, and recommended but voluntary for others.

Recommended/voluntary vaccination:

A vaccination policy may recommend certain vaccinations for health workers but leave compliance up to the discretion of the individual. Unfortunately, multiple studies across many countries have demonstrated that voluntary health worker vaccination policies result in lower than desirable coverage, even when accompanied by efforts to educate health workers on the benefits of vaccination and by measures for convenient access. This is particularly true for seasonal influenza vaccine, but it has been demonstrated for other vaccines as well [\(27, 28, 29\)](#).

With voluntary vaccination policies, experience has shown that additional efforts are required to promote the policy and generate demand among recipients. In order to further incentivize vaccination as well as mitigate the risks to both unvaccinated health workers and their patients, some policies – while ultimately voluntary – use “soft mandates”. For example, health workers who refuse vaccination may be reassigned to areas where they are less likely to come into contact with high-risk patients or be required to wear face masks while caring for patients. See more on this under “Checking for immunity or history of previous vaccination (screening)”. These policies may also require health workers to sign a waiver/declination form that they understand the risks involved (i.e. to themselves and to the patients they care for) by refusing vaccination. See more on declination forms in Box 6, and further in [section 4](#) under “Interventions to increase health worker vaccination uptake”.

Required/mandatory vaccination:

Mandatory policies make vaccination of health workers a legal or regulatory requirement, or a prerequisite for employment or completion of training. Mandatory policies for health worker vaccinations have been associated with higher uptake in some settings [\(30\)](#), and arguments have been made that ensuring the safety of vulnerable patients by requiring those who care for them to be vaccinated is a professional ethical duty [\(31\)](#).

Surveys of health worker vaccination policies across Europe found considerable variation with respect to implementation and enforcement of policies considered “mandatory”. Practical implications range from moving health workers who refuse vaccination to low-risk departments or away from patient care (in effect, a soft mandate, as described above), to termination of employment, to fines imposed on health facilities or the health workers themselves. Some policies absolutely require vaccination against certain VPDs for students to gain access to training hospitals, thus linking the requirement to graduation and employment [\(32\)](#).

However, the success of such policies is very context specific and should not be adopted without careful consideration of the legal and ethical implications, feasibility and resource requirements for implementation and enforcement, as well as any potential negative reactions or ramifications (e.g. reduced motivation, attrition, strikes/protests and possible litigation). Concerted efforts to engage and secure health worker and community support prior to implementation are key.

Implications for health workers who require a medical exemption must also be considered (see more under “Checking for immunity or history of previous vaccination (screening)”). In addition, any mandatory vaccination policy should consider whether schemes are in place to provide compensation in the rare event of a serious adverse event following immunization (AEFI) [\(33\)](#).

The following WHO resource, while developed specifically in the context of COVID-19 vaccines, outlines important ethical considerations and caveats that should be evaluated and discussed by governments and/or institutional policymakers considering mandatory vaccination policies. In addition, Box 4 consolidates recommendations for the ethical implementation of mandatory vaccination policies for health workers.



Useful resource

[COVID-19 and mandatory vaccination: ethical considerations and caveats \(34\)](#) (WHO)

Mixed approach:

A mixed approach could also be adopted where mandatory vaccination applies only to certain categories of health workers likely to have direct physical contact with high-risk patients or those at higher risk of occupational exposure, while a voluntary vaccination policy is applied to the remaining categories. Such a policy should clearly and unambiguously define the health worker groups to whom, or work areas where, mandatory and voluntary vaccination policies apply.



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Considerations for health workers who cannot be vaccinated

Implications for health workers who cannot or will not be vaccinated should also be included in the policy. The policy should include considerations for those who have a valid medical contraindication to vaccination, as well as situations where a health worker may be temporarily unable to receive certain vaccinations (e.g. due to pregnancy or lactation). As with all personal and medical records, systems should be in place to ensure confidentiality regarding any medical contraindications or pregnancy status.

Health workers have a responsibility to know their immune status and share the obligation to protect themselves and their patients (see “Responsibilities of health workers” in [section 3](#)).

Health workers who are unvaccinated/non-immune may be temporarily (or permanently) reassigned to areas where they are less likely to encounter high-risk patients, or be required to wear PPE such as face masks while caring for patients. For health workers who refuse or opt out of vaccination for non-medical reasons, some policies include repercussions such as mandatory unpaid leave during an outbreak or periods of peak transmission, or even requirements to appear before a committee to explain reasons for not following the policy.

If a refusal/opt-out option is going to be made available, it is important to consider the feasibility and resources needed to enforce the consequences. Responsibility for enforcing consequences may fall to co-workers and create resentment within the health facility. Where the health workforce is already under-resourced, policies that require unvaccinated health workers to stay home or require vaccination as a condition of employment or clinical assignment could have significant negative impacts for already overburdened health systems. Policies that require unvaccinated health workers to be transferred to duties where the risk is lower might remove critical health workers from settings that badly need health personnel.



Box 4

Recommendations for ethically implementing mandatory vaccination policies

There must be a compelling employee and patient safety problem that is clearly communicated to employees.	For those who do meet medical or other exclusion criteria, health facilities should offer alternative means for achieving transmission control, including mandatory mask wearing (where applicable), reassignment to non-clinical areas (if feasible), temporary leave during peak transmission seasons (e.g. influenza) or during an outbreak.
Institutions should support health workers by implementing vaccination procedures that are free, easy to access and include comprehensive coverage of adverse events.	
The process for policy and programme development should be transparent, with a broad range of health worker perspectives involved.	Consequences for those who refuse vaccination should be clearly articulated, as above (e.g. reassignment, unpaid leave/suspension or termination).
There should be clear opt-out criteria for medical reasons. Any other exemptions, if allowed, should be made in a transparent and objective manner.	Prospective employees should be notified of the mandatory policy and the consequences for not complying.

Adapted from: *How to implement seasonal influenza vaccination of health workers* [\(35\)](#).

Checking for immunity or history of previous vaccination (screening)

In countries with established and high-performing immunization programmes, younger health workers may have already received the recommended vaccinations in their childhood or prior to entering the workforce, or through health worker vaccination programmes offered at previous places of employment.

In some settings (e.g. where measles is still endemic or where hepatitis B is known to be highly prevalent) a substantial portion of adults may already have acquired natural immunity through prior infection or exposure. Policies may therefore specify that serological testing for confirmation of immunity, where available and reliable, be accepted in lieu of requiring revaccination (see Box 5).

See [section 3](#) for more on checking for vaccination and/or immune status at job entry.

Box 5

Special considerations regarding screening for hepatitis B



As part of a national comprehensive viral hepatitis response, countries may consider establishing a hepatitis B testing and vaccination approach for health workers. Testing and treatment of health workers for hepatitis B is beyond the scope of this guide. But the **WHO Western Pacific Regional Office is developing guidance addressing the important policy and programmatic considerations for implementing such a strategy**. Key points to be considered before incorporating a testing component along with health worker vaccination for hepatitis B include the following:

- Countries should determine what type of testing will be undertaken (if any) prior to or following vaccination, in the context of the local resources and laboratory capacity available.
- Prior history of vaccination should be considered when developing a testing strategy, particularly in countries where hepatitis B vaccination has been a long-standing part of routine immunization. However, health workers with documented vaccination history should still be offered testing for hepatitis B surface antigen (HBsAg), as they may have been infected prior to vaccination and should be linked to follow-up care.
- If testing is conducted, systems must be in place to ensure the results are managed confidentially, and health workers must be informed of their results, the care and treatment options available, and implications for their work duties.
- Policies to prevent stigma and discrimination should be promoted, and measures to prevent unintended negative outcomes such as loss of employment for those diagnosed with viral hepatitis should be established prior to the introduction of testing.
- Policies and programmes should align with global guidelines promoting access to effective treatment and monitoring, which will also allow health workers diagnosed with chronic viral hepatitis B and C to safely continue providing care for their patients.

Gender considerations

There is growing awareness and understanding of how gender-related barriers can affect immunization programme performance (36). In particular, as women make up 70% of health workers, it is especially important to integrate gender considerations into a health worker vaccination policy and address specific barriers that may be faced differentially by women and men.

Although women hold a majority of the jobs in the health sector, they are under-represented in senior and decision-making roles at the local, national and global level. In many countries, male workers make up the majority of physicians, dentists and pharmacists who may have better access to vaccines as compared to female workers. Also, women are less likely than men to be in full-time employment, thus decreasing their likelihood of being involved in occupational health interventions as compared to permanently employed workers. Ensuring women's representation at all levels of decision-making, policy design and implementation will help to ensure that policies and programmes are more gender responsive (37).

In addition to implications for pregnant or breastfeeding health workers, policies – particularly at the health facility level – should consider the growing evidence on differential biological responses to vaccination between men and women. For example, adverse reactions to vaccines have been shown to be more prevalent among women for some vaccines (38). This could contribute to greater vaccine hesitancy among women and have implications for a health worker vaccination programme if not adequately addressed, both in terms of a targeted communication strategy and availability of sick leave, if needed, following vaccination. This topic is covered in more detail in **section 5**.

Budget and programme funding

The health worker vaccination policy should clearly specify the responsibility for allocating funding for vaccines as well as the operational costs of delivering the health worker vaccination programme, whether it is the NIP, OHS programme, health service employers (including private providers), employment injury benefit scheme, health insurance scheme or shared. In countries with a significant private sector for health services, it is especially important that funding be clarified during policy development. Ideally, all health worker vaccinations should be at no cost to the recipient.

Emergency response vaccination

Countries may already have in place legislation and policies that provide for vaccination of health workers as a defined priority population in emergencies (39).

Any new policies on health worker vaccination should align with existing policies and protocols for national emergency or pandemic planning, as well as existing health facility policies for managing and controlling outbreaks of VPDs.

Section 3

HEALTH WORKER VACCINATION STRATEGIES



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Once a national health worker vaccination policy has been established, a costed operational plan and guidelines will be needed to implement the policy. The planning and management of a health worker vaccination programme will differ depending on who is responsible for operating the programme (i.e. NIP, occupational health, schools or training institutions, other) and the strategy (or strategies) for vaccinating health workers. The multidisciplinary stakeholders listed in **section 2** should also be engaged and involved in developing the operational plan, especially if the vaccination programme will be implemented by parties other than the NIP.

