

An overview of pharmacy's impact on immunisation coverage

A global survey

2020



Colophon

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Recommended citation:

International Pharmaceutical Federation (FIP). An overview of pharmacy's impact on immunisation coverage: A global survey. The Hague: International Pharmaceutical Federation; 2020

Infographics and maps:

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Cover image:

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Executive summary

The role of pharmacists is continuously expanding. Beyond being medicines experts, first-line health care providers and integral members of interdisciplinary teams, they have begun engaging in immunisation services. In some countries and territories, pharmacists have gained the authority to administer vaccines. This has been shown to be associated with numerous benefits, including increasing vaccine coverage, and warrants the need for a comprehensive overview of the status of pharmacist-led vaccination.

In 2016, FIP conducted the first global survey to identify pharmacists' roles in immunisation and, following the analysis of the results, published its report. Between December 2019 and March 2020, we conducted a new global survey to update our intelligence and inform our advocacy with current evidence. A total of 106 organisations from 99 countries and territories participated in this study, making it the most representative survey ever conducted on this subject. More than double the number of responses, as compared with our initial survey, were received.

In our updated survey, we sought to evaluate various aspects of pharmacist-led immunisation, including advocacy activities, regulatory frameworks, vaccine administration, training and certification, vaccination records, and limitations and barriers to the expansion of pharmacy practice to include vaccine administration.

KEY FINDINGS

Pharmacists' roles in promoting vaccination awareness and uptake and advocating for vaccination

- Some 70% of respondents confirmed that pharmacists play an active role in educating the public on vaccine-preventable diseases as well as advocating for vaccination. Although different levels of engagement were reported, most pharmacists contribute to a general public understanding about which diseases can be prevented through vaccines, and about the value of vaccines for individuals and society.
- Only a few reported higher levels of engagement activities, such as assessing vaccination status and identifying high risk groups. Engagement in more proactive advocacy activities is recommended to further expand pharmacists' role in immunisation.

Regulatory and contractual frameworks for pharmacy-based vaccination

- Pharmacy-based vaccination (PBV) is now available in at least 36 countries and territories, 16 more than were indicated in our study in 2016.
- Nearly 1.8 billion people can access vaccination services at a community pharmacy around the world — almost twice as many as in our 2016 study.
- Vaccine administration by pharmacists is authorised in 26 countries and territories, compared with 13 in 2016. Nevertheless, 66 countries and territories in our sample (a two-thirds majority) do not have PBV, so there is still a long way to go.
- Sixteen of these 66 countries and territories are proposing or developing pharmacist-led vaccination policies. Most reported that the change should take effect within one to five years. If these changes are confirmed, the number of countries with PBV could rise to 52 in the next few years.
- In 50 countries or territories, not only is PBV not available but there are no indications that this may change in the near future.

Reimbursement for vaccination services

- Pharmacy vaccination services are paid for by the customer in most countries and territories. Ten respondents reported that the service is reimbursed by public health systems, and five by private health systems. In six cases, the service is provided at no cost to the patient or health system (the cost is taken up by the pharmacy).
- Reimbursement mechanisms for PBV services are linked to policies and strategies to foster equity in access to vaccines and vaccination providers, and to achieve high vaccination coverage rates.

- Reimbursement for vaccination services was perceived as important or very important by 78.4% of respondents.

Vaccine administration

- Pharmacies are involved in the administration of 36 different vaccine types.
- Vaccines commonly administered in pharmacies include influenza (94% of respondents), hepatitis B (61%) and tetanus (58%). Nearly all respondents (96%) reported that they can vaccinate adults.
- Among 34 respondents with PBV, 24 (71%) reported that pharmacists may not prescribe vaccines. Pharmacists' legal capacity to recommend and administer a vaccine to a patient appears quite limited, hindering the potential for improving vaccination coverage for high-risk groups.
- Pharmacists are accountable for the vaccination process as the vaccine administrator, pharmacy manager or pharmacy owner in nearly 80% of vaccinations at a pharmacy.
- Influenza, pneumococcal disease, herpes zoster and pertussis are a significant cause of morbidity and mortality in older people, in whom the importance of vaccination is often underestimated. It is of paramount importance to increase focus on vaccination throughout the life course. In addition, as soon as vaccines against COVID-19 become available, mass immunisation — especially for those vulnerable to severe forms of the disease — will be essential and urgent, and pharmacies should be part of the vaccination pathways.

Training for vaccination services

- In 35 countries and territories where pharmacy-based vaccination is authorised, 100% of respondents indicated that, post-graduate training for pharmacists in vaccination roles exists, while in 16 countries undergraduate training also takes place.
- Within a subset of 22 respondents with PBV, vaccination training is mandatory in 68% of cases. With more pharmacists gaining the authority to administer vaccines, it is imperative that training is put in place, in addition to certification renewal programmes, to ensure quality and sustainability of services.

Vaccination records

- Pharmacists do not have access to vaccination records in most countries and territories (67% of respondents), which is regrettable.
- Even in countries with PBV, full access to vaccination records is available in only 12 out of 33 countries and territories, with the other 21 respondents reporting access to some records only.
- In close to half of the countries and territories with PBV, pharmacists do not possess the authority to record vaccination details in a shared vaccination record. This is a significant barrier in complex health systems where all healthcare professionals must know the vaccination status of each patient.
- Paper vaccination records are most common (73% of respondents). Shared electronic systems exist in 27 countries and territories but barriers exist for pharmacists to be given read and write access.
- Regulatory frameworks and logistical efforts should be implemented to maintain vaccination records that are easily accessible, readily shared and sufficiently comprehensive. Collaboration between governmental, technological and healthcare stakeholders is necessary to achieve this.

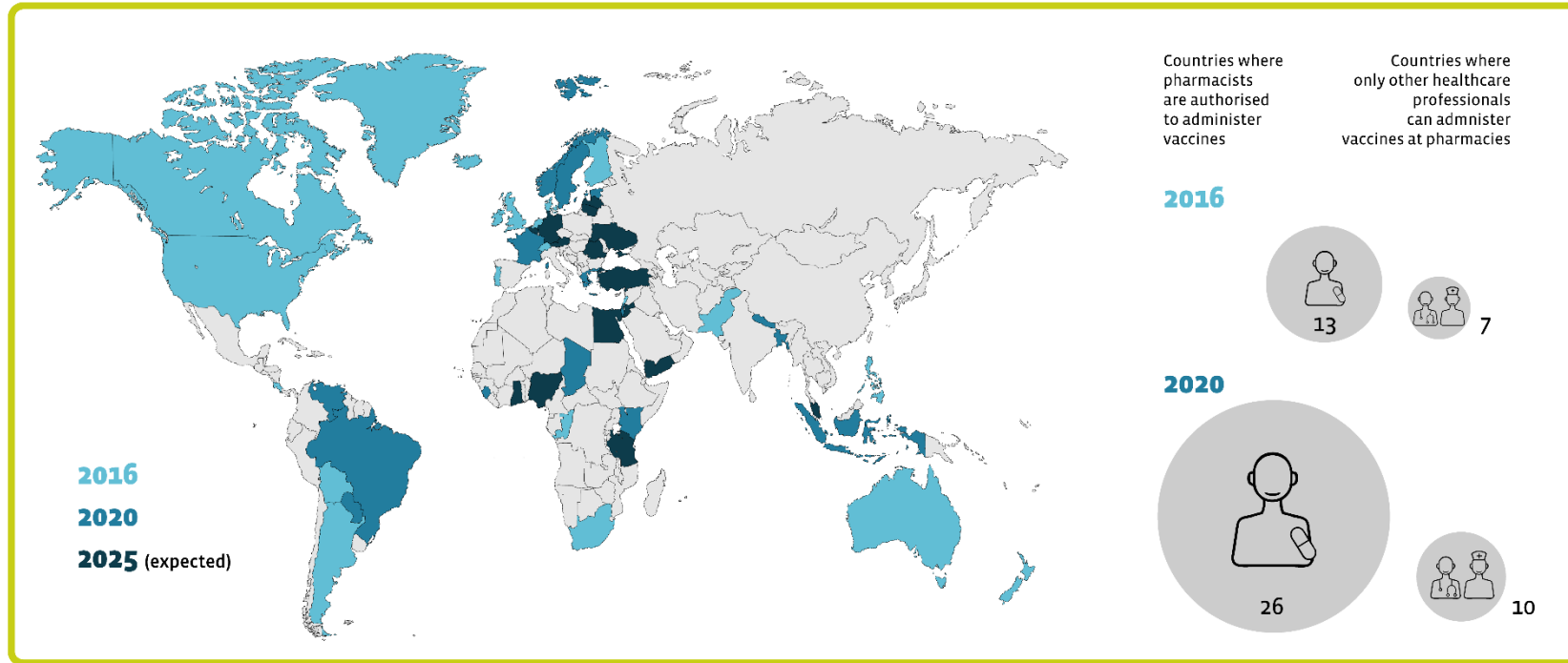
Limitations to the development of pharmacists' role in vaccination

- Limited acceptance and support of pharmacists' role as vaccinators by governments and other health professions across all income levels are perceived as the most important barriers to its full realisation. Further advocacy efforts are required.
- The lack of financial support by health systems is an important limitation. Financial support is a significant component of service sustainability and equitable access to vaccination services.
- Important differences in perceived barriers are found between countries and territories with or without PBV, for example, the perceived lack of patient demand or acceptance for PBV services. While this was reported by 18 respondents (30%) from countries without PBV, it was reported by only one

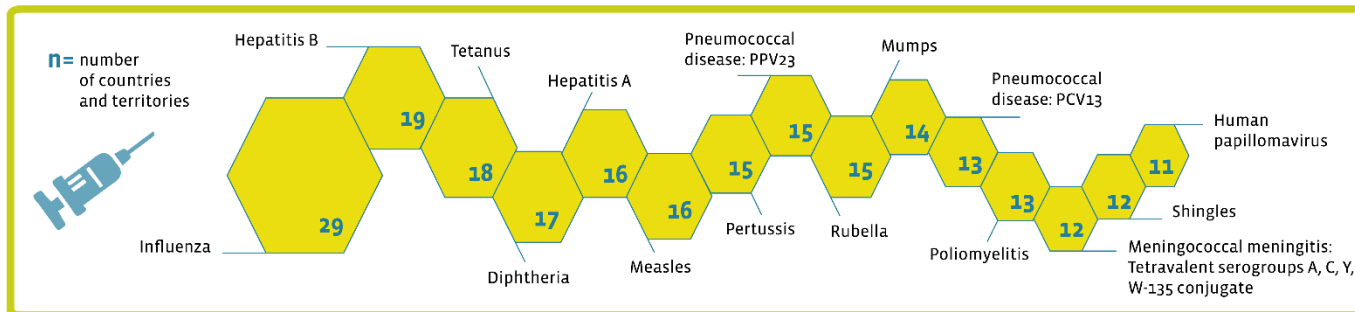
(3%) of those with pharmacy-based vaccination. This suggests that, once the service is implemented, patients recognise its value and actively seek the service.

- The same happens with the limitations related to the lack of confidence by pharmacists (43% in countries without PBV vs. 19% in those with the service) and limited access to training opportunities (51% vs. 23%). These limitations are greatly overcome once regulatory frameworks support the delivery of this service and implementation begins.
- Data seem to suggest that, as the implementation of vaccination services becomes more established and consolidated, the perceived barriers to these services seem to wane.

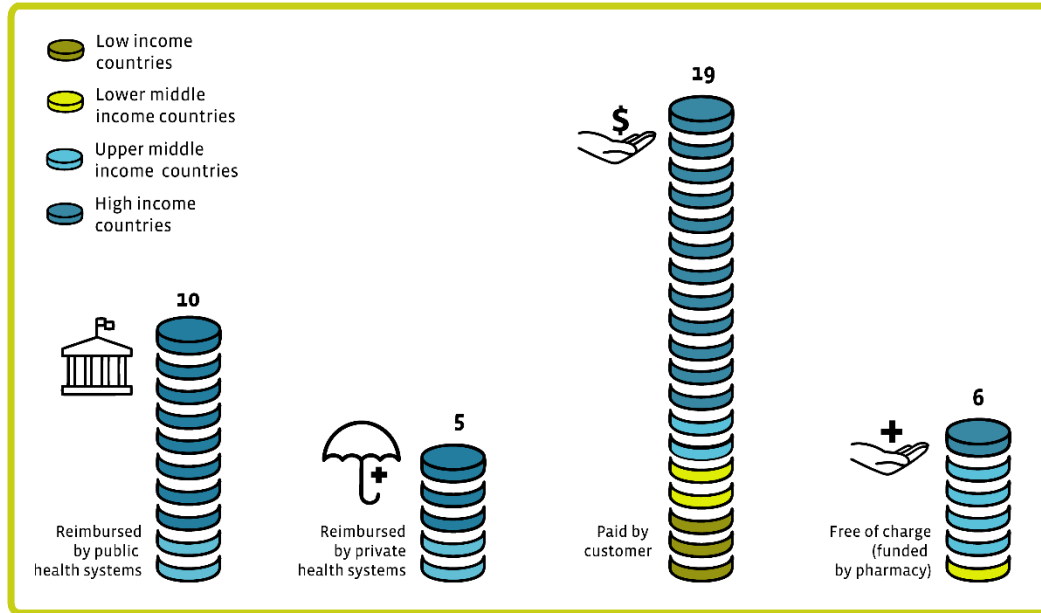
Evolution of countries and territories with pharmacy-based vaccination



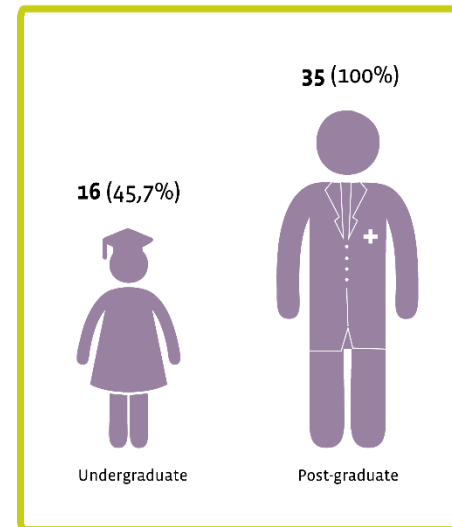
The 15 vaccines most commonly administered at pharmacies



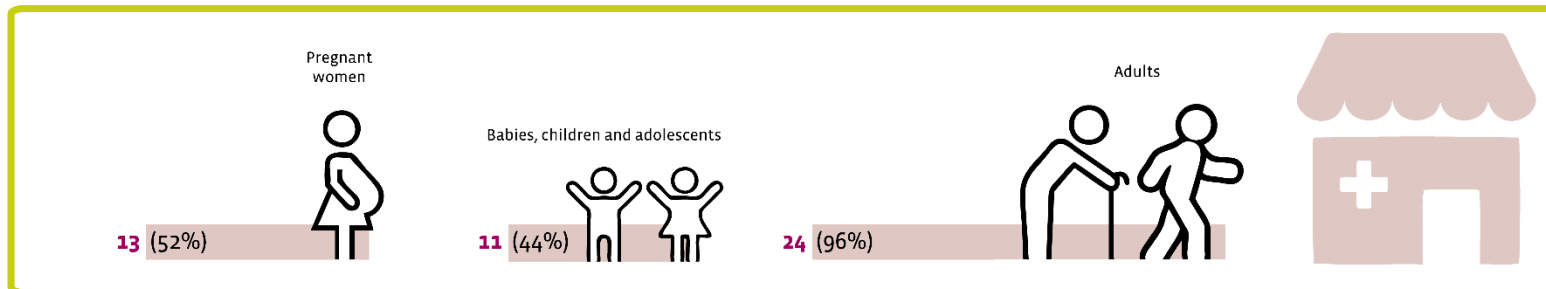
Countries (n=33) with different reimbursement models for pharmacy-based vaccination services



Vaccination training given in countries with pharmacy-based vaccination (n= 35)



Countries in which the following population groups can be vaccinated at pharmacies (n= 25)



Acknowledgements

The content of this report has been produced independently by the authors and editors.