Broadly speaking, vaccinations for health workers fall into three general categories:

- routine immunizations which all health workers should receive, ideally prior to entering the health workforce or beginning clinical contact (e.g. see **Table 1**);
- annual or periodic vaccinations (e.g. seasonal influenza vaccine); and
- exceptional or emergency vaccinations for which health workers are a priority group (e.g. pandemic influenza and Ebola vaccine).

When establishing a health worker vaccination platform, policymakers should recognize that each of these categories will require different planning and implementation considerations (see **Table 2** for a summary at the end of this section).

Pre-service screening and vaccination

Ideally a programme should be established whereby catch-up vaccination, if needed, is offered to health workers as part of their training, when they enter the workforce for the first time or when they begin a new job. In some respects, this may be the easiest way to begin a health worker vaccination programme that can then be expanded over time. As catch-up vaccination is phased in annually with new cohorts of students and graduates, coverage within the health workforce will increase over time. Furthermore, as routine immunization systems are strengthened and coverage improves in the general population, increasingly more health workers will likely already be up to date with their routine vaccinations by the time they enter training or the workforce.

Proof of vaccination, or documentation of immunity, against diseases which are at high risk of transmission (see **Table 1**) should be included as a requirement for admission to medical, nursing, dental school and other schools related to health-care fields. Where documentation is not available, vaccination should be offered free of charge – either on-site through the school or through a local health facility.

Many countries have policies making vaccination against certain diseases a prerequisite linked to hospital access for practicum training for medical or nursing students (32). In addition, courses and training about immunology, the importance of vaccines, patient safety, occupational health and so forth should be introduced early on in the training curricula and repeated before exposure to clinical practice (29).

Vaccination checks should also be built into the hiring process, as part of other pre-employment requirements and onboarding protocols, including for temporary or contract workers. Employee vaccination history should also be reviewed routinely (e.g. as part of an annual employee health assessment). This would provide an opportunity to catch up any health workers who may not have received all vaccinations upon hiring (e.g. due to pregnancy or any other reason). In many countries, such periodic health assessments are usually carried out by occupational health services who look at the risks to which health workers are exposed and recommend appropriate vaccinations. Health workers may move from lower to higher level risk categories within the same health care facility.

Agencies and organizations responsible for deploying health workers or other frontline first responders to assist with public health emergencies should also have policies in place to ensure these health workers are vaccinated, both for their own protection and for the safety of the populations they work with. Screening and vaccination should be included in all pre-deployment medical clearance requirements [\(39\)](#).

Who implements?

Implementation of a policy to check and record the vaccination status of individuals studying to become health workers, or new health worker employees, is usually the responsibility of the institution (e.g. school, health facility, etc.), ideally as part of the application process and/or during a preclinical occupational health check. Catch-up vaccination, where needed, may be offered on-site where capacity exists.

This strategy requires close collaboration between the NIP of the MOH, OHS programmes, ministries of employment and labour, and ministries of education or equivalent entities responsible for medical training programmes.

Challenges

Offering catch-up vaccination at the time of the health check is ideal, but where capacity for this does not exist, individuals studying to become health workers and health workers may be asked to seek vaccination elsewhere (i.e. through primary care). This may result in lower compliance, especially if associated costs must be borne by the individual. Ideally, all recommended vaccines for health workers should be free of charge to the health worker (i.e. costs covered by the NIP, OHS programme, health service employers, insurance providers or a mix, as determined during policy development).

This strategy also depends heavily on the availability of up-to-date records of individual vaccination or immunity status. In many countries, retention of home-based vaccination records is low. Many adults may not have any written documentation of their childhood vaccination histories and obtaining this information can be difficult. See [section 5](#) for more on the importance of health worker registries and home-based records (HBRs).

In these cases, revaccination should be offered or, where capacity exists, serological testing for immunity can be done. For vaccines that require a series of doses (e.g. hepatitis B), an accelerated adult schedule should be followed to ensure all doses are received in as timely a manner as possible.



Useful resources

On implementing school-entry vaccination checks:

[Global consultation on implementing vaccination checks at school \(40\) \(WHO\)](#)

On catch-up schedules for missing vaccinations:

[Leave no one behind: guidance for planning and implementing catch-up vaccination \(41\) \(WHO\)](#)

[WHO recommendations for interrupted and delayed vaccination \(42\)](#)

Case study

Immunization of medical students in Sri Lanka



In the mid-1990s, the Sri Lankan government initiated a hepatitis B immunization programme to vaccinate medical students on a voluntary basis. Acceptance of the three doses of vaccine was and remains high. This programme was later expanded to include hospital staff. The rationale for the programme was to protect health workers, and it mainly targeted unvaccinated medical officers and nursing staff against hepatitis B, given the occupational risk. The programme is run as a collaboration between the government (which procures the vaccine) and medical schools, nursing schools and hospitals within the country, which provide the vaccine free of charge as required to students/health workers.

Sri Lanka introduced hepatitis B vaccine (HepB) into its routine immunization programme for children in 2003. Coverage with HepB has been very high, with over 95% of children having received this vaccine since 2005 (according to WHO–UNICEF [United Nations Children’s Fund] estimates of immunization coverage). As a result, it is anticipated that increasingly fewer health workers will need to be vaccinated with HepB when they join the health workforce. Screening of health workers will continue to ensure they are protected against hepatitis B.

Source: MOH, Sri Lanka.



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Case study

Vaccination requirements for first responders



All WHO staff and consultants deployed to assist with the 2014 Ebola response in Guinea, Sierra Leone and Liberia were required to obtain medical clearance prior to departure, which included submitting documentation of up-to-date vaccinations for the following:

- Yellow fever (required)³
- Diphtheria-tetanus-polio +/- pertussis (diphtheria-tetanus ideally within 5 years)
- Typhoid vaccine
- Hepatitis A and B
- Meningitis ACYW 135 (mandatory if outbreak ongoing)
- Measles (for those born after 1963 who had not had the disease, or two doses of measles-mumps-rubella)
- Rabies (recommended)
- Cholera vaccine (only recommended in limited situations and based on risk assessment).

WHO staff members were offered these vaccinations through the Staff Health and Wellbeing services at headquarters or regional offices.

Source: WHO Ebola outbreak response handbook for health and safety in the field [\(43\)](#).



3. In accordance with the International Health Regulations (IHR 2005), yellow fever vaccination may be required by a State Party for travellers as a condition of entry.

Case study

Pre-service screening in students and new personnel in Costa Rica



Prior to their admission, all students of the health sciences (Nursing, Pharmacy, Medicine, Nutrition, Dentistry, Veterinary Medicine, and related technicians) in Costa Rica are asked to provide proof of vaccination with the following vaccines: BCG, MMR, varicella, hepatitis B, seasonal influenza, Td, Tdap and pneumococcus 13-valent. Pre-service screening also applies to new personnel at all levels of health system. This decision was approved by the NITAG and endorsed by the Ministry of Health and Social Security System (CCSS) in 2013. If proof of vaccination is not available either through a home-based record or an electronic registry system, the student or new personnel is considered unvaccinated and must receive all pending vaccines using catch-up immunization schedules.

Additionally, before starting their in-hospital training, the academic coordinator at each health facility must check that the student has all required vaccines. In the case of new health workers, the Occupational Health Area is in charge of reviewing the vaccine registry among other clinical variables and the local Epidemiology Unit and nursing staff is responsible for administering and registering the vaccines in the National Electronic Immunization Registry (SIVA). If a student or health worker rejects vaccination, this is included on a list to be reviewed by the director of each health facility, who can then determine if an exemption is warranted.

Sources: Ministerio de Salud. Norma Nacional de Vacunación. San José, Costa Rica, 2013. Caja Costarricense de Seguro Social. Lineamiento para la vacunación de las personas trabajadoras de la Caja Costarricense del Seguro Social y Procedimiento para la vacunación de estudiantes de las carreras de ciencias de la salud y técnicos afines. Septiembre 2017.



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Vaccination of current health workers

Along with strategies to screen and vaccinate new health workers during training and/or job entry, there should also be mechanisms in place to vaccinate current (in-service) health workers. Vaccination of in-service health workers includes:

- vaccines offered on an annual basis (e.g. seasonal influenza);
- emergency or outbreak response (see more on this under “Vaccination of health workers during emergencies or outbreaks”); and
- catch-up vaccination of health workers who may have missed earlier opportunities or who require completion of a vaccine series or boosters (this is important for the start-up phase of any new health worker vaccination programme).

Who implements?

Programmes to vaccinate current health workers are most often the responsibility of the employing health facility as part of the OHS programme. However, in some countries, health worker vaccination efforts are implemented by the NIP. That may also be the case for annual vaccination campaigns (e.g. for seasonal influenza), which may be managed by the NIP but delivered campaign style, ideally on-site at the health workers’ place of work, or somewhere nearby and convenient for health workers to access. The checklists found in **Annexes 2** and **3** were developed for planning health worker immunization against seasonal influenza but can be adapted more broadly.

An advantage of a peer-to-peer approach is that it also expands the number of staff trained in vaccine delivery

Some health facilities have developed “train-the-trainer” or “peer-to-peer” programmes whereby health workers receive training on vaccine administration and then deliver the vaccinations to other staff members. The occupational or employee health staff serve as key resources in this training. An advantage of this approach is that it also expands the number of staff trained in vaccine delivery, which can help decentralize the process, providing vaccination across all shifts and on weekends and allowing for more time to conduct one-on-one education [\(44\)](#).

For vaccines requiring more than one dose (e.g. hepatitis B), an accompanying vaccine management system should be put in place to monitor completion of the series [\(45\)](#).

Challenges

Uptake of vaccination among health workers is a challenge in all settings. Reasons for this are complex and vary across health worker populations. Extensive research has been done on strategies to increase uptake, which are covered in detail in [section 4](#).

As some vaccine recipients may experience minor side effects, consideration may be made to staggering vaccination services for health workers in the same job category or who work in the same area of the health facility, to avoid health worker shortages. It is also important to have flexible paid sick leave policies for health workers who may experience minor illness after vaccination. The decision to stagger vaccination should also be weighed against the resulting delays in vaccinating staff overall as well as the potential inconveniences that might reduce vaccine uptake. Programmes should evaluate this within the context of their specific situation to determine the best approach.

Another significant challenge faced by programmes, both nationally and at the health facility level, is how to successfully monitor the vaccination status of health workers. Ideally, all health facilities should have an up-to-date health worker register that includes the vaccination status of all staff. These databases can be resource-intensive to establish and maintain; however, they are critical to providing an accurate picture of the proportion of staff protected as well as individual immunity status in the event of a VPD outbreak (see case study “Catch-up of current health workers following new policy rollout”). [Section 5](#) covers health worker registries and monitoring health worker vaccination status and vaccine coverage in more detail.



© WHO / Yoshi Shimizu



Useful resources

On introducing and conducting annual health worker vaccination:

[*How to implement seasonal influenza vaccination of health workers \(35\) \(WHO\)*](#)

Case study

Catch-up vaccination of current health workers in Canada following new policy rollout



Following a case of measles in a hospital in Ontario, Canada, the Occupational Health Department put in place a directive requiring screening for vaccination status as part of the standard process for all new hires. A database was created to maintain these records at the hospital for all health workers, and a great amount of effort was put forth to also gather this data for staff members already employed. The Occupational Health Department sent out emails to all staff members requesting vaccination records or serology (if applicable), and staff were also given the option to revaccinate or redo serology tests if needed. The initial request was followed by reminders and follow-up by managers.

The activity took a full year to complete and required intensive individual follow-up. However, now the hospital has a robust database that is updated whenever employees join or leave, providing important information on vaccination status that can be easily queried in the event of another measles case, or any other outbreak event.

Source: Personal communication from former staff member

Case study

Immunization of health workers in Egypt



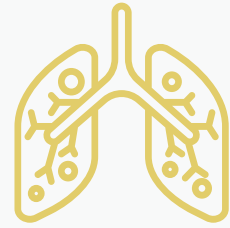
In recognition of the hepatitis burden in Egypt and the country's aim to eliminate hepatitis as a part of a multipronged campaign, the Ministry of Health and Population (MoHP) undertook vaccination of health workers in 2014. All health workers in publicly funded hospitals and clinics were offered three doses of HepB free of charge through the MoHP. The programme was well accepted by health workers.

An evaluation of the programme conducted in 2019 found that 76% of health workers had received three doses of HepB. This programme will continue for new employees, and the MoHP intends to continue to monitor uptake. Egypt is implementing a comprehensive plan for hepatitis elimination, and hepatitis B vaccination is envisioned as one of the core preventive elements in reaching the goal of eliminating hepatitis by 2022.

Source: MoHP, Egypt.

Case study

Vaccination of health workers in Costa Rica based on changing epidemiology of Pertussis



At the end of 2000, the Costa Rican National Children's Hospital warned of an increase in cases of whooping cough in newborns and infants. Data analysis showed that 90% of the hospitalized children were not old enough to complete a 3 dose DPT schedule and 62% of the cases had a history of contact with a family member with persistent cough.

Considering the shift in the age distribution of pertussis towards adolescents and adults, and the risk of hospitalization and death due to pertussis infection in children under 6 months of age, a cocoon strategy was introduced in 2007 and maternal immunization started in 2011. The national immunization strategy, funded by the government, also introduced vaccinating personnel working in neonatal care units, emergency and intensive care units and services attending children with respiratory infections. The decision-making process to introduce pertussis vaccination of health workers was based on the epidemiologic situation of the country, safety and cost-effectiveness considerations, ensuring availability of the necessary resources and sustainability of the immunization strategy.

Source: Avila-Agüero ML et al. *Epidemiology of pertussis in Costa Rica and the impact of vaccination: A 58-year experience (1961–2018)*. *Vaccine*, 2021. ISSN 0264-410X. Available online 10 December 2021. <https://doi.org/10.1016/j.vaccine.2021.11.078>.



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Case study

Season influenza immunization of health workers in Cote d'Ivoire



From 2016-2019, the US Centers for Disease Control and Prevention (CDC) provided technical assistance to Cote d'Ivoire to develop its national immunization policy for influenza, which was implemented in 2018. Cote d'Ivoire also joined the Partnership for Influenza Vaccine Introduction (PIVI – www.pivipartners.org) that same year, positioning itself at the forefront of sub-Saharan African countries introducing seasonal influenza vaccine.

Cote d'Ivoire's Institut National de l'Hygiene Publique (INHP) received 2 000 doses of influenza vaccines in 2018, through government procurement to pilot a vaccination campaign to: inform the feasibility of implementing a national seasonal influenza vaccination programme, and define innovative strategies to promote vaccination in targeted risk groups. The campaign targeted health workers and diabetics in the three health districts of Bouake and the Koumassi Port Bouet-Vridi (KPV) health district (in Abidjan). The campaign showed broad uptake of the vaccine, with overall coverage rates of 82% and 76% among health workers and diabetics, respectively, and this encouraged the Ministry of Health to continue developing the national influenza vaccine programme.

In 2019 and 2020, Cote d'Ivoire received 15 000 doses (each year) of southern hemisphere (SH) influenza vaccine from PIVI facilitated-donations, which allowed an expanded vaccination campaign into 34 select health districts and 3 government-owned institutions, to reach up to 40% of its health worker population.

In 2021, Cote d'Ivoire received 30 500 doses of northern hemisphere (NH)* influenza vaccine through a donation facilitated by PIVI and LDS (Latter Day Saints Charities), allowing them to expand to 60 health districts (out of 113) and vaccinating at least 75% of its health worker population. The vaccination campaign was launched on November 18th with a target end date of December 30, 2021.

** Influenza viruses circulate year round in Cote d'Ivoire, in May-June and October – during the first and second rainy seasons. INHP decided to launch a campaign during NH season to allow spacing for arrival of COVID-19 vaccines, scheduled to arrive in Spring 2021.*

Source: Malembe Sandrine Embama, PIVI.

Vaccination of health workers during emergencies or outbreaks

In outbreak or pandemic scenarios, or during humanitarian crises where the risk of VPD outbreaks is elevated, ensuring the protection of health workers is paramount. When resources, particularly vaccine supplies, are limited, ethical allocation frameworks will almost always place health workers at or near the top of the priority list. From a utilitarian perspective, protecting frontline health workers against disease will indirectly benefit the health of the community. Under the principle of reciprocity, it is fair to prioritize the vaccination of health workers, who are often more exposed than others to the risk of contagion since they are committed to caring for society [\(46\)](#).

Who implements?

This may vary depending on the scope and extent of the emergency event and how the overall response is managed. Vaccination may be overseen by the NIP but implemented through the health facility occupational health mechanisms. Alternatively, vaccination could be managed entirely by the NIP in a campaign style, particularly if vaccine supply needs to be tightly managed. Countries that have a robust programme for health worker vaccination will be in a better position to be able to reach this target population during an outbreak or emergency.

Studies have found that having a seasonal influenza vaccination programme is positively associated with a country's pandemic preparedness and response, because countries have experience with key activities, including identifying and accessing vaccine target risk groups; building the capacity of NITAGs to review and provide recommendations on the use of vaccines and national regulatory agencies' capacity to provide market authorization of vaccines; increasing familiarity of health workers and the public with adult vaccination; developing and using communications tools to increase public awareness of the burden and risks of influenza, and the benefits of seasonal influenza vaccine; developing national influenza vaccine distribution plans; contributing to adequate cold-chain and deployment logistics; and increasing vaccine uptake by target populations and establishing AEFI surveillance systems for adult populations [\(47\)](#).

Challenges

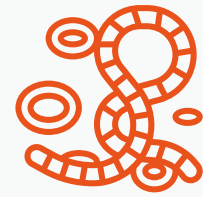
Informed consent is always required for vaccination. Practices for obtaining informed consent vary among and even within countries. In most programmes, informed consent is simply implied by the act of showing up to be vaccinated; however, a formal, written consent process is sometimes used (more common in middle- and high-income countries). In all cases, clear information about the vaccination must be given so that consent can truly be considered informed. During emergencies, the consent process may need to be modified. For example, if a new vaccine is being deployed under expanded access/compassionate use [\(48\)](#), or emergency use listing (EUL) [\(49\)](#) or authorization (EUA), a more extensive consent procedure may need to be followed.

In some countries, vaccination programmes that normally operate on a voluntary basis may be subject to different rules during a declared emergency. National legislation or even health facility policies may call for mandatory vaccination of health workers during a public health emergency, and/or this may come with increased penalties or costs of refusal, including termination of employment.

Lessons from Ebola and pandemic H1N1 influenza vaccination campaigns have shown the critical importance of building trust among health workers to the success of vaccination in response to an outbreak. **Section 4** provides further details on special considerations for strategies to increase vaccine uptake among health workers during an emergency, outbreak or pandemic event.

Case study

Vaccination of health workers against Ebola in the Democratic Republic of the Congo



During the Ebola Virus Disease (EVD) outbreak in Beni health area in 2021, following WHO SAGE recommendations, Ervebo® vaccine was used for the first time to vaccinate 1,370 health workers over a four-week period.

The vaccine is recommended during EVD outbreaks using a “ring vaccination strategy”. Contacts of an EVD confirmed case and their contacts, along with health workers, were offered the vaccine if they had not received Ervebo® vaccine during the preceding six months.

Some lessons learned from implementation of this strategy included:

- Risk Communication and Community Engagement (RCCE) needed to be clear and concise to ensure that people identified as a contact, or contact of contacts, and health and frontline workers were correctly provided vaccine. For those who had been previously vaccinated more than 6 months ago, a second dose of the vaccine was recommended.
- Prioritization of health workers and frontline workers in the ring considered at the “highest risk” over other health workers in nearby health facilities was not possible to implement in practice. The national health authorities had to request the International Coordinating Group (ICG) on Vaccine Provision to release sufficient vaccines to vaccinate all health workers and frontline workers in all health facilities in Beni health area (estimated to be around 5,500 people) regardless of whether they were in the initial ring. This was necessary as it was difficult to predict where Ebola patients would go for medical care. It was also difficult to estimate the actual risk of exposure among health workers working in the same health district where health facilities are close by. Therefore, a precautionary approach that allowed vaccination of all of these workers was needed.
- The SAGE recommendation to vaccinate health workers and frontline workers considered at risk, but at lower risk of EVD in neighbouring areas with Zabdeno/ Mvabea vaccine (another Ebola vaccine product) was discussed with the National Immunization Programme. As the vaccine schedule is two doses, 56 days apart, this recommendation was problematic to implement in the context of an outbreak where cases may spread, and it was challenging to decide to introduce another vaccine in adjacent areas to the outbreak. It was also challenging from the logistics point of view to have two different vaccine presentations being administered to two different target groups, and from the communications aspect to communicate to health workers and frontline workers why they would be receiving different vaccines.