This study was supported by GSK and Sanofi Pasteur.



1 Introduction — Pharmacists' contribution to immunisation

Vaccines are a notable public health achievement, having been proven to control, eliminate and prevent disease as well as representing significant cost-effective resources. The benefits associated with vaccination underscore the importance of not only raising vaccination awareness, but also increasing vaccination coverage, particularly in specific populations who may be at an increased risk of developing vaccine-preventable diseases.

As a result of population ageing, susceptibility to vaccine-preventable diseases is growing and so are potential disease complications. Diseases such as influenza, pneumococcal disease, herpes zoster and pertussis are a significant cause of morbidity and mortality in older people, in whom the importance of vaccination is often underestimated. It is of paramount importance to increase focus on vaccination throughout the life course and to ensure access to vaccines that are relevant for every age group. This requires new responses by health systems, and pharmacists should be part of the solution.

Pharmacists play essential roles in increasing vaccine uptake and therefore achieving high vaccination coverage rates. In fact, through their accessibility and distribution across community pharmacies, pharmacists are ideally placed to offer vaccination services. Thanks to their expertise and knowledge in diseases, vaccines and the supply chain, pharmacists are also reliable advocates for vaccination. They are well suited to address vaccine hesitancy and provide evidence-based advice to the public. Moreover, as front-line health professionals, pharmacists represent key players within collaborative health systems to achieve target vaccination coverage rates and even contribute to reducing antimicrobial resistance, among other public health goals related to immunisation.

There is no paucity of literature describing the positive repercussions of pharmacists' contribution to immunisation. Nevertheless, whereas pharmacists in several nations possess full authority to prescribe and administer vaccines, pharmacists in other nations are mainly involved in ensuring the safe supply and dispensing of vaccines, as illustrated by this survey report. Also, in many countries, barriers to the full utilisation of pharmacists to deliver vaccination services still remain, ranging from regulatory impediments to limited acceptance by other health professions and to a lack of adequate reimbursement models for vaccines and pharmacy-based vaccination services that would ensure the sustainability of and equitable access to such services.

It is in this regard that FIP has conferred great importance on advocating and pursuing research on pharmacists' role in immunisation over the past decade. In 2011, the joint guidelines of FIP and the World Health Organization (WHO) on Good Pharmacy Practice defined the administration of medicines, vaccines and other injectable medicines as a key role of pharmacists.

In 2016, FIP conducted the first global survey to identify pharmacists' roles in immunisation and, following the analysis of the survey results, published its global report. Since then, FIP has pursued its advocacy efforts through policy meetings and congress sessions on immunisation as well as through discussions and representation with global, regional and national partners, including the WHO.

In 2019, to support its member organisations in achieving or expanding pharmacist-led vaccination, FIP published its global vaccination advocacy toolkit. In 2020, FIP not only released an abridged version of that publication called "[Give it a shot: Expanding immunisation coverage through pharmacists](#)", it also conducted a new global survey of its member organisations and other partner organisations to update our intelligence and inform our advocacy with current evidence.

A total of 106 organisations from 99 countries and territories participated in this study, making it the most representative survey ever conducted on this subject.

The findings from this survey are very encouraging as they tell us not only that the number of countries introducing pharmacy-based vaccination has increased since 2016, but also that a significant number of countries are currently undergoing policy and regulatory changes to introduce this valuable service in the near future. However, this survey also tells us that, in a majority of countries, pharmacies are not yet being utilised as a pathway to improve vaccination coverage.

There is still a long way to go, and FIP will continue advocating and supporting its members in achieving this important expansion in our scope of practice and our service to society.

2 About the study

2.1 Aim and objectives

FIP has collaborated with its member organisations and several partner organisations to conduct a comprehensive global survey-based study to gain a better understanding and data on the following topics:

1. Pharmacists' roles in promoting vaccination awareness and uptake and advocating for vaccination
2. Regulatory and contractual frameworks for pharmacy-based vaccination
3. Administration of vaccines
4. Training the pharmacy workforce for vaccination services
5. Vaccination records
6. Additional services related to vaccination
7. Limitations to the development of pharmacists' role in vaccination

In addition, FIP used the data collected in 2016 as the baseline to identify developments in this area in the past four years and trends that will shape pharmacy-based vaccination in the coming five to 10 years.

2.2 Data collection methodology, tools and glossary

This study was based on data collected from FIP member organisations and other partner organisations through the "FIP global survey on the role of pharmacists in immunisation 2019", conducted between December 2019 and March 2020.

2.2.1 Design of the survey questionnaire

Developed by FIP, the survey design was based on the 2016 questionnaire and incorporated new questions or edited versions of some of the questions.

The survey was conducted using the online survey platform Question Pro, but the questionnaires were also distributed as PDF forms, to facilitate data collection.

The survey was conducted in five languages (Arabic, English, French, Russian and Spanish).

The questionnaire was not accompanied by an extensive glossary, but it offered the following definitions to provide a clear and shared understanding of these two key concepts:

Immunisation: the process by which an individual becomes immune against an infectious disease either by natural contact with an infectious agent or by vaccination.

Vaccination: the administration of a vaccine to stimulate immunisation.

The questionnaire is included as [Appendix 1](#).

2.3 Study sample and demographics

A total of 141 pharmacist organisations from 112 countries and territories were invited to participate in the survey. This includes 134 FIP member organisations, one FIP observer organisation, and six non-member organisations, all representing community pharmacists. Overall, responses were received from 106 organisations from 99 countries and territories. Organisations from the same country or territory were requested to submit a joint response, thus yielding a response rate of 88.4%, i.e., 99 countries and territories out of 112. All participating organisations are listed in Section 11 (p40), and Figure 1 presents a geographical overview of the participating countries and territories.

Respondents represent 41.9% of the world's 236 countries and territories. However, the population of the countries and territories represented in this study (6,402 million) accounts for 83% of the world's population in 2019 (7,713 million).

Figure 1. Countries and territories that participated in the study (n=99)

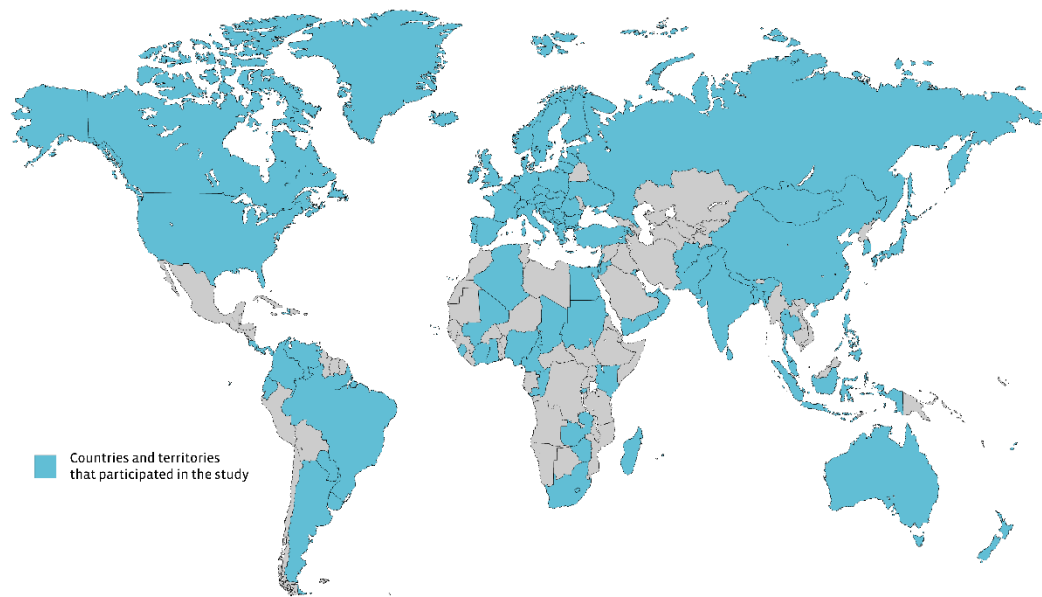


Table 1 shows the distribution of the countries and territories represented in this study both in terms of number within each WHO region and population. In terms of the number of respondents, the study is most representative within the European and Southeast Asian regions. However, in terms of the population, the Southeast Asian and Western Pacific regions are the most representative when considering the population covered by the study in relation to the total population of those regions. See A summary table of the respondents and key survey data are provided in Appendix 2.

Table 1. Sample distribution per WHO region and population covered by the study

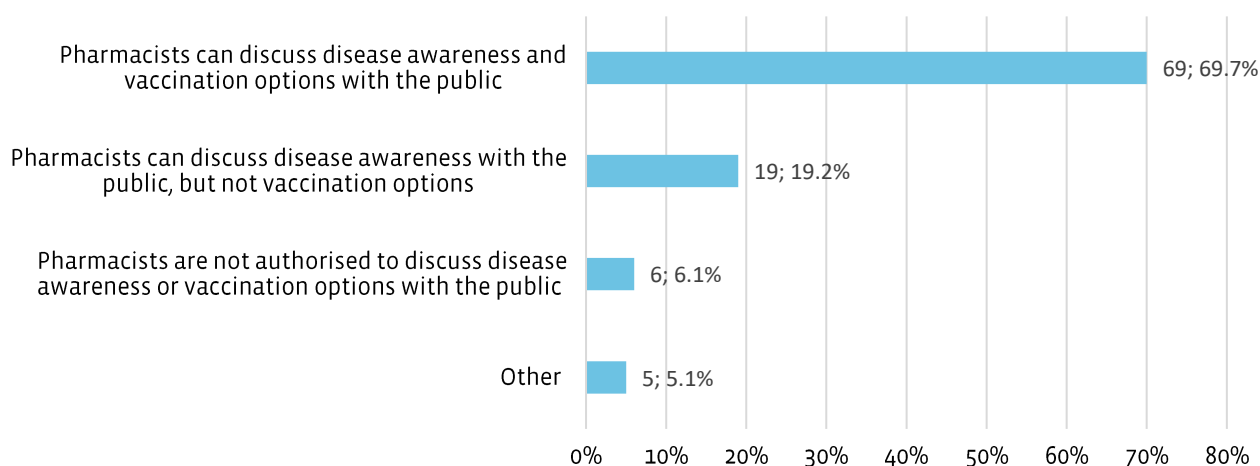
WHO Region	Countries and territories invited to participate in the study	Responses	Response rate per region	% of sample	Countries and territories in the WHO region	% of respondents per region	Population per region (million)	Population covered by the study (million)	% of the region' population	% of the study population
Africa (AFRO)	25	17	68%	17.2%	50	34%	1,092	618	57%	10%
Eastern Mediterranean (EMRO)	12	11	92%	11.1%	23	47.8%	718	463	64%	7%
Europe (EURO)	41	41	100%	41.4%	61	67.2%	931	829	89%	13%
The Americas (PAHO)	15	12	80%	12.1%	56	21.4%	1,015	750	74%	12%
Southeast Asia (SEARO)	6	6	100%	6.1%	11	54.5%	2,002	1,920	96%	30%
Western Pacific (WPRO)	13	12	92%	12.1%	35	34.3%	1,955	1,823	93%	28%
Global totals	112	99	88%	100%	236	41.9%	7,713	6,402	83%	100%

3 Pharmacists' roles in promoting vaccination awareness and uptake and advocating for vaccination

3.1 Vaccination awareness and advocacy activities

In general, nearly 70% of respondents confirmed that pharmacists in their country or territory play an active role in educating the public on vaccine-preventable diseases as well as advocating for vaccination (Figure 2). From all respondents, 89% (88 countries and territories) reported different levels of engagement in support and advocacy of immunisation-related activities. These figures suggest that a vast majority of pharmacists contribute to a general understanding among the public about which diseases can be prevented through vaccines, and about the value of vaccines for individuals and society.

Figure 2. Pharmacists' role in informing the public about vaccine-preventable diseases and vaccines, and in advocating for vaccination (n=99)



The five countries that selected the option "Other" (Iceland, India, Lithuania, Pakistan and Romania) reported that, although there is no formal impediment for pharmacists to discuss disease awareness or vaccination with the public, this is not widely done and it not considered as part of their mainstream practice.

Out of a total of 93 respondents, 89 (92.5%) are involved in at least one type of awareness raising or advocacy activity. Figure 3 shows the various activities undertaken by respondent countries and territories, with leaflet distribution and participation in online awareness campaigns (such as webpages or social media) being most common. However, there is potential for further involvement in individualised patient care, as activities such as assessing vaccination status and sending reminders to patients, as well as identifying and advising high risk patient groups, were less common. Utilising pharmacy expertise for advising on immunisation committees was the least reported option (8% of respondents).

Figure 3. Types of awareness and advocacy activities pharmacists are involved in (n=93)

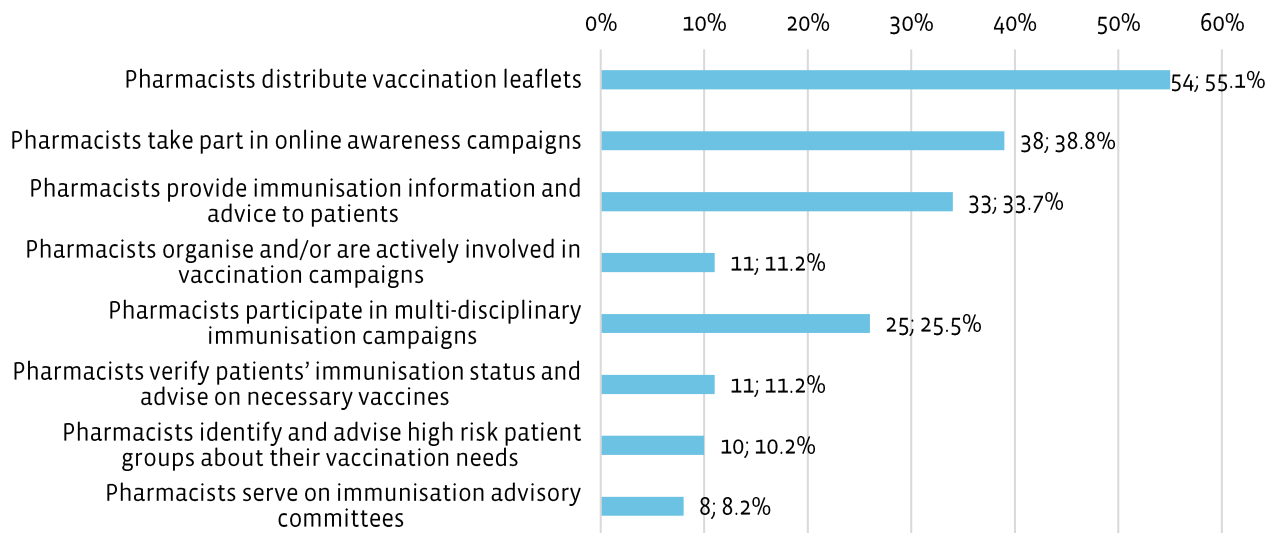


Table 2 shows the relative frequencies of promotional activities undertaken by respondent countries and territories as a percentage of all responses.

Table 2. Comparison of promotional activities undertaken by respondent countries and territories in 2016 and 2020

Support and advocacy activities	% responses (n)	
	2016	2020
Distribute leaflets	22% (28)	36% (54)
Participate in online awareness campaigns	Not included	25% (38)
Provide information and advice	21% (26)	22% (33)
Organise and lead campaigns	16% (20)	7% (11)
Participate in multi-disciplinary campaigns	14% (12)	16% (25)
Assess vaccination status and send reminders	10% (12)	7% (11)
Identify and advise high risk patient groups	10% (17)	7% (10)
Serve on immunisation advisory committees	8% (10)	5% (8)
Total responses	100% (125)	100% (190)

In comparison with 2016, results from the 2020 survey showed that distributing leaflets was still the most common advocacy activity. There was also an increase of respondents providing information and advice as well as engaging in multi-disciplinary campaigns. Nevertheless, for the assessment of vaccination status, identification of high-risk patient groups and involvement in immunisation advisory committees, similar or fewer responses were noted in the 2020 survey. With a high number of respondents having specified pharmacists' role in not only discussing vaccine-preventable diseases, but also advocating for vaccination, it is surprising that only a few of them reported activities of higher levels of engagement, such as assessing vaccination status and identifying high risk groups. Engagement in more proactive advocacy activities is recommended to further expand pharmacists' role in immunisation.

4 Regulatory and contractual frameworks for pharmacy-based vaccination

4.1 Availability of pharmacy-based vaccination

Taking into account data from the 2016 and 2020 surveys, pharmacy-based vaccination is available in at least 36 countries and territories out of a combined sample of 101 (36%). This implies that this study has identified 16 new countries (80% increase in number) with pharmacy-based vaccination compared with our study in 2016.

The samples of the two studies are quite different (45 respondents in 2016 and 99 in 2020), but there is a group of 40 countries and territories in common. In this group, there were 18 countries with pharmacy-based vaccination in 2016 and there are 23 in the 2020 survey (a 28% increase).

Also, 26 countries and territories (26%) stated that vaccine administration by pharmacists is authorised, compared with 13 countries in 2016. Ten respondents (10%) stated that only other healthcare professionals are allowed to administer vaccines at pharmacies. Although there was a significant increase in sample size between both surveys, there was a two-fold increase in the number of countries and territories where vaccination by pharmacists is authorised. Nevertheless, a two-thirds majority (65 out of 101) of countries and territories in our sample still do not have pharmacy-based vaccination, which suggests that there is still a long way to go to expand pharmacy practice in these countries to include this important service.

Figure 4 provides a geographical overview of pharmacy-based vaccination at international level.

Figure 4. Countries and territories with or without pharmacy-based vaccination (n=99)

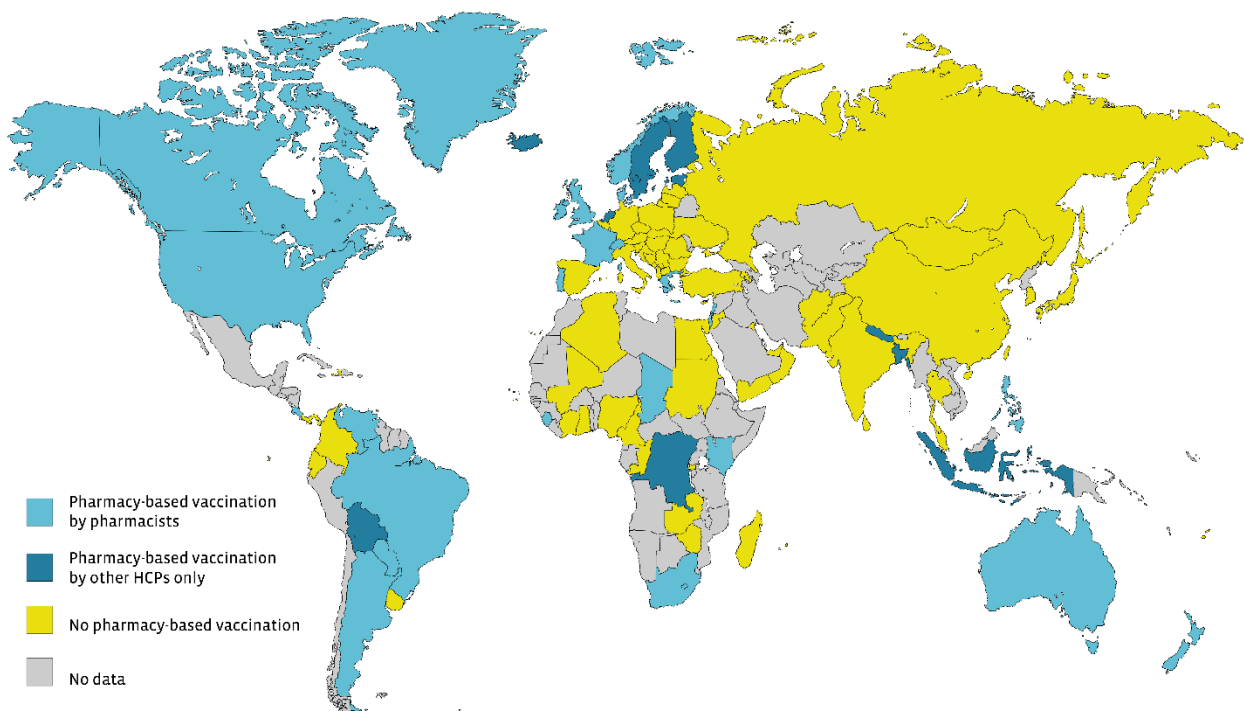


Figure 5 presents the data for the availability of pharmacy-based vaccination among the countries and territories in the study sample, plus two countries that did not participate in this study but had reported having pharmacy-based vaccination in 2016, and having not had regulatory changes since then.

The 36 countries with pharmacy-based vaccination identified in this study currently represent a total population of 1,732 million people, which is 27% of the total population of the countries and territories participating in this study, and 22% of world's population. As such, nearly 1.8 billion people can access vaccination services at a community pharmacy around the world — almost twice as many as in our 2016 study (940 million). This gives an idea of the potential vaccination coverage these countries can achieve if they fully utilise the pharmacy pathway for vaccination strategies.

Table 3 presents this study's figures in comparison with the 2016 data, while Table 4 lists the countries and territories where pharmacy-based vaccination is possible as well as the health professionals who are allowed to administer vaccines at pharmacies, and how the situation has changed since 2016. It may be noted that one country (Pakistan) had reported having pharmacy-based vaccination in 2016 and reported not having it in 2020. This was not due to a regulatory change, but rather due to a different interpretation of the questionnaire in the two years. For the sake of clarity, pharmacies in Pakistan are legally authorised to provide immunisation services although in 90% of the cases, vaccination tend to be undertaken by nurses and doctors in clinics and hospitals. The administration of vaccines in pharmacies is undertaken by nurses and doctors and the legal accountability for this process lies on the pharmacy manager or owner. (1)

Figure 5. Availability of pharmacy-based vaccination (n= 101)¹

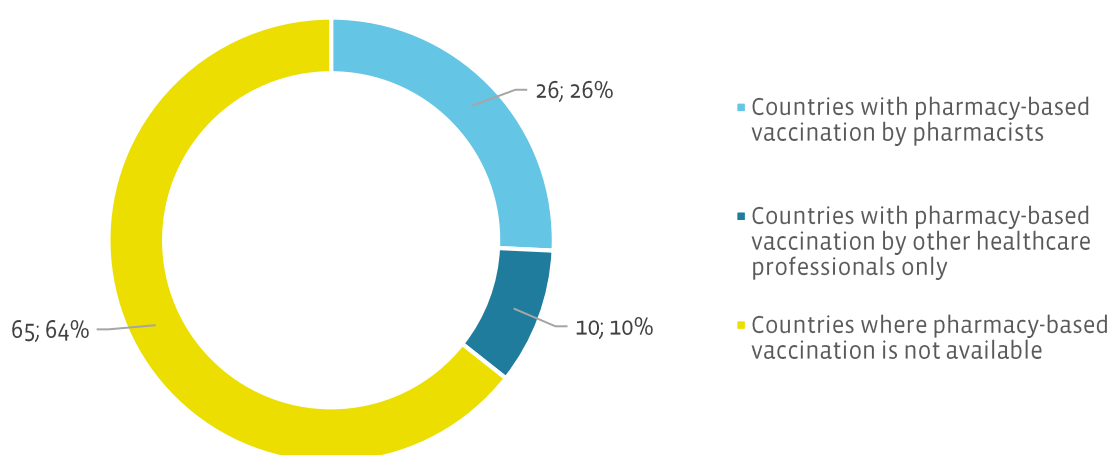


Table 3. Comparison of administration of vaccines in pharmacies by pharmacists or others in 2016 and 2020

Countries and territories where administration of vaccines in pharmacies is allowed	% of sample (n)	
	2016	2020
Yes (by pharmacists and other HCPs*)	29% (13)	26% (26)
Yes (but only by other HCPs*)	16% (7)	10% (10)
No	55% (25)	66% (65)
Total	100% (45)	100% (101)[†]

*HCP: healthcare professional

[†]includes 2016 data

¹ Includes two countries from the 2016 study

Table 4. Comparison of countries where pharmacy-based vaccination is allowed (2016 and 2020)

Country	Administration in pharmacies †		Administration by pharmacists		Administration only by other HCPs	
	2016	2020	2016	2020	2016	2020
Argentina	Yes	Yes	Yes	Yes	No	No
Australia	Yes	Yes	Yes	Yes	No	No
Bangladesh	ND	Yes	ND	No	ND	Yes
Bolivia*	Yes	Yes	No	No	Yes	Yes
Brazil	No	Yes	No	Yes	No	No
Canada	Yes	Yes	Yes	Yes	No	No
Chad	ND	Yes	ND	Yes	ND	No
Congo (DR)*	Yes	Yes	No	No	Yes	Yes
Costa Rica	Yes	Yes	Yes	Yes	No	No
Denmark	Yes	Yes	Yes	Yes	No	No
Estonia	ND	Yes	ND	No	ND	Yes
Finland	Yes	Yes	No	No	Yes	Yes
France	No	Yes	No	Yes	No	No
Greece	ND	Yes	ND	Yes	ND	No
Hong Kong	No	Yes	No	Yes	No	No
Iceland	Yes	Yes	No	No	Yes	Yes
Indonesia	ND	Yes	ND	No	ND	Yes
Ireland	Yes	Yes	Yes	Yes	No	No
Israel	No	Yes	No	Yes	No	No
Kenya	ND	Yes	ND	Yes	ND	No
Lebanon	Yes	Yes	No	Yes	Yes	No
Malta	ND	Yes	ND	Yes	ND	No
Nepal	ND	Yes	ND	No	ND	Yes
Netherlands	Yes	Yes	No	No	Yes	Yes
New Zealand	Yes	Yes	Yes	Yes	No	No
Norway	No	Yes	No	Yes	No	No
Pakistan	Yes	No	No	No	Yes	No
Paraguay	No	Yes	No	Yes	No	No
Philippines	Yes	Yes	Yes	Yes	No	No
Portugal	Yes	Yes	Yes	Yes	No	No
Sierra Leone	ND	Yes	ND	Yes	ND	No
South Africa	Yes	Yes	Yes	Yes	No	No
Sweden	ND	Yes	ND	No	ND	Yes
Switzerland	Yes	Yes	Yes	Yes	No	No
UK	Yes	Yes	Yes	Yes	No	No
USA	Yes	Yes	Yes	Yes	No	No
Venezuela	ND	Yes	ND	Yes	ND	No
Number replying "yes"	20	36	13	26	7	10

*2016 data

†Cells highlighted in dark blue indicate a confirmed change of status since 2016; those in light blue indicate countries and territories with pharmacy-based vaccination for which there were no data from 2016.

Table 5 presents the distribution of countries and territories with pharmacy-based vaccination per WHO region, as well as the number of respondents in each region that indicated which health workers are authorised to administer vaccines at pharmacies. Although the highest number of respondents with pharmacy-based vaccination is in the European region, proportionally the Americas and Southeast Asian regions have higher implementation rates for this service.

Table 6 presents a similar analysis by World Bank income level. While the implementation of pharmacy-based vaccination is proportionally higher in upper-middle income countries, this service is present in 20 high-income countries out of the 34 countries and territories that participated in the study — i.e., high-income countries represent 59% of the jurisdictions with pharmacy-based vaccination.

Table 5. Number of countries and territories with pharmacy-based vaccination (PBV) per WHO region

WHO Region	Countries and territories in the study	Countries and territories with PBV	% of the countries with PBV per region in the study	PBV by pharmacists	PBV by trained pharmacy technicians	PBV by other healthcare professionals (e.g., nurses or doctors)
AFRO	17.2% (17)	4	24%	4	2	2
EMRO	11.1% (11)	1	9%	1		
EURO	41.4% (41)	15	37%	10	2	9
PARO	12.1% (12)	7	58%	7	1	2
SEARO	6.1% (6)	3	50%		1	3
WPRO	12.1% (12)	4	33%	4		3
	100% (99)	34	34%	26	6	19

Table 6. Number of countries and territories with pharmacy-based vaccination (PBV) by income level

Income level	Countries and territories in the study	Countries and territories with PBV	% of the countries with PBV per region in the study	PBV by pharmacists	PBV by trained pharmacy technicians	PBV by other healthcare professionals (e.g., nurses or doctors)
High income	43.4% (43)	20	47%	15	3	12
Upper middle income	10.1% (10)	7	70%	7		2
Lower middle income	18.2% (18)	4	22%	2	1	3
Low income	28.3% (28)	3	11%	2	2	2
	100% (99)	34	34%	26	6	19

4.2 Foreseeable changes in pharmacy-based vaccination regulation

As shown in Figure 6, 16 (24%) of the 66 countries and territories in the sample where pharmacy-based vaccination is currently not available are currently proposing or undergoing the development of pharmacist-led vaccination policies. Table 7 summarises the countries and territories where policy is expected to be passed as well as the details of the policy. Most of these respondents reported that the change will take effect within one to five years. It is very encouraging to see that, if these changes are confirmed, there could be an increase of 44.4% in the number of countries with pharmacy-based vaccination, from the current 36 to a foreseeable 52 in the next few years.

These policy changes concern the flu vaccine for most countries (75%) as the current literature has already described the benefits of pharmacist-led influenza vaccination, particularly in improving vaccine coverage. These policy changes additionally shed light on the effectiveness of advocacy activities to expand pharmacists' scope of practice to improve public health.

However, in 50 countries or territories, not only is pharmacy-based vaccination not available but there are no indications that this may change in the near future. These countries could see their vaccination coverage rates — especially for older adults — significantly improved if pharmacies were considered among the vaccination pathways. These countries and their professional organisations are encouraged to work with FIP and other peer organisations to organise an advocacy strategy leading to the necessary regulatory changes.