Source: Alejandro Costa, WHO Health Emergency Programme, Geneva, Switzerland.



Useful resources

On protecting health workers in emergencies:

[Occupational safety and health in public health emergencies: a manual for protecting health workers and responders \(39\) \(WHO\)](#)

Table 2

Summary of implementation strategies, key components and challenges for health worker (HW) vaccination platforms

	Routine immunizations that all HWs should receive , ideally prior to entry into the workforce or before starting patient interaction (see Table 1 for WHO recommended vaccines)	Annual or periodic vaccines (e.g. seasonal influenza)	Emergency or exceptional vaccinations (e.g. pandemic influenza, COVID-19, Ebola)
Implementation strategy	<ul style="list-style-type: none"> Policy directive by national/state government <ul style="list-style-type: none"> » MOH/health department » Labour/employment » Ministry of education/training Implementation by institutions (schools and/or health centres) Integrate into requirements for training/licensing and/or hiring: <ul style="list-style-type: none"> » Screen prior to training practicum (by school staff) » Screen prior to hiring (by health centre staff) Students/HWs provide documentation of their vaccination status (HBR or other) Students/HWs should be made aware of policy during the application/hiring process 	<ul style="list-style-type: none"> Policy directive by national/state government <ul style="list-style-type: none"> » MOH/health department » Labour/employment Implementation by health facility or NIP (campaign-style delivery) Offer convenient and free vaccination, ideally on-site, to increase uptake <i>Refer to guide on seasonal influenza vaccination of health workers (35) for details on planning and delivery strategy</i> 	<ul style="list-style-type: none"> Policy directive by national/state government <ul style="list-style-type: none"> » MOH/health department and/or public health agencies (emergency/pandemic preparedness policies) Implementation likely to be centrally managed but may be managed by health facility <i>Refer to guidance on deployment of vaccines for COVID-19 (50) for details on planning and delivery</i>
Components needed	<p>Policy framework</p> <ul style="list-style-type: none"> Policy directive Guidelines/standard operating procedures (SOPs) at institutional level <p>Human resources</p> <ul style="list-style-type: none"> Informed consent Staff to do screening/record checking <p><i>If offering vaccination on-site:</i></p> <ul style="list-style-type: none"> Staff to vaccinate 	<p>Policy framework</p> <ul style="list-style-type: none"> Policy directive Guidelines/SOPs at institutional level (incl. risk assessment if necessary) <p>Human resources</p> <ul style="list-style-type: none"> Staff to provide educational information Collection of informed consent (if written forms required) Staff to vaccinate (may require training if new vaccine) 	<p>Policy framework</p> <ul style="list-style-type: none"> Policy directive Guidelines/SOPs at institutional level (incl. risk assessment and prioritization framework if necessary) <p>Human resources</p> <ul style="list-style-type: none"> Staff to provide educational information Collection of informed consent (if written forms required) Staff to vaccinate (may require training if new vaccine or if increasing the number of staff who can provide immunization)

	Routine immunizations that all HWs should receive , ideally prior to entry into the workforce or before starting patient interaction (see Table 1 for WHO recommended vaccines)	Annual or periodic vaccines (e.g. seasonal influenza)	Emergency or exceptional vaccinations (e.g. pandemic influenza, COVID-19, Ebola)
	<p>Data</p> <ul style="list-style-type: none"> • HBR/vaccination cards or documentation of immunity • Student/HW registry maintained at institution • Data reporting up to MOH, national/regional programme managers • Electronic health records (EHRs) and/or electronic immunization registry (EIR), where applicable <p><i>If offering vaccination on-site:</i></p> <ul style="list-style-type: none"> • AEFI surveillance <p>Vaccine supply (and/or serological testing where applicable) and logistics</p> <ul style="list-style-type: none"> • Access to affordable, quality-assured vaccine and convenient clinic options <p><i>If offering vaccination on-site:</i></p> <ul style="list-style-type: none"> • Local cold-chain and waste management <p>Information, education, communication (IEC)</p> <ul style="list-style-type: none"> • Awareness of the requirements during enrolment/application process • Clear messaging to promote understanding of the benefits of HW vaccination • Assessment and analysis to understand how HWs think and feel about the policy, to identify and remove barriers hampering vaccine uptake and activate HWs' intention to vaccinate • Monitoring vaccine hesitancy among HWs through social listening mechanisms 	<p>Data</p> <ul style="list-style-type: none"> • HW registry maintained at health facility (enumeration of target population) • Data reporting up to MOH, national/regional programme managers • EHRs and/or EIRs, where applicable • AEFI surveillance <p>Vaccine supply</p> <ul style="list-style-type: none"> • National vaccine deployment plan • Funding for vaccine and delivery • Local cold-chain and waste management <p>IEC</p> <ul style="list-style-type: none"> • Targeted communications campaign specific to HWs • Assessment and analysis to understand how HWs think and feel about the policy, to identify and remove barriers hampering vaccine uptake and activate HWs' intention to vaccinate • Monitoring vaccine hesitancy among HWs, both through online and offline social listening mechanisms 	<p>Data</p> <ul style="list-style-type: none"> • HW registry maintained at health facility (enumeration of target population) • Data reporting up to MOH, national/regional programme managers • EHRs and/or EIRs, where applicable • AEFI surveillance <p>Vaccine supply</p> <ul style="list-style-type: none"> • National vaccine deployment plan • Funding for vaccine and delivery • Local cold-chain and waste management <p>IEC</p> <ul style="list-style-type: none"> • Targeted communications campaign specific to HWs • Assessment and analysis to understand how HWs think and feel about the policy, to identify and remove barriers hampering vaccine uptake and activate HWs' intention to vaccinate • Monitoring vaccine hesitancy among HWs, both through online and offline social listening mechanisms

	<p>Routine immunizations that all HWs should receive, ideally prior to entry into the workforce or before starting patient interaction (see Table 1 for WHO recommended vaccines)</p>	<p>Annual or periodic vaccines (e.g. seasonal influenza)</p>	<p>Emergency or exceptional vaccinations (e.g. pandemic influenza, COVID-19, Ebola)</p>
	<p>Options for those who cannot be vaccinated</p> <ul style="list-style-type: none"> • Support/counselling to discuss options for how work may be impacted (e.g. exclusion from certain patient care, leave during outbreaks) • Defer certain requirements temporarily (e.g. if pregnant, lactating) 	<p>Options for those who cannot be vaccinated</p> <ul style="list-style-type: none"> • E.g. temporary or permanent task shifting, extra PPE requirements, mandatory sick leave 	<p>Options for those who cannot be vaccinated</p> <ul style="list-style-type: none"> • E.g. temporary or permanent task shifting, extra PPE requirements, mandatory sick leave.
<p>Challenges/ barriers</p>	<ul style="list-style-type: none"> • Difficult to implement for current HWs • Relies on availability of records/vaccination history (especially in areas where serological testing is not an available option, HWs without records may have to be revaccinated) • Funding for catch-up vaccination or serological test (ideally should be free of cost to the HW) • Unavailability of EHRs/EIRs in many settings • Risk of “fake” HBR or other certificate of vaccination or serology if needed for employment and if HBRs easy to forge 	<ul style="list-style-type: none"> • Cost of annual vaccinations and ensuring continued political will at all levels to champion annual vaccination • Difficult to reach high uptake without compulsory mandates • Challenges with reporting/coverage monitoring – HW registries are often out of date or not kept, privacy concerns • Unavailability of EHRs/EIRs in many settings • Risk of “fake” HBR or other certificate of vaccination or serology if needed for employment and if HBRs easy to forge 	<ul style="list-style-type: none"> • May be difficult to reach high uptake without making mandatory (although with outbreak/emergency, the demand may be higher) • Challenges with reporting/coverage monitoring – HW registries are often out of date or not kept, privacy concerns • Regulatory issues – depending on licensure given in country

Roles and responsibilities for successful implementation

Leadership support

The important role of health facility managers and administrators to promote and deliver health worker vaccination programmes cannot be overstated. Programme evaluations have indicated that visible forms of leadership support are significantly associated with higher vaccination rates in health workers (51). In addition, an emphasis on institutional accountability (e.g. reporting vaccination data to the highest level of the organization or board of trustees, and public reporting of vaccination rates) has been shown to be a strong factor for success.

Management teams also play a major role in promoting a culture of prevention in which vaccination is not only encouraged but expected, for both patient and health worker safety (52, 53). It has been suggested that ward/department managers (middle managers) have the most influence on staff members and are in a pivotal position to send out messages reminding/educating staff members about the need to get vaccinated (54). Managers should be able to articulate the programme goals to their staff members and explain the value of vaccination for them, their patients and their families. There is a strong need for respected peers as well as managers to serve as champions for vaccination and to lead by example.

Case study

Framing vaccination as an employee benefit

At a large hospital in Kansas, United States of America Tdap vaccination is offered to all health workers when they begin employment, sustain an injury for which Td vaccination is indicated or upon request. Senior leaders, recognizing the importance of vaccination, include Tdap vaccination among the list of employee benefits (along with paid leave, medical and dental insurance, pharmacy discounts and free parking). Job candidates are made aware of the vaccination during the interview process, at the pre-employment health screening and again during orientation.

Source: Tdap vaccination strategies for adolescents and adults, including health care personnel (44).



Responsibilities of health facility managers

Guidance for managers on their responsibilities with respect to vaccinating health workers under their supervision should be clearly outlined in writing, as a policy directive, part of the OHS management guidelines or other (as applicable).