Figure 6. Countries proposing or undergoing the development of pharmacy-based vaccination policy (n=66)

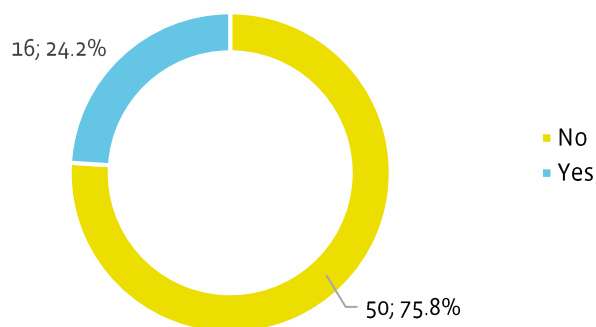


Table 7. Countries expecting pharmacy-based vaccination policy to be passed (n=16)

Country	Timeline	Vaccines to be included
Austria	In the next 5–10 years	Flu vaccine
Belgium	In the next 5 years	Adult vaccines
Egypt	No details provided	No details provided
Germany	The Measles Protection Act, which was passed on 29 November 2019, was expected to come into force on 1 March 2020. Its implementation will allow pharmacists taking part in pilot projects at local/regional levels to administer vaccines after receiving training. In a test phase of a maximum of five years, only participating pharmacies will be able to vaccinate.	Flu vaccine for individuals 18 years and older, only within the above described pilot projects
Ghana	The Pharmaceutical Society of Ghana is now undergoing advocacy activities towards policy change. There is a law that says that public vaccinators have to be certified by a senior medical officer.	All vaccines
Jordan	2020	Flu vaccine
Latvia	3–5 year period	Flu vaccine
Lithuania	1 November 2020	Adult vaccines only: flu, tick-borne encephalitis and measles
Malaysia	Not sure	Adult vaccines
Nigeria	2020	All vaccines
Romania	There are only discussions, but nothing concrete for the moment. The professional body of pharmacists in Romania highly supports flu vaccination in pharmacies, and there was some positive feedback from the authorities, but no legislative action as of yet.	Flu vaccine, but will advocate for all vaccines
Singapore	By end of 2020	Flu vaccine
Tanzania	Proposals in different health care platforms have been tabled, but high level authorities have not given any approval or statement yet.	All vaccines
Ukraine	2022	All vaccines
Turkey	No details provided	No details provided
Yemen	2025	Flu vaccine

4.3 Pharmacists' authorisation to prescribe vaccines for administration

As shown in Figure 7, out of the 34 respondents who positively answered that pharmacy-based vaccination is regulated in their country or territory, the majority (24 respondents; 71%) stated that pharmacists are not authorised to prescribe vaccines for administration. However, seven respondents (21%) stated that pharmacists can prescribe some vaccines, and three (9%) reported that they can prescribe all vaccines. The details of which vaccines pharmacists can prescribe are provided in Table 8.

Figure 7. Pharmacists authorised to prescribe vaccines for administration (n=34)

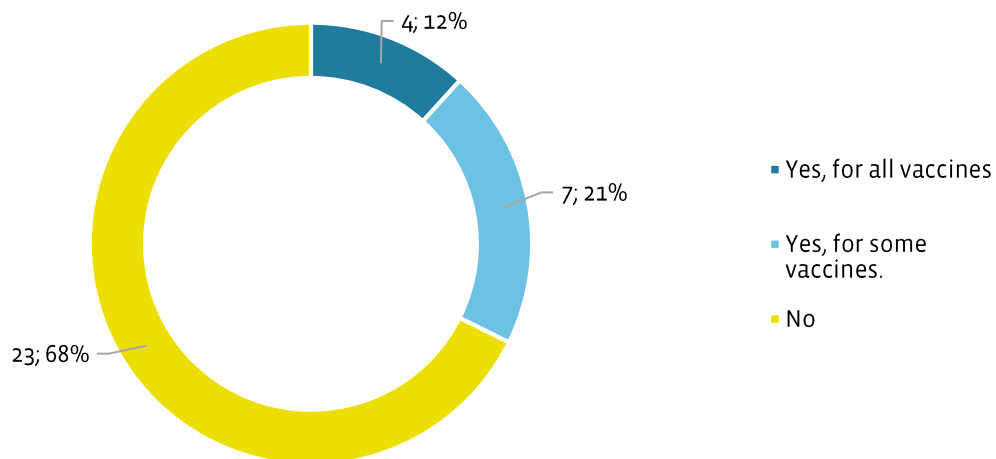


Table 8. Vaccines that pharmacists are authorised to prescribe per country (n=10)

Regulatory situation	Country or territory	Vaccines
Pharmacists authorised to prescribe some vaccines	Brazil	According to Resolution 197 (Anvisa, 2017), "the administration of vaccines in private establishments that are not included in the National Vaccination Schedule will only be done by medical prescription". Considering this definition, pharmacists are authorised to administer the vaccines that are part of the Brazilian national immunisation programme without the need for a medical prescription.
	Canada	No details provided
	France	Law 2019-774 of 24 July 2019 relating to the organisation and transformation of the health system provides for the possibility for pharmacists to prescribe certain vaccines, according to a list drawn up by decree after advice from the National Agency for the Safety of Medicines and Health Products (ANSM). This has come about as a result of the increasing licensing of vaccines with mandatory prescription status, which will soon be the case for some influenza vaccines.
	Ireland	Influenza, pneumococcal and herpes zoster
	Israel	Influenza
	South Africa	Pharmacist-initiated therapy (pharmacist prescription) can be offered for all vaccines on the Expanded Programme on Immunization (Government list of essential vaccines), annual flu vaccine, measles/mumps/rubella combination vaccine and the tetanus vaccine for adults.
	United Kingdom	No details provided
Pharmacists authorised to prescribe all vaccines that they administer	Chad, Kenya, New Zealand and Sierra Leone	

These findings show that, with few exceptions, pharmacists' legal capacity to recommend and administer a vaccine to a patient who could benefit from it is quite limited. This limitation hinders the potential for improving vaccination coverage for high-risk groups, such as the influenza vaccine for older adults, people with non-communicable diseases and pregnant women. In Ireland, where pharmacists can prescribe and administer the seasonal influenza vaccine, vaccination rates have steadily increased. (1) Likewise, a pilot project in Portugal — where pharmacists may administer the flu vaccine but by medical prescription only — allowed pharmacists to administer the vaccine without the need for a prescription. The result was a 32% increase in vaccination coverage. (2)

4.4 Requirements for the administration of vaccines in pharmacies

In countries and territories where pharmacists are authorised to administer vaccines, the most common requirement for their administration is the adequate storage and conservation of vaccines in the pharmacy (compliance with cold chain requirements) for 30 respondents out of 33 (91%). Other common requirements include the reporting of adverse reactions or medication errors related to vaccines (76%) as well as the management of hazardous materials and waste products (73%). See Figure 8 for details. Table 9 lists other particular requirements reported by some respondents beyond those listed in the questionnaire.

The results show that pharmacy-based vaccination is structured and regulated according to existing frameworks and quality standards, and several technical and professional requirements are enforced for this service to be delivered. At least 55% of all responding countries and territories enforce all of the eight requirements included in the survey questionnaire..

Figure 8. Requirements for the administration of vaccines in pharmacies (n=33)

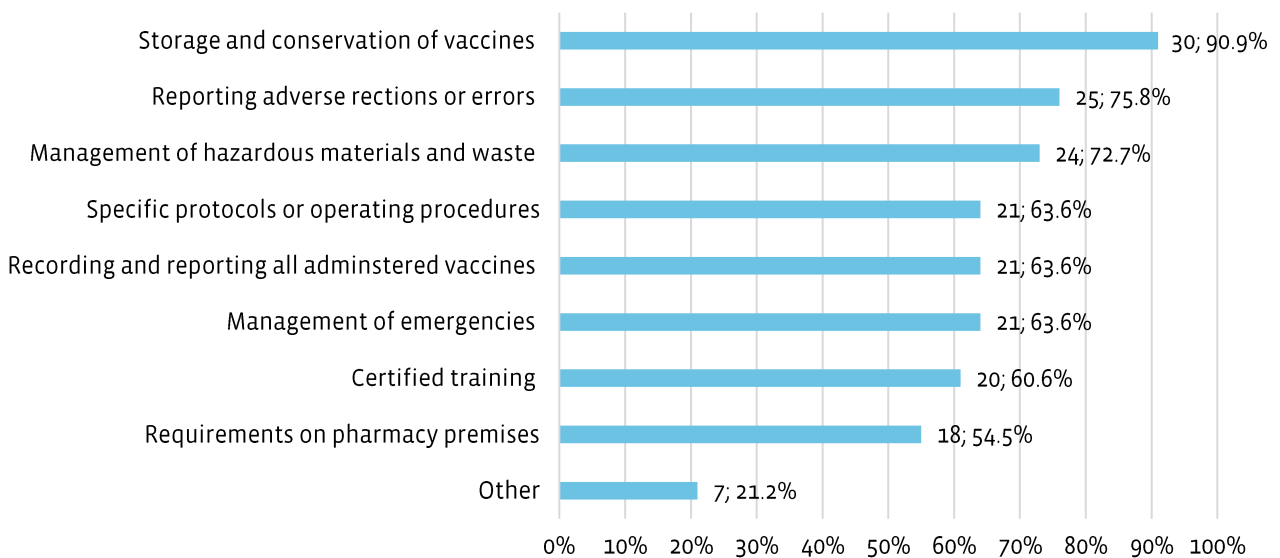


Table 9. Other requirements for the administration of vaccines in pharmacies (n=7)

Country or territory	Additional requirements or details
Costa Rica	The protocol for the service and application of injectables and/or vaccines in private pharmacies must be applied. This constitutes a standard operating procedure in the application of injectables.
France	Vaccination is only administered by pharmacists who are trained and registered with the Regional Health Agency and only for adults over the age targeted by the seasonal flu vaccination recommendations. It should be noted that if all the vaccines administered are registered, there is no need to send a report to the health authorities.
Hong Kong, China	The programme is sponsored by the government with a subsidy of around HKD 110 per dose after cost of the vaccine.
Iceland	The physician is responsible for the administration of the vaccine together with the administering nurse.
Malta	Vaccines are prescription-only medicines, but some pharmacies and wholesale dealers supply vaccines directly to doctors for administration to patients, many times at pharmacy premises. The Chamber of Pharmacists is addressing this with the Ministry for Health and physicians' associations. Recently, a scheme was launched by the Ministry for Health whereby private doctors ordered free influenza vaccines from government stores and physicians administered the vaccine for a fee. The Chamber is in discussion to extend this scheme to pharmacists.
Portugal	Stocking other materials (such as alcohol, latex gloves, sterile gauze compresses, cotton, band-aids, etc).
Venezuela	There are no established regulations.

4.5 Reimbursement for vaccination services

Figure 9 summarises the situation regarding the reimbursement for pharmacy-based vaccination services in relation to the income level of countries and territories. Overall, pharmacy vaccination services are paid for by the customer in the majority of countries and territories. Ten respondents (two from upper-middle income and eight from high-income countries or territories) reported that the service is reimbursed by public health systems, and five reported the existence of reimbursement by private health systems. In six cases, the service is provided at no cost to the patient or health system (the cost is taken up by the pharmacy). In the few cases of low-income or lower-middle income countries that currently have pharmacy-based vaccination, there are no examples of reimbursement by third-party payers.

In some cases (like Australia), a hybrid situation exists, where the public health system and the customer each pays a part of the cost of the service. In Hong Kong, China, the government offers payment to the physician, and pharmacists receive a partial reimbursement. In New Zealand and Bangladesh, some vaccines are funded by the government, but customers have to pay for others. Table 10 lists the countries and territories for each funding model.

Reimbursement mechanisms for pharmacy-based vaccination services are linked to policies and strategies to foster equity in access and to achieve high vaccination coverage rates. This involves equity in terms of customers' economic access to the service, equity in terms of access to vaccines throughout the life course, and equity in terms of vaccination providers and offering patients the option to get vaccinated at the facility that is most convenient for them. In countries without reimbursement by a third-party payer, despite having to pay for the vaccination service, many people still choose to get vaccinated at a pharmacy because of the trust in the professionalism of pharmacies and the convenience (location and opening hours, and no appointment required).

Figure 9. Countries with different models for pharmacy-based vaccination services (n=33)

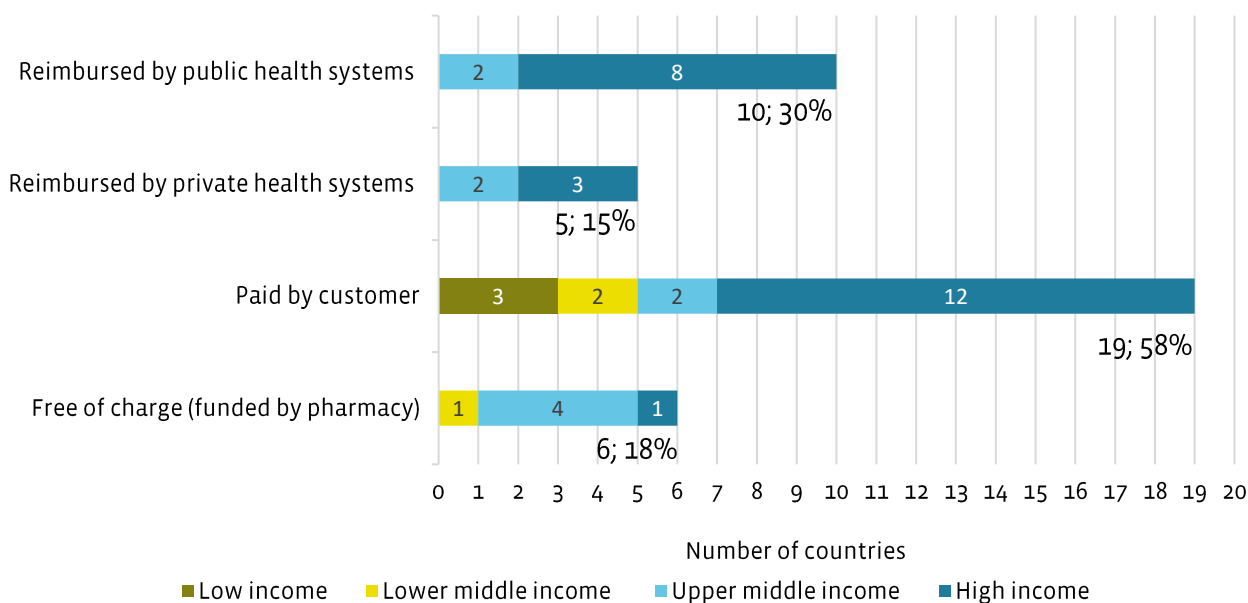


Table 10. Countries and territories per funding model for pharmacy-based vaccination services

Model	Countries and territories
Reimbursement by public health systems	Argentina, Canada, Denmark, Finland, France, Ireland, New Zealand, South Africa, United Kingdom, United States of America
Reimbursement by private health systems	Argentina, Denmark, France, South Africa, United States of America
Paid for by the customer	Bangladesh, Brazil, Canada, Chad, Estonia, Finland, Iceland, Israel, Kenya, Malta, Nepal, Netherlands, New Zealand, Norway, Paraguay, Portugal, Sierra Leone, Switzerland, United Kingdom
Free of charge (funded by the pharmacy)	Costa Rica, Greece, Lebanon, Paraguay, Philippines, Venezuela

In those countries and territories with reimbursement by third-party payers, the types of vaccination that are reimbursed vary by country or territory, with more than half of respondents specifying that either specific population groups or specific vaccines are included in the reimbursement scheme (Figure 10). Table 11 provides details about the reimbursement models for specific diseases or population groups.

Reimbursement for vaccination services was perceived as important or very important by 78.4% of respondents (Figure 11). Not only does the provision of these services imply a significant investment in training, infrastructure and equipment time, but appropriate reimbursement models for the service also ensure its sustainability.

Figure 10. Types of vaccines that are reimbursed (n=13)

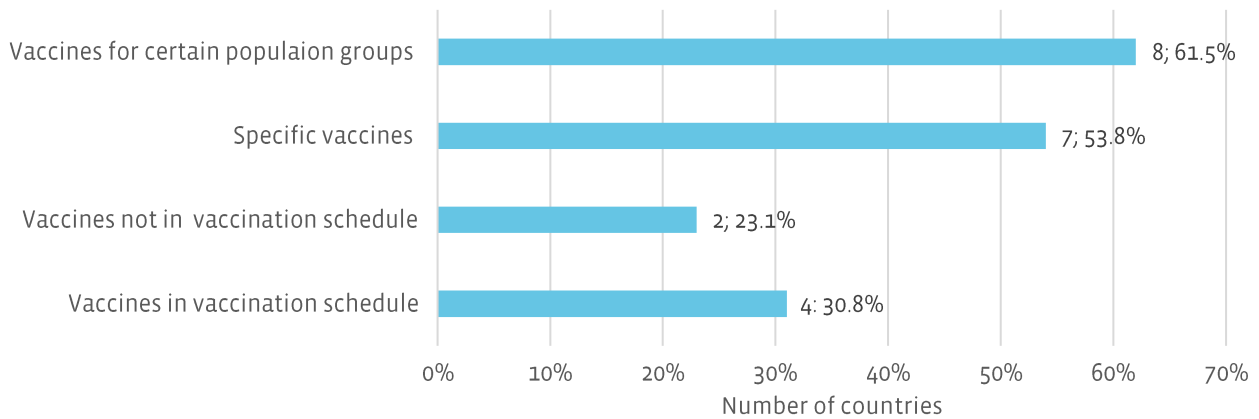
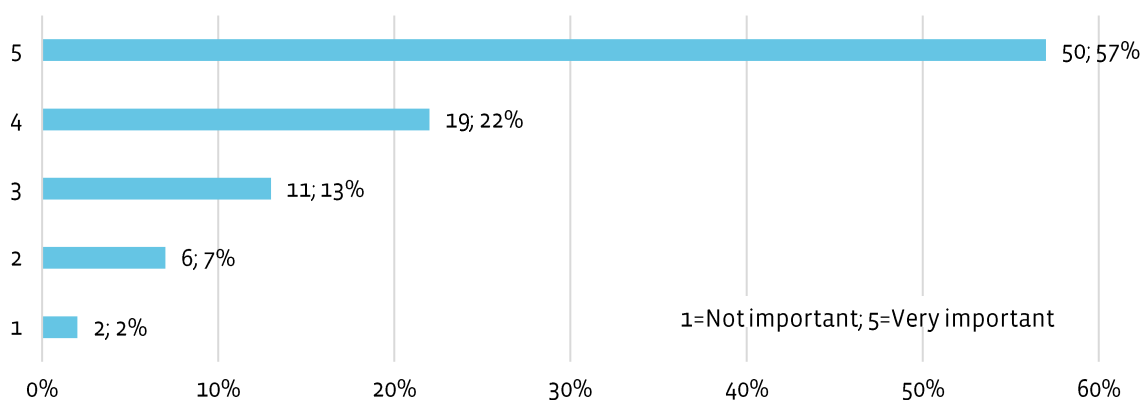


Table 11. Additional details of reimbursement models for specific vaccines or population groups

Country or territory	Reimbursement for specific vaccines	Reimbursement for vaccination for certain population groups
Bangladesh	NA	0-12 years and also people with low-income
Canada	Varies by province/territory	Varies by province/territory
Ireland	NA	Patients who have a medical card and who are at risk of influenza only. All other patients must pay the pharmacist
New Zealand	Influenza and MMR	Influenza — pregnant women and people aged 65 years and over MMR — aged 16-49 but targets within that group vary by region
Switzerland	Each insurance company manages its list and its reimbursement conditions	NA
United Kingdom	Seasonal influenza vaccination. Other vaccinations provided are not reimbursed, they are paid for by the patient.	18 years old and over.
United States of America	Varies by payer	NA

Figure 11. Importance of reimbursement for vaccination services (n=88)



5 Vaccine administration

5.1 Vaccines administered at pharmacies

Figure 12 illustrates the types of vaccines that are authorised to be administered in pharmacies. For all the vaccines included in the questionnaire, there were at least some countries where administration is possible at pharmacies, meaning that pharmacies are involved in the administration of 36 different vaccine types.

From 31 respondents, 94% (29 countries and territories) reported that the flu vaccine can be administered at pharmacies, while vaccines for hepatitis B (61% of respondents) and tetanus (58% of respondents) are also commonly administered in pharmacies. See Appendix 3 for the 15 most commonly administered vaccines at pharmacies per country.

Although the flu vaccine is the most common one administered in pharmacies, it ranks as the 12th most common in terms of inclusion in national vaccination schedules (Figure 13). This suggests that pharmacy-based vaccination contributes to improving access and uptake of vaccines not included in vaccination schedules throughout the life course. Vaccines for diphtheria and measles were the most commonly included in national vaccination schedules (92% of respondents).

Figure 12. Vaccines administered at pharmacies (n=31)

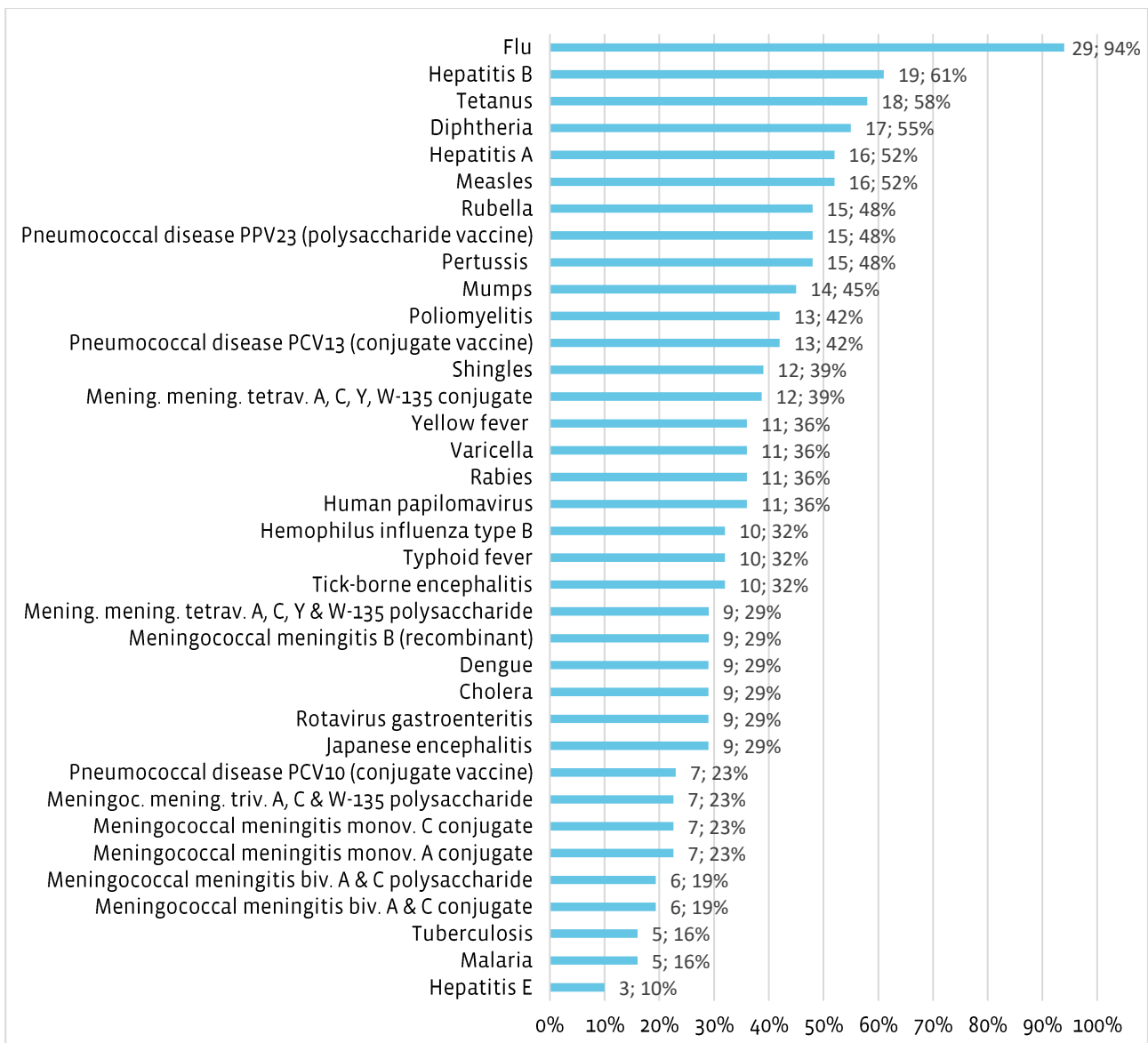
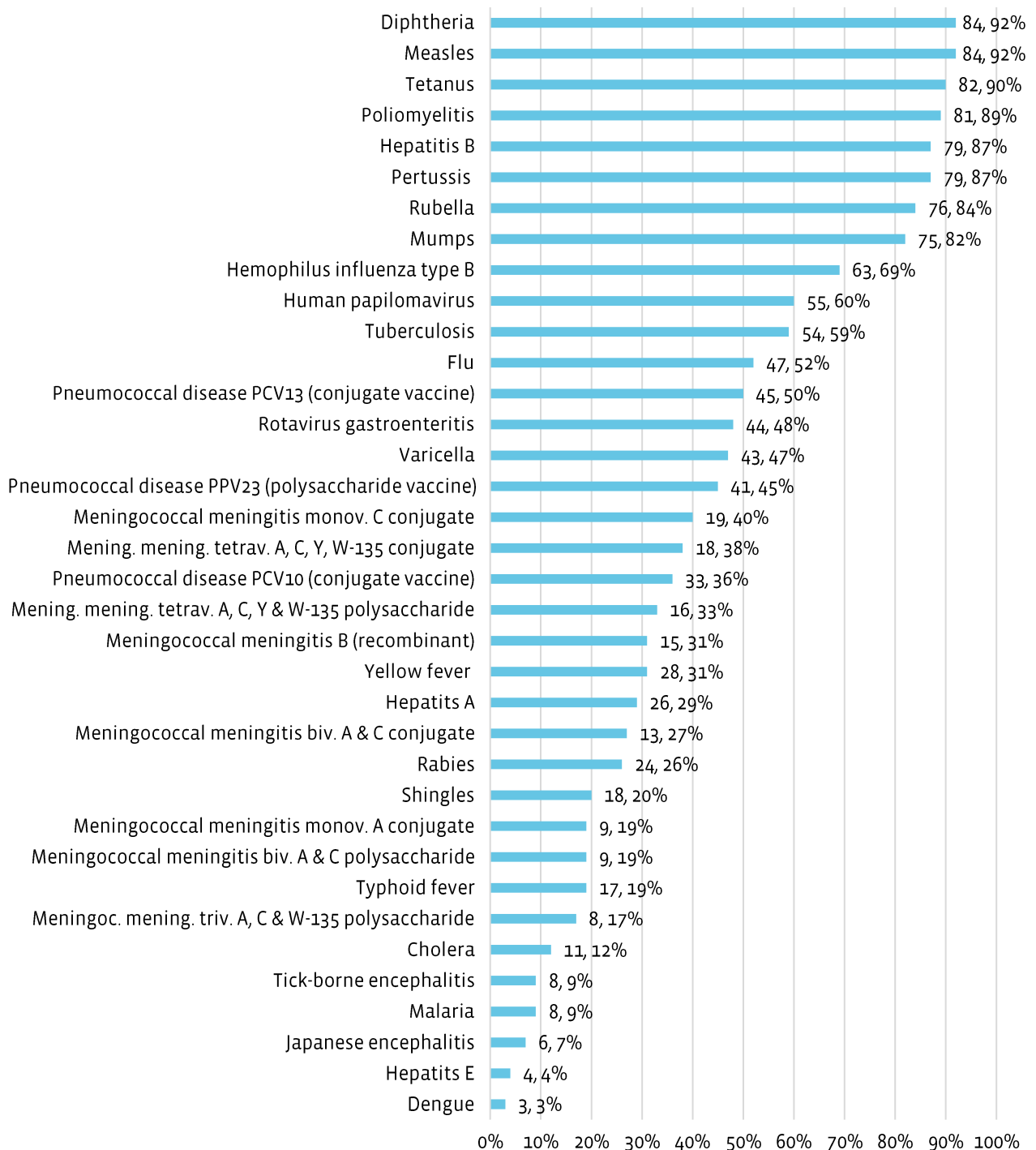


Figure 13. Vaccines include in national vaccination schedules (n=91)



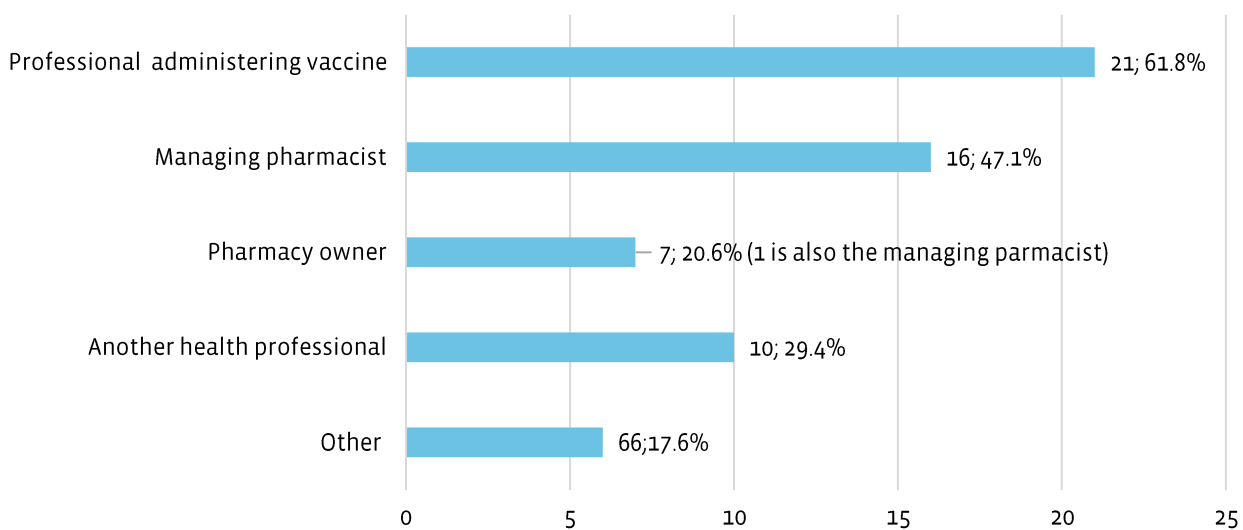
5.2 Accountability for the vaccination process

Thirty-four respondents provided details about who is accountable for the vaccination process, with one (Paraguay) stating that there is no formal regulation of this aspect of the process. In 15 countries and territories, this accountability is shared (with various possibilities existing), while in 18 countries, it lies solely with one person. Details are provided in Appendix 4.

As shown in Figure 14, in 21 countries and territories (61.8%), accountability lies with the professional administering the vaccine, with six of these countries (Costa Rica, Greece, Kenya, Malta, Sweden and Switzerland) reporting that this is the sole accountable person for the outcomes of the vaccination.

The managing pharmacist is accountable according to 47.1% of respondents. Moreover, accountability lies with the pharmacy owner as stipulated by seven respondents (20.6%) — although in none of these seven cases is the owner solely accountable. These results illustrate that pharmacists must possess knowledge on vaccination, including, but not limited to, indication, dose, route and technique of administration, precautions, contraindications and adverse events, in addition to establishing the proper policies and procedures to ensure the safe storage and supply of vaccines, such as maintenance of the cold chain and verification of expired products. Such knowledge and procedures are required as pharmacists are accountable for the vaccination process either as the vaccine administrator, pharmacy manager or owner in nearly 80% of the cases where a vaccine is administered at a pharmacy.