For example, health facility managers (or programme managers – e.g. staff health or OHS/IPC – responsible for the health worker vaccination programme) should:

- have a written policy for the immunization recommendations (or requirements) for its health care workers;
- be responsible for the implementation and maintenance of an effective education, screening and vaccination programme, including ensuring systems are set up for monitoring, reporting and responding to AEFIs;
- designate management personnel to oversee vaccination activities, including accountability for coverage rates;
- ensure that all health workers are given adequate information to make valid decisions about vaccination (and/or serological testing, if available);
- provide opportunities (e.g. during supervisory visits) to health workers to safely pose questions and concerns about vaccines and vaccination;
- make the screening and vaccination process available to existing staff as well as all new staff on commencing service, and ensure there is a review process for each health worker within a month of beginning employment;
- be aware of their duty of care relating to the placement of, or provision of PPE to, health workers who remain non-immune (e.g. those with medical contraindications to vaccination, temporary deferrals – e.g. due to pregnancy – or those who refuse vaccination, or [where applicable] those who fail to seroconvert);
- periodically review the vaccination status of existing staff (e.g. during annual health checks, as part of supervision visits);
- ensure that copies of the health worker's vaccination records are available on termination of employment or, on the health worker's written request, within a reasonable period of time;
- maintain the security and confidentiality of information about the infectious disease and vaccination status of health workers;
- *[where vaccination on-site:]* ensure an AEFI monitoring and reporting system is in place;
- *[where vaccination on-site:]* ensure that any vaccination administered is included in the health worker register or EHR/EIR;
- *[where applicable:]* inform all temporary or visiting clinical staff of the requirements of the policy, and the need to provide evidence (immune status or vaccination record) of protection against specific VPDs;
- *[where applicable:]* ensure that employment agencies only provide contract staff who have a documented vaccination history and/or immune status consistent with health facility policy; and
- *[where applicable:]* include in contracts with training institutions a condition that students or trainees, prior to undertaking clinical placement as part of their course, must provide a written statement/evidence confirming that the student has a documented vaccination history consistent with the national health worker vaccination policy.

Responsibilities of health workers

Health workers should have a clear understanding of their responsibilities with respect to the national and institutional policies for health worker vaccination. This information should be provided in writing, ideally prior to commencing training/employment and be accompanied by education materials on the benefits of immunization to themselves, their patients and their own families (see [section 4](#)).

For example, health workers should:

- Take reasonable steps to be aware of their own past infectious disease and vaccination status to minimize the risk of contracting VPDs, of transmitting infectious diseases to patients, other staff or their own families.
- Comply with the health facility/training institutions' education, screening and vaccination programme. Where this is refused, health workers must confirm in writing their understanding of possible risks involved (i.e. to themselves, their families and towards the patients they care for) in non-participation in the vaccination programme (see Box 6 on declination forms).
- If non-immune, be aware of and follow the protective measures that should be applied (e.g. PPE) and understand their duty of care and obligation to their placement within the health-care setting.
- Comply with the health facility/training institutions' OHS and IPC policies and procedures, including risk management of potential transmission of VPDs from unvaccinated/non-immune staff to patients, or vice versa.
- Maintain their own personal records of all screening tests and vaccinations.
- Provide vaccination records and/or immune status when requested by the employer.
- Report any medical contraindications to vaccines and any AEFIs to their vaccination provider.



Box 6

Declination forms from health workers who refuse vaccination for reasons other than medical contraindications

Some health worker vaccination policies require individuals who refuse vaccination to sign a statement acknowledging that they understand the risks involved with such a decision. The data are mixed on whether use of these forms has any impact on encouraging uptake of vaccination among health workers. However, there are other advantages in the use of such forms, including:

- Identifying health workers who might require targeted education or other interventions to overcome barriers to vaccination;
- Determining what proportion of staff are reached by the vaccination programme; and
- Identifying reasons why health workers are declining vaccination [\(55\)](#).

Declination forms have been found to be more successful in promoting vaccination as a patient safety measure and dispelling misconceptions about vaccination when they include the following elements:

- A statement stressing that the health worker has received education regarding the rationale for the vaccination and that declining the vaccination puts patients at risk (and also themselves and their families). This has a greater impact than a simple “yes or no” declination form.
- Consequences for failure to sign the declination form.
- A statement about the organization leaders’ expectations and the importance they place on vaccination [\(56\)](#).

A sample declination form developed by HProImmune Project [\(57\)](#) for the promotion of immunization for health professionals in Europe is available here:

<http://hproimmune.eu/toolkits/files/docs/uk/admin/Declination.pdf>.

Section 4

CONFIDENCE AND DEMAND



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Health workers are a unique target population in that they may be both recipients and providers of vaccines. Health workers are also a trusted source of information and recommendation to vaccinate and can be powerful advocates for vaccination among their patients and communities. It is therefore important to develop a tailored plan to encourage health worker confidence in vaccination, both to increase vaccine uptake among health workers themselves as well as to empower and equip them to relay positive messages and reinforce social norms about vaccination among their colleagues and communities.

Factors contributing to uptake of vaccines by health workers

Despite recommendations and, in some cases, mandatory requirements, increasing vaccine uptake among health workers has been challenging in many settings. Especially with respect to new vaccines, uptake among health workers has been shown to be quite variable ([58, 59, 60, 61](#)).

Factors influencing vaccine uptake among health workers are complex, context-specific and will vary across different health worker categories, as well as across vaccines (e.g., factors affecting the uptake of seasonal influenza vaccine may be different to the factors that increase uptake of hepatitis B vaccination). Local qualitative or quantitative research can be conducted to identify the behavioural and social drivers (BeSD) of vaccine uptake for a specific target population. This data should be used as a part of the planning and implementation processes to design and evaluate corresponding interventions. While some of the following considerations may help inform planning, local data should be gathered to determine the reasons for low uptake and to evaluate strategies.

Convenience and accessibility

- Increasing the ease of access to vaccination can greatly enhance health worker willingness to be vaccinated (see more on this topic under “Interventions to increase health worker vaccination uptake” in this section).

Perception of risk

- Low risk perception (at times calculated with an incomplete understanding of health workers' role in disease transmission) is often cited as a reason for refusal, particularly with respect to influenza vaccination ([62, 63, 64](#)).
- Health workers may believe they are fit and healthy, and thus not in need of protection from infection ([65](#)).
- However, fear of illness caused by the virus has been cited in some settings as a reason for vaccination against hepatitis B ([66](#)).
- Doubts about vaccine efficacy and fears about potential side effects are cited as reasons for declining vaccination (influenza) ([67, 68](#)), while belief in the safety and efficacy of the vaccine (hepatitis B) has been positively associated with uptake ([66, 69](#)).
- Health workers may feel they can rely on hand hygiene and other infection prevention behaviours to protect them from infection.

Prior vaccination history

- One of the most common factors positively associated with intention to receive seasonal and pandemic influenza vaccines is past receipt of seasonal influenza vaccine ([68, 70, 71](#)).
- Studies have also reported that willingness to receive a COVID-19 vaccine is directly related to past receipt of an influenza vaccine (personal communiqué, Dr. S. Bino, Institute of Public Health, Albania).

Motivating factors

- Self-protection and fear of illness are the strongest and most consistent drivers of health workers' decisions to be vaccinated, as well as belief in the safety and efficacy of the vaccine ([66, 72](#)).
- Protection of patients and of family and friends can also be an important motivator ([63, 68](#)).
- Health workers may be more likely to receive an influenza vaccine if they have a colleague who is or recently was ill ([73](#)).
- On the other hand, working in wards among patients with respiratory infections does not necessarily lead to increased vaccine uptake ([74](#)).
- Recommendations from a respected colleague, as well as a belief that others (including friends and family) think health workers should be vaccinated, have been associated with higher intentions to be vaccinated ([75, 76, 77](#)).
- Support from leadership or management and the possibility of paid sick leave if feeling unwell after vaccination may encourage the willingness of health workers to be vaccinated ([78](#)).



Useful resources

[Data for action: achieving high uptake of COVID-19 vaccines \(79\) \(WHO\)](#)

Communication strategies

Health workers, like anyone else, are susceptible to misinformation and rumours about vaccination, and may themselves have questions and concerns about vaccines. Studies have shown that simply improving knowledge about the risks and benefits of vaccination among health workers may not be enough to achieve optimal vaccination uptake. Rather, what is needed are communications, education and engagement strategies informed by a good understanding of the behavioural and social drivers of vaccination among health workers, both as providers of vaccination and as recipients [\(80\)](#).

- Communications messages should be tailored to address the needs (including health literacy level) of different health worker groups.
- Traditional mass media campaigns and one-way communications may not be sufficient, therefore dialogue-based interventions such as one-to-one or small group counselling, are better for building confidence and motivation towards vaccination.
- Teaching the relevance of health worker vaccination in pre-service training curricula may help build generations of better-informed health workers and establish health worker vaccination as a norm.
- Particularly in the case of new vaccines, providing detailed information about the vaccine and appreciation of the burden of disease among health workers can help to improve uptake [\(81\)](#).
- Communications should emphasize the value and protection that vaccination brings to health workers as individuals, as well as their families, the patients they care for, their colleagues and communities (see **Box 7**).
- Materials and media should be developed with gender and equity dynamics and dimensions in mind: who is portrayed, how they are perceived, and the role (and gender) of other health workers in communicating accurate and accessible vaccine and safety information are all important considerations [\(82\)](#).



Box 7

Examples of key messages to health workers

“As a health worker, [vaccine X] will help protect you from exposure to the virus while you are performing your job.”

“By staying healthy, you can continue to provide essential health services and contribute to the overall [public health/emergency/pandemic] response.”

“By getting vaccinated, you can help reduce the risk of [disease X] transmission to your patients, colleagues/other health workers, family, neighbours and community.”



Useful resources

Examples of posters and other campaign materials can be found at the following links:

[*Flu vaccination toolbox: guidance and technical resources \(83\)*](#) (WHO)

[*Infographic: Vaccination during the pandemic – 10 tips for health workers \(84\)*](#) (Pan American Health Organization)

Interventions to increase health worker vaccination uptake

While effective communications may increase confidence and motivation towards vaccination, additional strategies are often necessary shape vaccination behaviour (or uptake), especially if the vaccine requires multiple doses. To appropriately design strategies to increase uptake of vaccination among health workers, it is important to understand what drives them to accept or reject vaccination, also considering differences within health worker groups and drivers or barriers in specific settings. The suggestions below have been shown to increase health worker vaccination uptake with varying degrees of success, noting that multi-component interventions targeting a range of barriers are often more effective ([27, 44, 80, 85, 86, 54](#)):

Ensure convenience and accessibility

- Provide vaccine at no cost to the health worker.
- Explicitly and frequently promote, communicate and ensure understanding of how, when and where health workers can be vaccinated.
- Enable convenient access to vaccination services, including on-site vaccination in health facilities, walk-in vaccination clinics and mobile vaccination carts.
- Offer flexible hours, including options for staff working after-hours and on weekends.
- Consider peer-to-peer immunization programmes, where feasible.

- Implement standing order programmes which authorize nurses and pharmacists to administer vaccinations according to a standard protocol without the need for a physician’s examination [\(87\)](#).
- Conduct mass vaccination campaigns with a “festive” approach [\(88\)](#) (see case study on the Flulapalooza event later in this section) or bundled with other health education and interventions such as staff health and wellness days.