Figure 14. Accountability for vaccination process (n=34)



5.3 Population groups that can be vaccinated at pharmacies

In terms of the population groups that can be vaccinated at a pharmacy, while nearly all respondents (24 out of 25; 96%) reported that they can vaccinate adults, only 11 countries and territories reported that they can generally administer vaccines to babies, children and adolescents (Figure 15). Due to the way in which the question was asked, several respondents included observations, summarised in Table 12, because they might be authorised to vaccinate children or adolescents but not babies, for example. Another relatively common case is that the age depends on the jurisdiction (in countries with a federal structure) or the vaccine itself.

What these figures imply is that community pharmacies can be an important pathway for adult vaccination and can complement the vaccination services provided by other health professionals and at other types of facilities. Diseases such as influenza, pneumococcal disease, herpes zoster and pertussis are a significant cause of morbidity and mortality in older people, in whom the importance of vaccination is often underestimated. It is of paramount importance to increase focus on vaccination throughout the life course and to ensure access to vaccines that are relevant for every age group. In addition, as soon as vaccines against COVID-19 become available, mass immunisation – especially for those vulnerable to severe forms of the disease – will be essential and urgent, and pharmacies should be part of the vaccination pathways.

Figure 15. Population groups that can be vaccinated at pharmacies (n= 25)

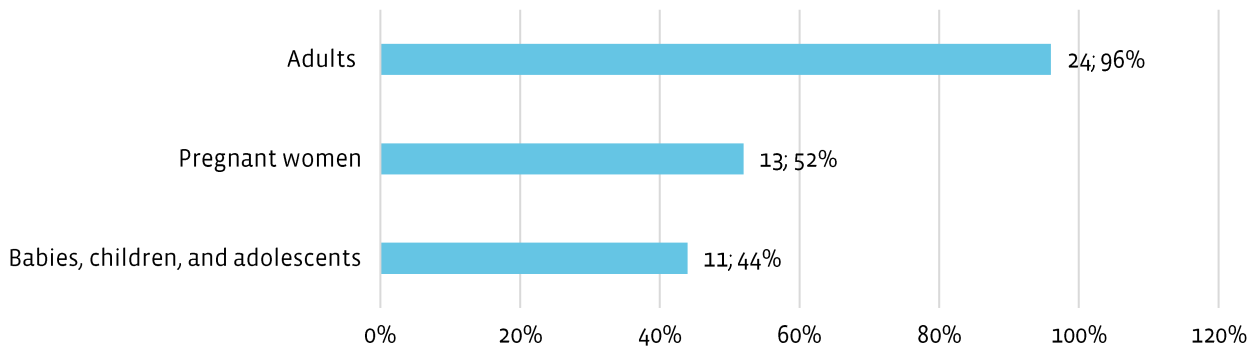


Table 12. Population groups that can be vaccinated at pharmacies per country or territory (n=25)

Country or territory	Babies, children, and adolescents	Adults (18 years old or greater)	Pregnant women	Observations
Argentina	✓	✓	✓	
Australia		✓		Varies by jurisdiction or type of vaccine, but mostly ≥16 years old
Brazil	✓	✓	✓	
Canada		✓		Varies by jurisdiction or type of vaccine, but mostly ≥5 years old
Chad	✓	✓		
Costa Rica	✓	✓	✓	
Denmark	✓	✓	✓	
France		✓	✓	
Greece		✓	✓	
Hong Kong, China	✓	✓		
Ireland		✓	✓	≥10 years old for flu
Israel		✓		
Kenya	✓	✓	✓	
Lebanon	✓	✓	✓	
Malta		✓		
Nepal	✓			
New Zealand		✓		Varies by vaccine
Paraguay		✓		
Philippines		✓		
Portugal		✓	✓	Adolescents, but not children or babies
Sierra Leone		✓		Children and adolescents, but not babies
South Africa	✓	✓	✓	
Switzerland		✓		≥16 years old
UK		✓	✓	
USA	✓	✓	✓	

As shown in Figure 16, more than half of respondents (56%) reported that pharmacists were not authorised to administer vaccines outside the pharmacy premises. For the countries and territories where pharmacist-led vaccine administration can take place outside pharmacy premises, the majority of respondents cited nursing or care homes, patients' homes and work places as additional premises for vaccination (Figure 17). Authorising pharmacists to administer vaccines away from pharmacy premises is a nod to pharmacists' role as first line healthcare professionals, which should continue to be utilised to improve the health of communities.

Figure 16. Authorisation of pharmacists to administer vaccines outside pharmacy premises (n=32)

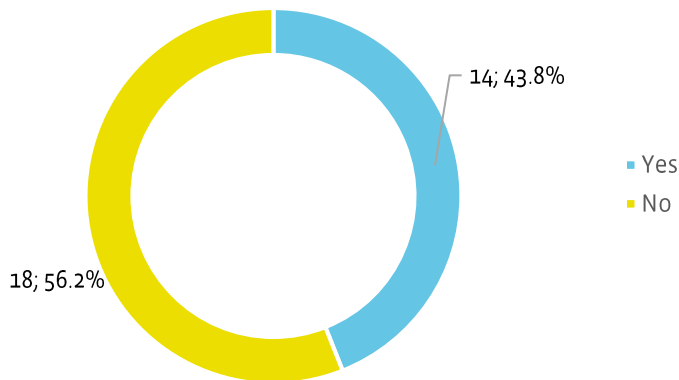
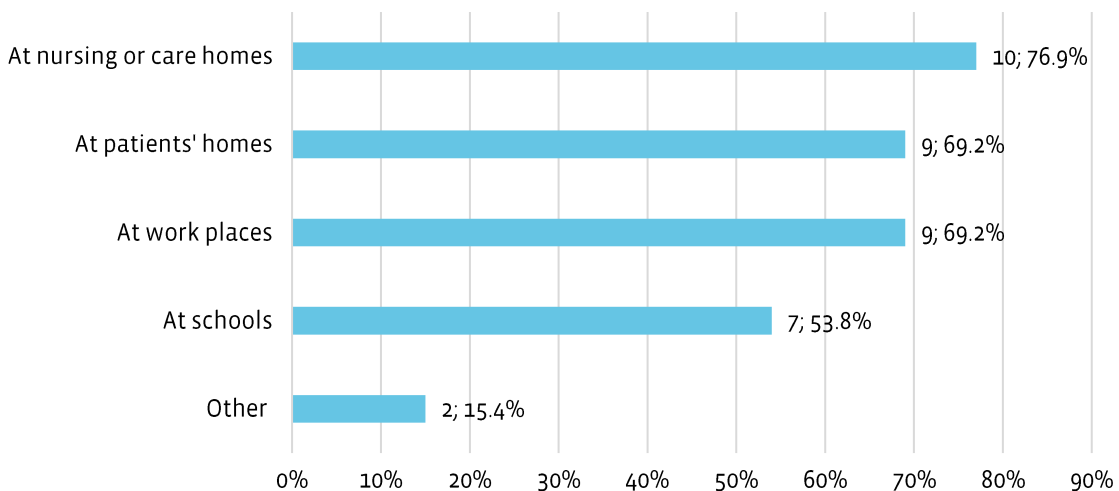


Figure 17. Places where pharmacists are allowed to administer vaccines outside pharmacy premises (n=13)



6 Training for vaccination services

The majority of countries and territories in our sample reported that pharmacists do not receive training on vaccine administration (Figure 18). This was to be expected because the sample includes countries and territories where the scope of pharmacy practice excludes vaccine administration. In fact, the figures practically coincide with those of where pharmacist-led vaccination is authorised (Figure 5). Nevertheless, although in countries like Germany pharmacists do not receive formal or comprehensive training about vaccine administration because they are not allowed to administer vaccines, they do receive training about different aspects of vaccination, including the different types and indications of vaccines, enabling them to check patients' vaccination status and give them advice. This includes health knowledge in advocating for vaccines (knowledge regarding the legal, ethical and health implications of vaccinations and the individual and societal benefits of vaccines).

In 35 countries and territories where pharmacy-based vaccination is authorised, all respondents indicated that post-graduate training opportunities for pharmacists in vaccination roles exist, while in 16 countries (46%) training also takes place at undergraduate level (Figure 19). In New Zealand, up until now, pharmacists have been trained as vaccinators if they choose to be as part of their continuous professional development. However, starting in 2020, the vaccinator training will be undertaken by all pharmacists during their internship year.

Within a subset of 22 respondents with pharmacy-based vaccination, it is encouraging to observe that vaccination training is mandatory in 68% of cases (Figure 20). With more pharmacists around the world gaining the authority to administer vaccines, it is imperative that training and educational models and activities are put in place, in addition to certification renewal programmes, to ensure the quality and sustainability of pharmacist-led vaccination services. The periodical renewal of the vaccinator training certification is mandatory in 13 out of 33 countries and territories (Figure 21).

Table 13 shows an increase in access to training when compared with results from the previous survey. Country details about training of pharmacists for vaccination-related roles are presented in Appendix 5

Figure 18. Countries and territories where pharmacists receive training for vaccine administration (n=98)

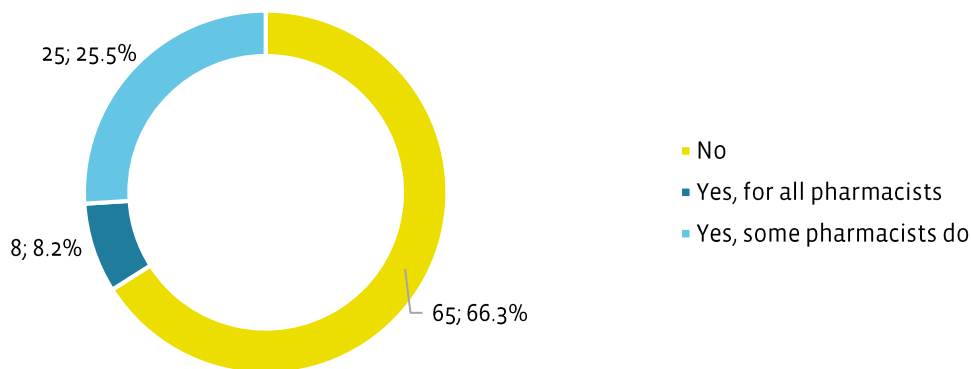


Figure 19. Vaccination training in countries with pharmacy-based vaccination (n=35)

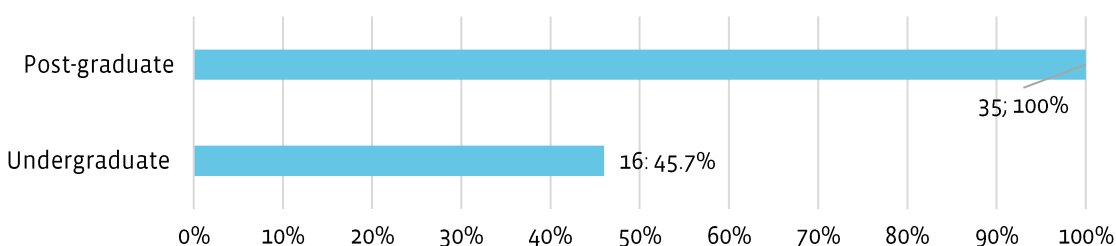


Table 13. Comparison of countries and territories where pharmacists can access training for vaccine administration in 2016 and 2020.

Countries and territories where pharmacists can access training for vaccine administration	% (n)	
	2016	2020
No	62% (28)	66% (65)
Yes	38% (17)	34% (33)
Total	100% (45)	100% (98)

Figure 20. Countries and territories where training about vaccine administration is mandatory (n=22)

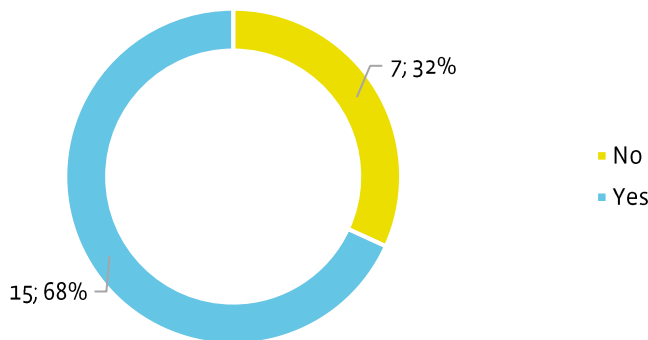
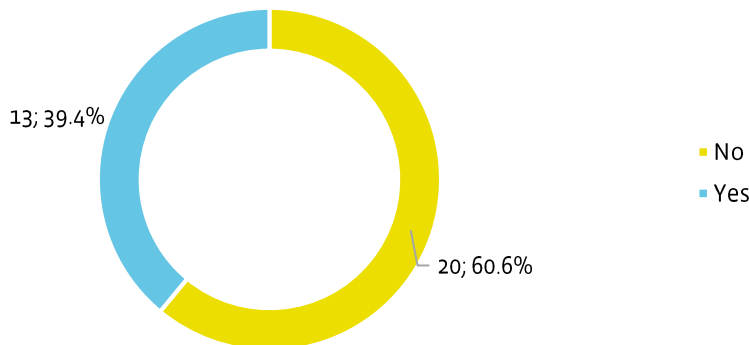


Figure 21. Countries and territories where pharmacists need to renew their certification (n=33)



As shown in Figure 22, in countries and territories where pharmacists receive vaccination training, the most commonly reported providers of training are professional organisations or universities (53% of respondents in both cases). The majority of respondents (71%) also reported that vaccination training is accredited, certified, recognised or approved by a regulatory or competent authority (Figure 23). Furthermore, a variety of competencies was shown to be developed through the training programme in at least two thirds of responding countries or territories, with the competencies regarding the safe administration of vaccines and public health knowledge reported by more than 90% of respondents (Figure 24).