Provide incentives

- Offer token incentives (pens, stickers, buttons or vouchers for coffee/ice cream).
- Provide time off (if feasible) to get vaccinated and in case of any minor pain or mild illness afterward.
- Consider expanding the programme to offer vaccination to include health worker families/ households.
- Present leadership awards/public recognition for teams or departments who achieve certain vaccine targets (e.g. pizza party or gift cards for departments with the highest vaccination rate).

Educate

- Provide clear and balanced information on the risks of disease, the safety profile of the vaccines and benefits of vaccination to support health workers in making an informed decision and to address uncertainties.
- Facilitate small group discussions and/or individual dialogue where needed to address any concerns or misconceptions, and to reinforce vaccination as a norm.
- Emphasize the role and responsibility of health workers in transmitting disease, including how vaccination can support a healthier clinic environment or community overall.
- Ensure communications materials (e.g. emails, posters and newsletters) include information on the importance and rationale for vaccination (including safety), in addition to where/when services are offered.

Use repeated reminders

- Apply nudge-based interventions/cues to action (e.g. text message reminder, emails, social media messaging, screen savers, posters, loudspeaker announcements or stickers worn by health workers who have been vaccinated).
- Embed vaccination messaging in other workday routines (e.g. during staff meetings or supervisory visits)

Demonstrate strong leadership and accountability

- Lead by example (ensure managers support and participate in the vaccination programme).
- Enlist the help of respected staff members, across all roles, to be “vaccine champions” and promote peer-to-peer advocacy.
- Include middle managers in the development and roll-out of the vaccination programme, to help bridge information gaps and assert positive influence on their staff.
- Designate management personnel to oversee vaccination activities, including accountability for coverage rates.
- Develop a robust data system with electronic enrolment and a tracking process to identify and follow up with health workers not yet vaccinated and to ensure completion of a multi-dose series [\(45, 89\)](#).

- Implement a system for monitoring coverage, with measurable objectives, targets and indicators [\(29\)](#).
- Display institutional accountability by requiring vaccination rates to be reported up to the highest levels of leadership (including hospital boards)
- Introduce public reporting of health facility health worker immunization rates as a means of promoting safe care and providing transparent quality information to the public, including on facility websites [\(90\)](#).

Institutionalize the concept

- Integrate immunization into the training and employment orientation of students and health workers.
- Include vaccination as a key component of IPC, along with hand hygiene and use of PPE.
- Require mandatory vaccination, or evidence of immunity, against certain diseases a condition for medical training or employment (see [section 2](#)).

Implement soft mandates

- Track refusals (for non-medical reasons) using signed declination forms (this can also help with data on compliance).
- Enforce conditions for non-vaccination (requiring surgical mask use, or exclusion of non-vaccinated staff from working with highly vulnerable patients).
- No single intervention has been shown to rapidly and substantially increase and sustain vaccination uptake except for mandatory vaccination, and as discussed in section 2, it is a contentious approach that will not succeed in all contexts.



Health worker influence on community confidence and uptake

Experience shows that health workers who are vaccinated themselves are better at communicating with their patients on the benefits of vaccination, building positive norms in their communities. Research and experience have shown that, in most settings, health workers are the most trusted source of information about vaccination and have the greatest influence on an individual's decision to vaccinate. Many studies have found that a strong recommendation from health workers, especially physicians, is highly likely to increase vaccination uptake (6, 91). Health workers can also help misinformation and rumours around vaccination and increase confidence among their patients and communities.

However, for this influence to be effective, the dialogue between health workers and their patients must be respectful and conducted in a manner that builds trust (92). Practising good interpersonal communication can result in more productive conversations about vaccination that result in uptake. Using these techniques when discussing vaccination issues can be challenging for health workers, and it is important that they have the appropriate resources to help guide them through these interactions.

WHO and its partners have developed a number of valuable resources in recent years to support health workers in developing skills and training in interpersonal communication.



Useful resources

[WHO resources to support health worker/caregiver interactions on immunization \(93\)](#)

[WHO Newsroom: How to talk about vaccines \(94\)](#)

[Communicating about vaccine safety: guidelines to help health workers communicate with parents, caregivers, and patients \(95\)](#) (Pan American Health Organization)

[Vaccine safety communication library \(96\)](#) (WHO Regional Office for Europe)

[Interpersonal communication for immunization – transforming immunization dialogue \(97\)](#) (UNICEF)

[Health worker communication for COVID-19 vaccination flow diagram \(98\)](#) (WHO)

[Health workers in focus: policies and practices for successful public COVID-19 vaccination uptake \(99\)](#) (WHO Regional Office for Europe)

Special considerations during an emergency, outbreak or pandemic event

Lessons from Ebola, cholera and H1N1 influenza have shown just how critical building trust among health workers is to the success of the vaccination response to an outbreak.

For new and/or emergency vaccinations (e.g. Ebola, COVID-19), health workers may be among the first priority groups to receive the vaccines and therefore have an important role to play in leading by example.

Studies assessing health workers' willingness to accept new vaccines have identified some factors that have been associated with an improvement in uptake [\(81\)](#):

- providing correct and verifiable information on the content, efficacy and safety of the vaccine;
- appreciation of the burden of disease among health workers (especially in areas where there is or was an outbreak);
- demonstration workshops and seminars where reputable scholars/colleagues give presentations on the vaccine and receive vaccination in view of the participants;
- offering the vaccine on an opt-out basis, without coercion; and
- identifying and directly addressing any specific concerns, misconceptions or misinformation about the vaccine.

Managing misinformation

Health workers play a critical role in promoting dissemination of accurate information, dispelling rumours and correcting misinformation and inaccuracies; however, health workers are themselves vulnerable to misinformation, especially in times of uncertainty, and are therefore an extremely important target group for any misinformation management strategy.

While vaccine hesitancy is not a new problem, the nature of the challenge has evolved over time. Digital communication, and social media in particular, has exponentially increased the speed and breadth with which information – including rumours, misinformation and disinformation – can spread.

WHO has called on countries to develop and implement national plans for generating confidence and demand, which includes vaccine information management, and has provided comprehensive guidance to support the development of these plans [\(100\)](#).

Case study

Vaccination Week in the Americas: efforts in Guatemala focus on health workers



World Immunization Week is a global initiative that takes place in April each year to celebrate the power of vaccines, to carry out vaccination-related activities and to highlight the essential work done by national immunization programmes around the world. The Region of the Americas marks this annually with Vaccination Week in the Americas as an opportunity to reach out and vaccinate populations with little or no access to vaccination, and to raise public awareness and attract political and media attention for the sustained and ongoing work that is needed to ensure individuals benefit from vaccination.

Each year, countries in the region review their own priorities and determine what the focus for the week will be nationally. In 2019, Guatemala specifically targeted health workers as recipients of Tdap vaccination and also raised awareness of other VPDs of high importance for occupational health (hepatitis B, influenza and measles) and preventing spread within health facilities. Over 5,000 doses of Tdap were delivered to health workers during the week-long events. In this example, the MOH recognized the importance of occupational health and the role that health workers can play in ensuring patient safety by preventing transmission of VPDs.

For more information, please see *Vaccination Week in the Americas 2021*: www.paho.org/vwa/.



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Case study

Countering vaccine concerns among health workers in Peru



WHO estimates that occupational exposure to hepatitis B – mainly from needle-stick injuries – accounts for some 37% of the disease burden among health workers worldwide and that 95% of this fraction of the burden can be prevented with immunization.

Peru has the distinction of being the first country in the world to work towards the goal of full HepB coverage for health workers under the Global Plan of Action on Workers' Health, endorsed by the 2007 World Health Assembly. To ensure the availability of vaccines in all health facilities in the country, the logistic systems of the MOH, the Ministry of Social Security, the armed forces and some health institutions in the private sector were used.

Initially, support for the hepatitis B immunization programme was high, with 95.5% of health workers receiving the first dose in April 2008. But only 75% returned for a second dose. Only 53.5% of health workers took the third and final dose in October the same year.

The opposition was spearheaded by doctors who argued that the vaccine contained high levels of thimerosal, a preservative that contains ethyl mercury. The MOH countered these allegations with the lack of evidence of toxicity in infants, children or adults exposed to thimerosal in vaccines, among worldwide research assessed by the WHO Global Advisory Committee on Vaccine Safety. The MOH used radio and television interviews, public meetings, office posters and palm cards to inform and reassure workers. A short film developed by WHO and dubbed into Spanish was especially effective in persuading doubters to take the vaccine. The film featured two nurses, one a triage nurse with 20 years in the job, who both contracted hepatitis B and HIV after accidents at work. As a result of these efforts, the number of health workers opposed to immunization had dropped from 46.5% to around 10%.

The campaign demonstrated that receiving vaccinations at health workers' place of work was a convenient method that also provided an opportunity to strengthen occupational health services for health workers and improve procedures for managing the risks of exposure to bloodborne pathogens. The campaign also highlighted the importance of communication with stakeholders for bringing about behaviour changes to achieve the desired results.

Source: Mass vaccination of health workers in Peru [\(101\)](#).

Case study

Flulapalooza event for immunization of health workers in the United States of America



In 2011, Vanderbilt University Medical Center doubled the previous record for number of vaccinations achieved in an 8-hour period by delivering over 12,000 influenza vaccinations to hospital staff and university affiliates during their (now annual) Flulapalooza event. Flulapalooza derives its name from a popular music festival and was chosen to motivate participation in the inaugural event aimed at setting a record. This event was more than a festive and social way to deliver annual influenza vaccines to health workers. It also served as a test of a health system's ability to respond to a disease outbreak. Such a large mass delivery of vaccines offers a realistic test of the conditions that emergency preparedness planners might have to contend with in terms of crowd control while managing the logistics and cold-chain requirements. Successive iterations of the event have seen marked efficiency improvements in staff utilization and workflow and have served to refine the hospital's ability to rapidly respond to a future public health scenario requiring mass vaccination while meeting the immediate, annual need to vaccinate health workers.

Sources: Vanderbilt doubles current world record for vaccinations [\(102\)](#); Emergency preparedness in the workplace: the Flulapalooza model for mass vaccination [\(103\)](#); It's a record: 12,850 flu shots in 8 hours. Hospital Employee Health [\(104\)](#).



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Section 5

MONITORING



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One of the biggest challenges, both for programmes nationally as well as at the health facility level, is how to successfully monitor the vaccination status of health workers. In the absence of an EIR [\(105\)](#) that can transmit this information to a national or regional/provincial database, monitoring of coverage relies on the existence of detailed up-to-date health worker registers at the health facility level. Robust reporting is then up to the relevant authorities at the district, regional and national level.

At a minimum, systems should be in place to monitor vaccine uptake (number of vaccinations), coverage and vaccine safety/AEFIs. If resources allow, programmes can consider additional monitoring activities, such as measuring vaccination impact. For newly introduced vaccines or newly introduced vaccination policies, a post-introduction evaluation (PIE) may be considered within the first year to identify implementation issues early on; afterward, health worker vaccination activities should be included in any NIP evaluations or reviews [\(106\)](#).

Progress indicators [\(107\)](#)

- **Vaccine uptake:** The number of people vaccinated with a certain dose of the vaccine in a certain time period (e.g. during a month or year).
- **Vaccination rate:** The proportion of people in a target population vaccinated with a certain dose of the vaccine in a certain time period (e.g. during a month or year).
- **Vaccination coverage:** The vaccinated proportion of a target population. Coverage can be estimated by accounting for vaccination in previous time periods (weeks, months, years). For the first year of a new vaccine introduction, or for annual vaccinations (e.g. seasonal influenza), rate and coverage can be used interchangeably.

Target population

Estimating the size of the target population for health worker vaccination is more complex than for other vaccines targeting the general population. An ideal scenario would be to establish a national health worker registry, but this may not be feasible in some settings.

There are two main approaches for estimating the size of the health workforce in general and those that need to be targeted for vaccination:

1. **high-level population estimates** based on national census information, national surveys or global health workforce databases, where necessary (see Box 8); and
2. **enumeration (counts) of beneficiaries**, assembled at the facility or district level and then reported up to the national level.

The first approach will be quicker and easier, but these global databases may not carry information on all the health worker categories that may be targeted for vaccination. For example, global databases may only have estimates of the numbers of doctors, nurses and midwives, but not other health worker categories. In such instances, rough estimates could be made based on ratios of health workers for whom data are not available to those for whom data are available (e.g. ratio of physicians to laboratory workers). These ratios could be quickly obtained through a survey of a small representative sample (e.g. tertiary, secondary and primary) of health facilities. Labour force surveys, where they exist, may also be helpful for estimating the number of people in the

health workforce. Even where formal health worker registers are not yet in place, there may be master facility lists that can be used to estimate the number of health workers per health facility, for example in countries where a health resources and services availability monitoring system (HeRAMS) [\(108\)](#) has been implemented.

The second approach of enumerating beneficiaries will provide a much more detailed picture of the true target population and is recommended if time and resources allow. This is especially important as health facilities will need to prepare these beneficiary lists in order to track vaccination delivery and maintain records of those vaccinated. Where up-to-date health worker registers already exist at the facility level, this information will be easier to compile. The health management information system (HMIS) may be useful for organizing these enumerations from the bottom up, for example by requesting district health offices to count and report on all health workers in their jurisdiction.

In all cases, health workers from both the public and private sector should be included when estimating the overall target population.



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Box 8

Resources for estimating target health worker population size

The National Health Workforce Accounts (NHWA) system aims to facilitate the standardization of a health workforce information system for interoperability, as well as to support tracking human resources for health policy performance towards universal health coverage.

More on NHWA and related tools is available here: www.who.int/hrh/statistics/nhwa/en/.

NHWA data portal: <https://apps.who.int/nhwaportal/>

[Global Health Observatory data: health workforce](#)

[Global Health Workforce Statistics database](#)

[Classifying health workers: mapping occupations to the international standard classification](#)

[Health Resources and Services Availability Monitoring System \(HeRAMS\)](#)

National health workforce registries

In many countries, health worker information is found across multiple distinct systems, which makes it very difficult to obtain a national picture of the entire health workforce. A national health workforce registry is analogous to a country civil registration and vital statistics system and can provide a single authoritative source of information to provide an accurate enumerated count of all health workers, including in the private sector. A comprehensive health workforce registry may also include medical students and trainees. While health workforce registries exist in some form in most countries, they are often not standardized, updated, reliable, centralized or in electronic form.

Several resources are available to assist countries in developing or modifying existing information systems towards a functional electronic health workforce registry.



Useful resources

[*Minimum data set for health workforce registry: human resources for health information system \(109\)*](#) (WHO)

[*National Health Workforce Accounts \(NHWA\) \(110\)*](#) (WHO)

[*iHRIS Software: track, manage, and plan your health workforce \(111\)*](#) (IntraHealth International)

Monitoring systems

As with all vaccinations, the date and dose of the vaccination should be recorded on both a record given to the health worker (a personal HBR if the health worker has one), or a card provided at the time of vaccination and a register maintained at the vaccinating facility. It is also useful to include the information about the vaccinator (or facility where vaccinated), the vaccine product and lot number, for better AEFI surveillance and follow-up.

Home-based records

Each health worker should have a copy of their vaccination history in a personal immunization record. HBRs are a vital tool to facilitate continuity of care and provide essential information needed for evaluation of coverage, safety and vaccine effectiveness monitoring, and proof of vaccination status. HBRs:

- allow a vaccine provider to establish whether any vaccinations are missing or a next dose is due;
- remind the individual when the next dose (in a series) is due;
- help to establish an individual's vaccination status in coverage surveys;
- provide vaccination information in case of an AEFI; and
- provide a proof of vaccination for an individual's travel, educational or occupational purposes.

Particularly where proof of vaccination is linked to requirements (e.g. for training or job entry), there is a possibility that falsification of HBRs may become a problem. Mitigation strategies include printing cards on paper/material that is difficult to copy or obtain by fraudsters, requiring signatures by vaccine providers, using unique identifiers (serial number, barcode) for each HBR, or using digital certificates with integrity checks ([107](#)).

Facility-based health worker registers

Ideally, all health facilities should have an existing health worker register that is maintained as part of the occupational health management system, and vaccination records should be incorporated into these registers. These record systems may be paper-based or digital and may be linked to an electronic vaccine management system or EIR, where these exist.

As part of the employee onboarding process, the health worker register should be populated with the data from the health worker's HBR or medical files, including EHR where available. The register should be updated regularly (e.g. as part of an annual employee health check) to include any vaccinations that health workers receive from other locations (e.g. in their own physician's office/ primary care or local pharmacies). This is necessary to provide an accurate picture of the percentage of health workers who are protected, and also to quickly identify unvaccinated staff members during an outbreak.

Facility-based health worker registers should be set up to:

- track the immunization status of health workers working at the facility, including contract workers, students and volunteers;
- send reminders to those who are missing vaccines or are due for subsequent doses;
- report data to public health authorities (e.g. in case of an AEFI or safety concern arising with a particular vaccine product or lot); and
- include vaccination data with other personal information for health workers kept on file.

Measuring vaccination coverage

Approaches for estimating coverage will necessarily differ across the different categories of health worker vaccinations described in **section 3**.

Ideally, coverage data should be disaggregated by sex in order to monitor whether there are any discrepancies in uptake by gender.⁴ Imbalances can then be addressed through targeted communications or approaches to find out what gender-related barriers are at play. Additional stratification can also be useful to inform programmatic action, for example age group, health worker role or type of facility (public/private).

A number of resources provide detailed information on the methods available to monitor and measure coverage of health worker vaccination.



Useful resources

[*How to implement seasonal influenza vaccination of health workers – Chapter 4. Monitoring and Evaluation \(35\) \(WHO\)*](#)

[*WHO reference for estimating influenza vaccination coverage among target groups \(112\) \(WHO Regional Office for Europe\)*](#)

[*Monitoring COVID-19 vaccination: operational guide for the collection and use of vaccination data \(107\) \(WHO\)*](#)

[*Operational guidance: COVID-19 vaccination data and information management, including monitoring of vaccine effectiveness \(113\) \(WHO Regional Office for Europe\)*](#)

4. Note that this also requires accurate denominators disaggregated by sex as well, as the health workforce may have a skewed sex ratio.

Surveys

Surveys can be a useful source of data on the prevalence of certain VPDs and immunization coverage as well as attitudes towards vaccination programmes. A gender analysis can also be included in surveys or any other programme evaluation or reviews to determine differences in coverage as well as disaggregated data on behavioural and social drivers. Findings from qualitative research will also help enrich an understanding of reasons for low uptake for priority population groups.

In considering survey methods, a representative sample of health workers can be selected through a stratified random sampling approach from national registries of health workers, where they exist, or databases maintained by professional organizations and so forth. If such registries are not available, a two-stage selection of health facilities and of health workers in these facilities can be done. If contact information is available, standardized interviews could be carried out face to face, by phone or via internet-based platforms. If contact information is not available, online survey links could be provided to all health workers in the selected facilities with an invitation to access the survey using their mobile phones or personal computers. It should be noted that when using this approach, self-reporting of vaccination may lead to overreporting ([114](#)).

Consideration should also be given to integrating questions related to health worker vaccination platforms and the vaccination coverage/immunization status of health workers into other programme reviews and assessments, such as NIP/EPI reviews ([106](#)) or service availability and readiness assessments (SARAs) ([115](#)).



Useful resources

[Immunization and gender: a practical guide to integrate a gender lens into immunization programmes \(116\)](#) (UNICEF Regional Office for South Asia)

[Why gender matters: Immunization Agenda 2030](#) (WHO, UNICEF, Gavi)

AEFI surveillance

As with all vaccination programmes, it is very important to monitor vaccine safety. This involves recording, investigating and reporting any adverse events following immunization, in line with existing systems in place for AEFI surveillance.

Departments responsible for health worker vaccination (e.g. OHS and health training programmes) should work with the national regulatory authority (NRA) to define roles and responsibilities with respect to vaccine safety monitoring. Typically, case investigation reports are made for serious cases, while a full line list of all detected cases is used by district, intermediary and national levels, and shared with the NRA. Sometimes, aggregate numbers of serious and non-serious AEFIs are also reported through the administrative reporting system. Monitoring these events can provide early warnings about safety concerns with a certain vaccine or vaccine batch, or about unsafe administrative practices.

For some vaccines (e.g. seasonal and H1N1 influenza vaccine), studies have shown that both local and systemic adverse reactions are more frequent among women than men ([117](#)). Reports have also shown higher rates of allergic reactions among women of childbearing age compared to men

following H1N1 vaccination (118). Especially as a large majority of health workers are women, it is important to keep this in mind when setting up AEFI surveillance systems, including collecting, analysing and reporting data by sex and age. In addition, safety monitoring systems should include measures for monitoring in the event that a health worker was inadvertently vaccinated with a contraindicated vaccine while pregnant.