Figure 22. Providers of vaccination training for pharmacists (n=34)

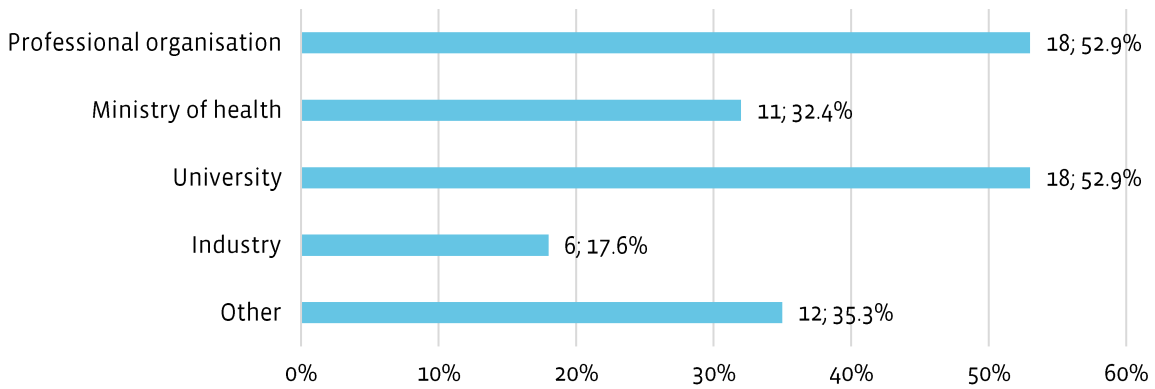


Figure 23. Training is accredited, certified or approved by a regulatory or competent authority (n=35)

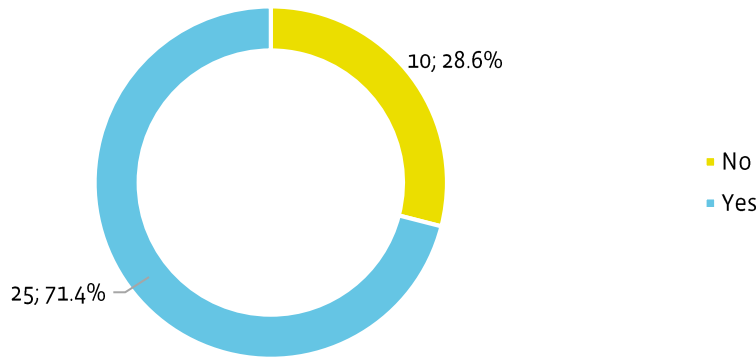
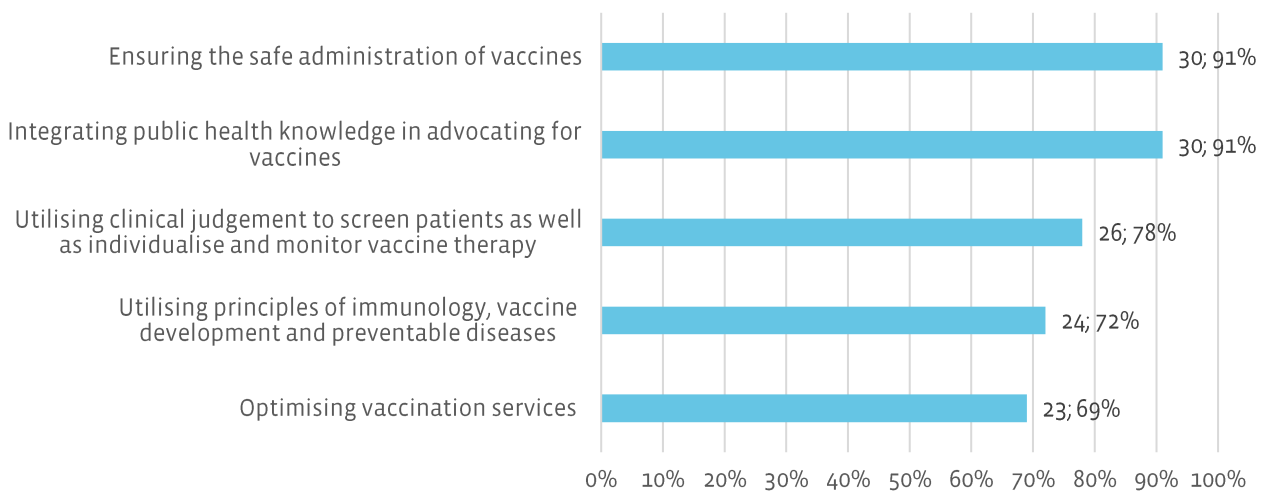


Figure 24. Competencies developed through the required training course (n= 32)



7 Vaccination records

As shown in Figure 25, responses in our sample showed that pharmacists do not have access to vaccination records in most countries and territories (67% of respondents). Although this largely coincides with the countries where pharmacy-based vaccination is not available, it is regrettable that pharmacists cannot have access (reading rights) to patients' vaccination records in order to assess their vaccination status, identify what vaccines may be missing or require a booster dose, and advise them accordingly.

Even in countries where pharmacy-based vaccination is available, data suggest that full access to vaccination records is only allowed in 12 out of 33 countries and territories, with the other 21 respondents reporting access to some records only. Details are provided in Table 14.

Figure 25. Access to vaccination records (n=99)

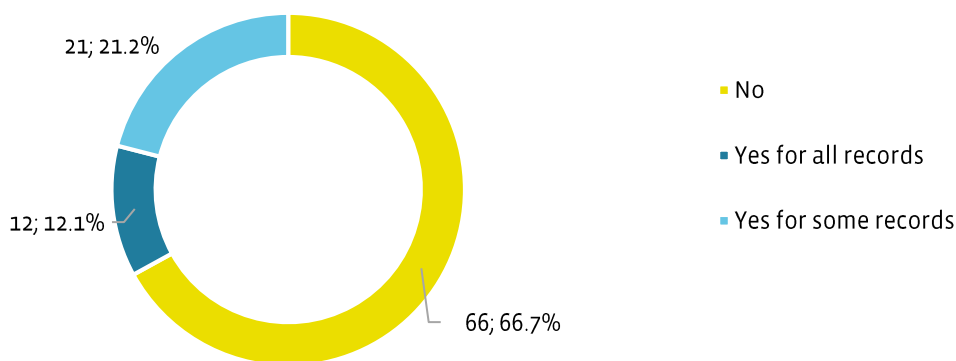


Table 14. Reading access by pharmacists to vaccination records

Reading access to vaccination records	Country or territory	What records are accessible to pharmacists?	
Access to some records	Belgium	Pharmacists can consult certain registers, but this is not included in the patient's records at the pharmacy.	
	Costa Rica	Only for vaccinations performed at the reporting facility	
	Côte d'Ivoire	Vaccination book	
	Ireland	For remunerated vaccinations, pharmacists can see if the patient has previously been vaccinated	
	Malaysia	Immunisation record book for babies and children up to 6 years old	
	Nigeria	Vaccination book	
	South Africa		Public sector issues "Road to health" vaccination cards to newborns, and mothers bring these to the pharmacy to record vaccinations.
			Yellow fever vaccination cards also contain space to record any other vaccinations/boosters an adult receives.
United Kingdom	NHS Digital is working to make sure all community pharmacies can access Summary Care Records which allows healthcare professionals instant access to patient information (e.g. allergies, medications, vaccinations). However, some contractors are not able to use or have decided not to use electronic systems to access/record administration of vaccines. More information: https://digital.nhs.uk/services/summary-care-records-scr/summary-care-record-scr-in-community-pharmacy		
Access to all records	Bangladesh, Brazil, Chad, Denmark, Hong Kong China, India, Indonesia, Kenya, New Zealand, United States of America, Zambia, Zimbabwe		

In close to half of the countries and territories with pharmacy-based vaccination, pharmacists did not possess the authority to record vaccination details in a shared vaccination record (Figure 26). Again, this is a significant barrier to the full realisation of pharmacists' role in vaccine administration in complex health systems where all healthcare professionals must be informed of the vaccination status of a patient.

In terms of the format of vaccination records, paper remains the most common format (73%; see Figure 27), but shared electronic systems already exist in 27 countries and territories. Although technically possible, barriers still exist in most countries for pharmacists to be given read and write access to such records and therefore fully participate in a collaborative, patient-centred approach to healthcare delivery.

Figure 26. Pharmacists authorised to record vaccination details in a shared vaccination record (n=34)

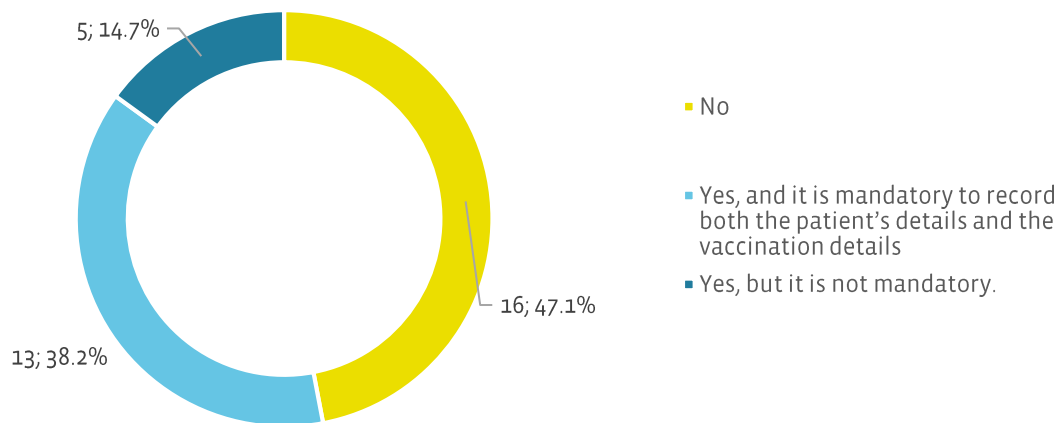
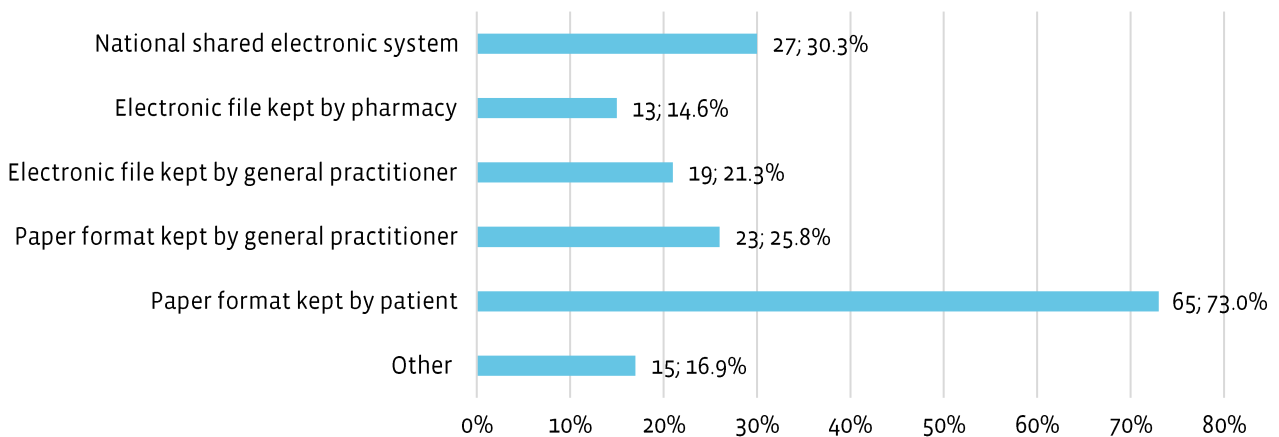


Figure 27. Format of vaccination records (n=89)



Based on the responses from countries and territories with pharmacy-based vaccination, there is variability regarding how (and if) vaccination records are shared, with the most common situation being that records are shared with health authorities (47%). While this is very important for the surveillance of vaccination coverage, Figure 28 shows that there is room for improvement in terms of vaccination information being shared across all healthcare professionals, including other pharmacies, so that they can act upon that information in a collaborative manner.

There is also variability in terms of the period of conservation of vaccination records (Figure 29).

Appropriate vaccination records are necessary to adequately assess vaccination status as well as maintain data on vaccine history and coverage. Regulatory frameworks and logistical efforts should be implemented to maintain vaccination records that are easily accessible by healthcare providers, that are readily shared among health authorities and health practitioners, and that are sufficiently comprehensive to include the details of

past vaccinations. Collaboration between governmental, technological and healthcare stakeholders is necessary for the creation and maintenance of secure and optimal vaccination records.

Figure 28. Sharing of vaccination records in countries with pharmacy-based vaccination (n=34)

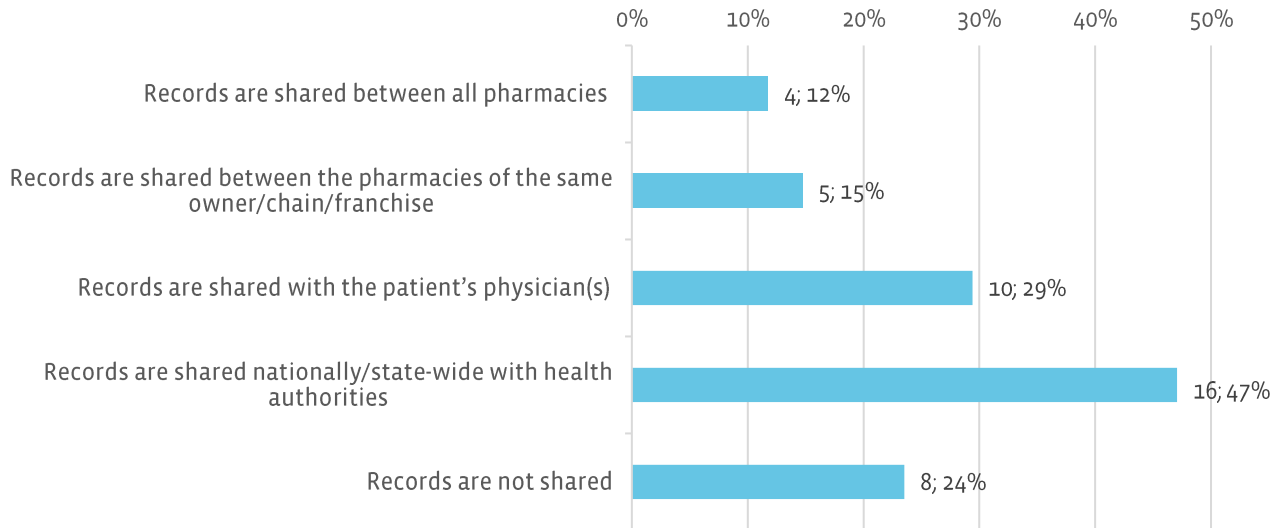
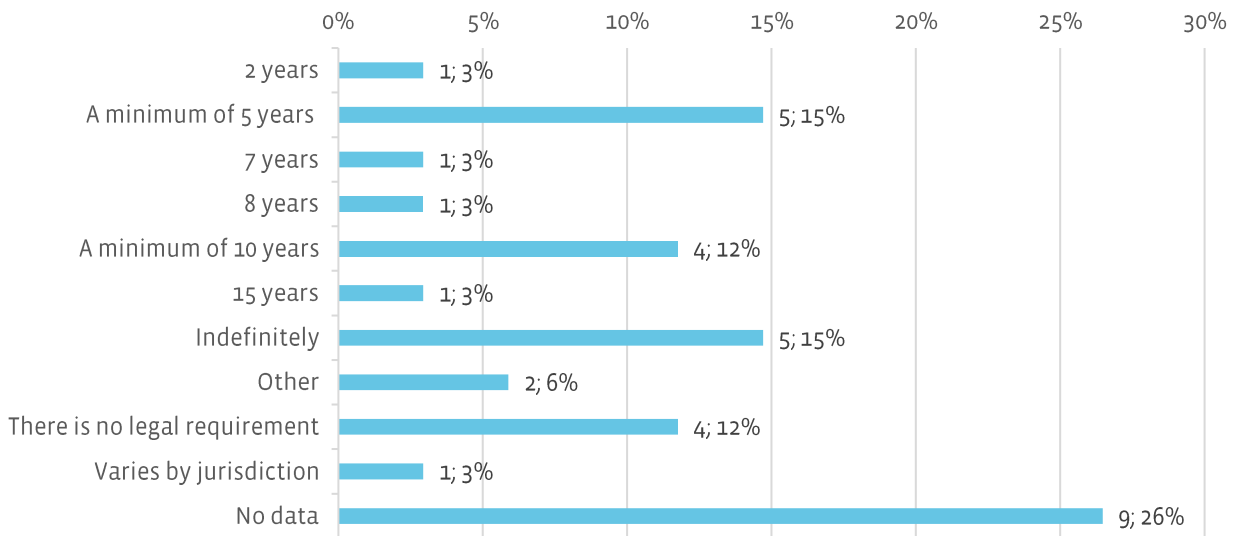


Figure 29. Period vaccinations records are kept in countries with pharmacy-based vaccination (n=34)



Although there is a significant body of evidence of the impact of pharmacy-based vaccination on immunisation coverage (see FIP's report ["Give it a shot: Expanding immunisation coverage through pharmacists"](#), which includes a compilation of 21 publications on this subject,³ the number of organisations that reported that such studies have been conducted in their country or territory was low (Figure 30). Examples of currently available evidence can be found in Table 15, to complement the list in the publication cited above.

FIP member organisations and researchers are encouraged to contribute to this growing body of literature to further advocate for the expansion of pharmacy practice into immunisation services across the globe.