Guidance for safety surveillance and AEFI monitoring is beyond the scope of this document, but comprehensive resources are available



Useful resources

[WHO global vaccine safety and pharmacovigilance resources \(119\)](#)

[COVID-19 vaccines: safety surveillance manual \(WHO\) \(120\)](#)

WHO-UNICEF interim guidance on digital health tools for COVID-19 vaccine delivery and performance monitoring – forthcoming

Conclusion

Vaccination of health workers is an important aspect of comprehensive programmes such as Infection, Prevention and Control (IPC) and occupational health and safety (OHS). As we globally work towards the goals outlined in Immunization Agenda 2030 and broaden the horizons for immunization to reach across the life course, health workers are an essential group to be vaccinated. Direct protection for health workers will maintain function and resilience of the health system. Indirectly it will also contribute to the protection of vulnerable patients and increase the likelihood of health workers recommending vaccination to their patients. This guide summarizes current global recommendations and programmatic considerations for establishing and/or strengthening platforms for the vaccination of health workers. As health workers are women, it is important to keep this in mind when setting up AEFI surveillance systems, including collecting,

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Annex 1. Risk categorization framework for vaccination of health workers

Table A1 provides an example of a framework that has been developed to categorize HWs with respect to risk of infection and transmission of influenza¹ and can be adapted for other VPDs as well. Please note that these examples are for airborne transmission; any risk categorization exercise would have to be adapted to the specific VPD in question (i.e. blood-borne transmission would place any health workers in contact with bodily fluids – including waste workers and janitors, for example, in the high-risk category). Current global recommendations and programmatic considerations for establishing and/or strengthening platforms for the vaccination of health workers. rkers are women, it is important to keep this in mind when setting up AEFI surveillance systems, including collecting,

Table A1

Summary of implementation strategies, key components and challenges for health worker (HW) vaccination platforms

Risk category	Health worker characteristics
Very high	<ul style="list-style-type: none"> High risk health workers (see below) who work in clinical areas that admit patients at high risk for severe disease, complications, or death following influenza virus infection. These include intensive care units; transplant or oncology wards; antenatal, peri-natal or postnatal areas; and areas with elderly individuals, especially those with chronic diseases.
High	<ul style="list-style-type: none"> Health workers who come into direct physical contact with patients, or with infectious materials, including surfaces or equipment contaminated by infectious materials. Health workers who have contact which is not physical but that would allow the acquisition or transmission of diseases that are spread at short range (1–2 m) by respiratory means, e.g., counsellors who have prolonged fact-to-face contact.^{2,3}
Low	<ul style="list-style-type: none"> Health workers who do not have contact with patients and whose normal work is not in a clinical area as defined above.

1. How to implement seasonal influenza vaccination of health workers. An introduction manual for national immunization programme managers and policy makers. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/bitstream/handle/10665/325906/9789241515597-eng.pdf>, accessed 5 March 2022).
2. Galton J, Tovey E, McLaws ML, Rawlinson WD. The role of particle size in aerosolised pathogen transmission: a review. J Infect. 2011; 62(1):1–13.
3. Galton J, Tovey ER, McLaws ML, Rawlinson WD. Respiratory virus RNA is detectable in airborne and droplet particles. J Med Virol. 2013; 85(12):2151–9.

The very high-risk category is also the one where the evidence for risk and impact of vaccination is the strongest and where there is a stronger justification for vaccination.⁴

Those targeted for vaccination should also include part-time personnel, students, contractors, and volunteers at the health facility who have possible exposure to patients as health workers in the above categories.

Risk categorization of individual health workers may be too complex and resource intensive in many settings, especially in low- and middle-income countries. In these situations, simpler approaches may be used in which health worker categories are classified into only two groups, i.e. high risk groups (targeted for vaccination) and low risk groups (not targeted for vaccination).⁵

To ensure targeted use of influenza vaccination of health workers and to address potential uptake issues, national policies for health worker vaccination should outline:

1. The classification of different health worker categories based on assessment of risk.
2. The policy for vaccination for each category, e.g. whether vaccination is recommended and whether the recommendation is for mandatory or voluntary vaccination.
3. Strategies for managing non-compliant health workers and vaccine refusers.

4. Rapid Evidence Appraisal: Healthcare Worker Influenza Vaccination – A global review of the evidence. 2017 (<https://www.sciencedirect.com/science/article/pii/S2590136219300373?via%3Dihub>, accessed 5 March 2022).

5. Occupational Assessment, Screening and Vaccination against Specified Infectious Diseases. Policy Directive from the New South Wales Government, Australia. (http://www.seslhd.health.nsw.gov.au/sites/default/files/groups/Public_Health_Unit/Immunisation/Policy%20Directive%20for%20the%20Occupational%20Assessment%2C%20Screening%20and%20Vaccination%20Against%20Specific%20Diseases.pdf accessed 5 March 2022).

Annex 2. Complementary checklist for planning vaccination of health workers

This checklist is adapted from the [WHO guide How to implement seasonal influenza vaccination of health workers](#)¹ and is meant to be used in conjunction with the vaccine introduction checklist from the WHO guide [Principles and considerations to adding a new vaccine to a national immunization programme: from decision to implementation and monitoring](#)² and adapted for local use using their own National Immunization Strategy. Items specific to seasonal influenza or new policies/new vaccine introductions are indicated in *[italics]*.

	Health worker vaccination policy
1	National policy on vaccination of health workers published and disseminated to all relevant agencies and health facilities, including private health facilities and relevant professional societies.
2	The policy on vaccination of health workers is reflected in the national occupational health policies.
3	The costs of vaccination of health workers are included in either the immunization or occupational health budget, as appropriate.
4	<i>[For seasonal influenza:]</i> Surveillance system in place for influenza activity, including defining start and end of the influenza season, to inform selection of the most appropriate vaccine formulation and timing of influenza vaccination.
	<i>[For new policies/new vaccine introductions:]</i>
5	A functional multidisciplinary coordination group is in place to discuss and promote access to a new target population of health workers, enabling the formation of partnerships which support and shape the national agenda.
6	The group includes focal points from the occupational health and immunization programmes, professional organization representatives and other relevant stakeholders.
7	A costed operational plan for health worker vaccination is developed and integrated into the national immunization plans and relevant occupational health plans.
	Formative research (optional but recommended)
8	The need and scope of any formative research (e.g. assessment of behavioural and social drivers of vaccination) to be conducted in preparation for vaccine introduction is defined.
9	A research group to conduct formative research has been identified, and terms of reference for the research have been developed.

1. How to implement seasonal influenza vaccination of health workers. An introduction manual for national immunization programme managers and policy makers. Geneva: World Health Organization; 2019 (<https://apps.who.int/iris/bitstream/handle/10665/325906/9789241515597-eng.pdf>, accessed 5 March 2022).
2. Principles and considerations for adding a vaccine to a national immunization program: from decision to implementation and monitoring. Geneva: World Health Organization; 2014 (<https://www.who.int/publications/i/item/9789241506892>, accessed 5 March 2022).

	Communications and strategies to increase confidence and uptake
10	Working group established for planning communications strategy and developing communications materials for health worker vaccination.
11	Tailored communications messages and materials developed along with an overall communications strategy.
12	Training for health facility communications teams is conducted.
	Vaccine procurement and supply chain management
13	Target population size estimate developed and included in demand forecast.
14	Individual health facility demand estimated, and vaccine distribution plan developed (including cold chain and transport).
15	Sufficient cold-chain capacity for vaccines and supplies at all levels established to accommodate vaccine during vaccination period.
	Vaccine delivery
16	Health facility vaccination delivery teams are established and trained. This would include training on obtaining informed consent from vaccine recipients.
17	System for managing vaccination refusals and implementing infection control measures in place for prevention of nosocomial transmission, e.g. reassignment, wearing of masks and mandatory leave in case of illness.
	Monitoring and evaluation
18	Data recording and reporting tools developed and distributed, including for coverage monitoring (updated administrative data and health worker surveys) and AEFI monitoring.
19	Post-introduction evaluation conducted, or health worker vaccination activities included in the next national immunization programme review.
20	Possibilities reviewed for operational research to assess health worker vaccine uptake.

Annex 3. Health facility checklist (where vaccination is to take place on-site)

	Communications
1	Health facilities communications working groups are established and trained.
2	Health facility communications plan and schedule for group communications with health workers is finalized.
3	Adequate supplies of posters and information materials for health worker vaccination are available.
4	Notification of vaccination sent out to targeted health workers and supervisors.
5	Telephone hotline established to address individual queries from health workers.
6	Vaccine monitoring system to identify and address drivers to uptake in health workers established (if low uptake observed).
	Storage capacity for vaccines and supplies
7	Adequate cold-chain storage capacity for vaccines and supplies during vaccination window period established.
8	Adequate quantities of vaccines and supplies available.
9	Provision to deal with extra injection waste during period of vaccination.
	Vaccine delivery
10	Categorization of health workers completed and beneficiary list for vaccination developed.
11	Vaccination delivery team identified and trained (including on techniques for reducing pain during vaccination, obtaining informed consent, etc.). ^{1,2}
12	Vaccination sites within health facility finalized.
13	Booking system established (if applicable).
14	System to case manage delivery for multi-dose vaccination schedule with callbacks/reminders (e.g. registry, automated appointment booking, daily list for follow-up)
15	System for management of vaccination refusals (including declination forms) and implementation of infection control measures in place for prevention of nosocomial transmission, e.g. reassignment, wearing of masks, mandatory leave in case of illness.

1. Managing pain during vaccine administration: a training module for health workers. Geneva: World Health Organization; 2017 (<https://cdn.who.int/media/docs/default-source/immunization/demand/trainingmodule-painmanagement-final.pptx>, accessed 5 March 2022).
2. WHO position papers on reducing pain at the time of vaccination. In: WHO/Position papers. Geneva: World Health Organization; 2021 (<https://www.who.int/teams/immunizationvaccines-and-biologicals/policies/position-papers/reducing-pain-at-time-of-vaccination>, accessed 5 March 2022).

	Monitoring and evaluation
16	Data recording and reporting instruments available, considering data protection issues.
17	Health worker vaccination registries developed (or updated).
18	System for defaulter tracking and reminders established.
19	AEFI monitoring and reporting systems updated to identify AEFI in health workers.

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