Figure 30. Country-level availability of evidence of the impact of pharmacy-based vaccination on immunisation coverage rates (n=29)

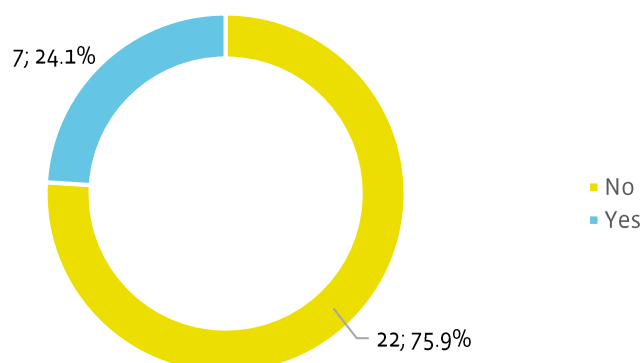


Table 15. Evidence of the impact of pharmacy-based vaccination on immunisation coverage rates

Country or territory	Details and references
Canada	<p>Isenor JE et al. Evaluation of the impact of immunization policies, including the addition of pharmacists as immunizers, on influenza vaccination coverage in Nova Scotia, Canada: 2006 to 2016. BMC Public Health 2018;18:787. Available here.</p> <p>O'Reilly DJ et al. Economic analysis of pharmacist-administered influenza vaccines in Ontario, Canada. ClinicoEconomics and Outcomes Research 2018;10:655–63. Available here.</p> <p>Isenor JE et al. Impact of pharmacists as immunizers on influenza vaccination coverage in Nova Scotia, Canada. Human Vaccines & Immunotherapeutics 2016;12(5):1225–8. Available here.</p> <p>Buchan SA et al. Impact of pharmacist administration of influenza vaccines on uptake in Canada. CMAJ 2017;189(4):E146–E152. Available here.</p> <p>Papastergiou J et al. Community pharmacist-administered influenza immunization improves patient access to vaccination. Canadian Pharmacists Journal 2014;147(6):359–65. Available here.</p>
Costa Rica	<p>Historically, the contribution of private sector pharmacies to the country's vaccination coverage rates has been low, approximately 7%, which is due to the fact that the national vaccination programme delivered by the Costa Rican Social Security Fund (CCSS) has a very high coverage.</p> <p>However, some vaccines such as dengue, meningococcus, yellow fever and hepatitis A are not included in the CCSS schedule. Likewise, some of the vaccines that the CCSS has are restricted in their use, for example: the influenza vaccine is reserved for children under 5 years of age and older adults with specific risk factors; the polyvalent pneumococcal vaccine for older adults and patients aged from 2 to 64 years with risk factors; and the papillomavirus vaccine is currently administered only to 10-year-old girls.</p>
Ireland	Pharmaceutical Society of Ireland. Evaluation of the Seasonal Influenza Vaccination Service. Available here .
Portugal	Flu Immunization Pilot-project for Elderly at Loures Municipality (Lisbon region), October to December 2018. The study showed an increase of 3.9% to 6.9% in vaccination coverage in patients aged 65 years and over. (2)
Switzerland	Studies are ongoing at pharmaSuisse
United Kingdom	<p>Evidence of impact of pharmacy-based vaccination on immunisation coverage rates in the UK is limited. Further research in this area would be beneficial. There is however good evidence that pharmacies are acceptable and convenient sites for vaccination.</p> <p>See: Perman S et al. Do community pharmacists add value to routine immunization programmes? A review of the evidence from the UK. Journal of Public Health 2018;40(4):e510–e520. Available here.</p>
United States of America	Baroy J et al. The impact of pharmacist immunization programs on adult immunization rates: A systematic review and meta-analysis. JAPhA 2016;56(4):418–26. Available here .

8 Limitations to the development of pharmacists' role in vaccination

Figure 31 illustrates the prevalence of the main limitations to the full realisation of pharmacists' role in vaccination and includes countries with or without pharmacy-based vaccination. These perceived limitations are further analysed separately for countries and territories with or without pharmacy-based vaccination in Figures 32 and 33, which further detail these limitations in relation to national income levels.

Both in countries with or without pharmacy-based vaccination, limited acceptance and support of this role by governments and other health professions are clearly perceived as the most important barriers. This suggests that further advocacy efforts are necessary to better inform key stakeholders about the benefits of involving pharmacists in vaccination roles and establish productive interprofessional alliances. These barriers are perceived across all income levels. The lack of financial support for the service by health systems is the third most important limitation both in countries with or without pharmacy-based vaccination, and is a significant component of sustainability of this service, and in advancing towards equitable access to vaccination services.

Important differences between the two scenarios (with or without pharmacy-based vaccination) are related to a perceived lack of patient demand or acceptance for pharmacy-based vaccination services. While this was reported by 18 respondents (30%) from countries without pharmacy-based vaccination, it was only reported by one respondent (3%) among those with pharmacy-based vaccination. This suggests that, once the service is implemented, patients recognise its value and actively seek the service.

The same happens with the limitations related to the lack of confidence by pharmacists (43% in countries without pharmacy-based vaccination vs. 19% in those with the service) and limited access to training opportunities (51% vs. 23%). Both of these limitations are greatly overcome once regulatory frameworks support the delivery of the service and implementation begins.

Figure 31. Perceived limitations to the development of pharmacists' role in vaccination, all countries and territories (n=92)

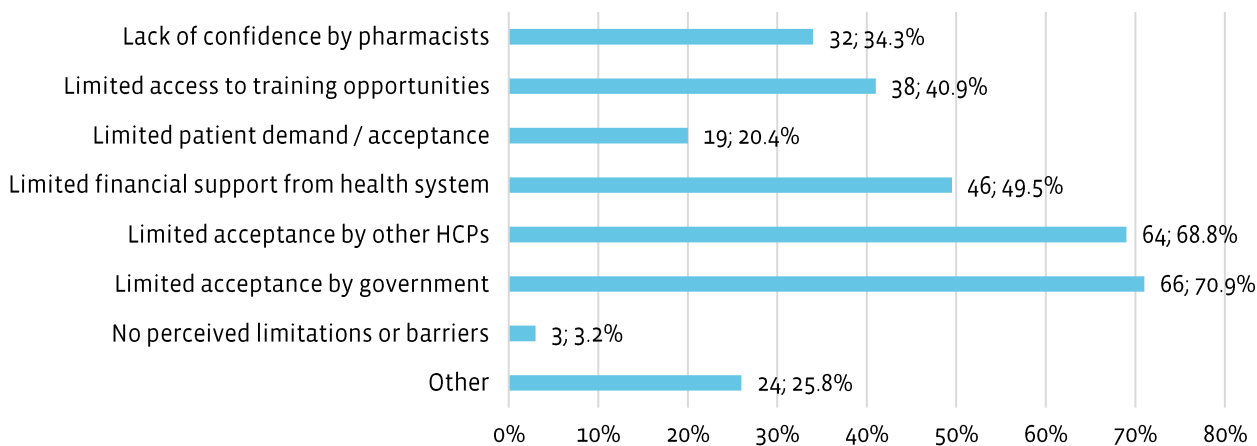


Figure 32. Perceived limitations to the development of pharmacists' role in vaccination in countries and territories without pharmacy-based vaccination, by income level (n=61)

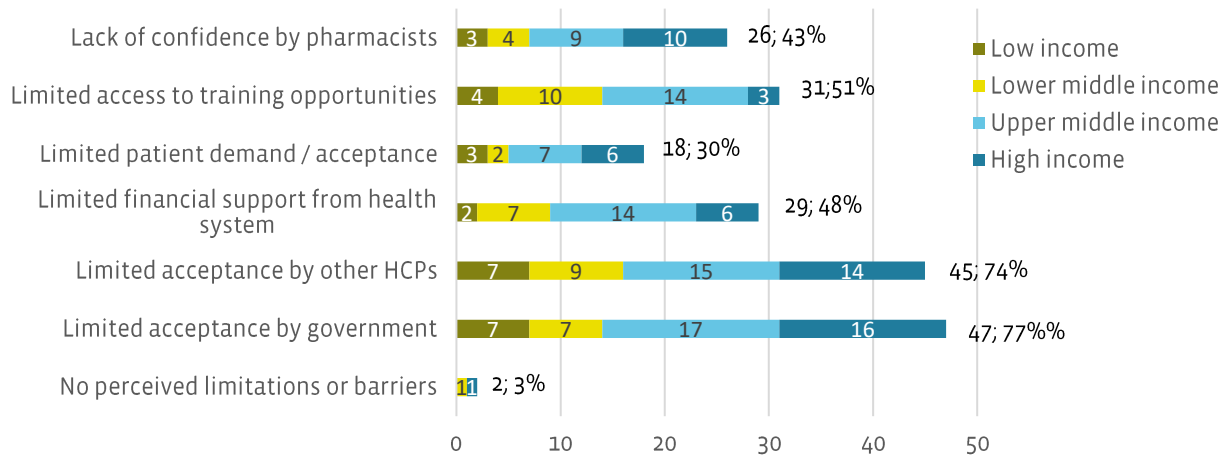
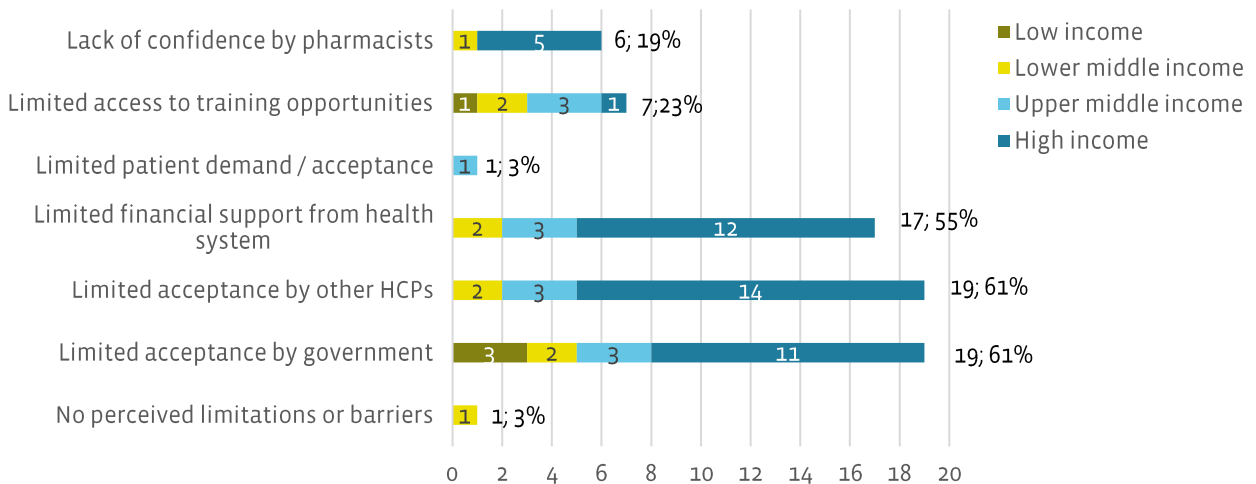


Figure 33. Perceived limitations to the development of pharmacists' role in vaccination in countries and territories with pharmacy-based vaccination, by income level (n=31)



A similar analysis was done for the perceived barriers by WHO region, to inform region-specific advocacy strategies (Figures 34 and 35).

Figure 34. Perceived limitations to the development of pharmacists' role in vaccination in countries and territories without pharmacy-based vaccination, by WHO region (n= 61)

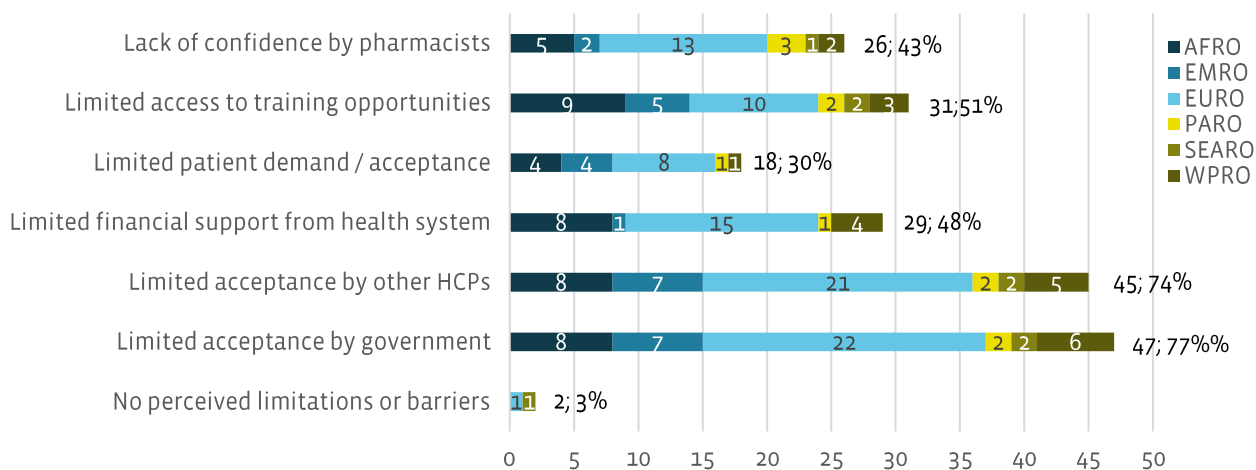


Figure 35. Perceived limitations to the development of pharmacists' role in vaccination in countries and territories with pharmacy-based vaccination, by WHO region (n=31)

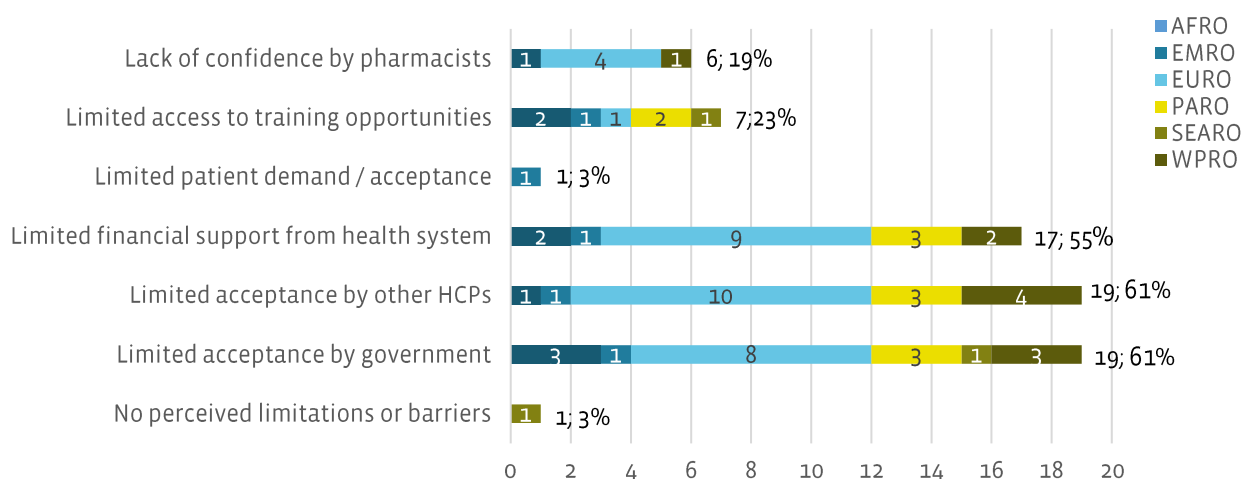


Table 16 shows the relative weight of the different barriers and limitations and how this evolved between 2016 and 2020. It should be noted that there was a significant increase in sample size between both surveys (from 45 respondents, 20 of which had pharmacy-based vaccination, to 99 respondents, 34 of which have pharmacy-based vaccination). Also, since a substantial number of the new respondents do not have pharmacy-based vaccination, this may shift the relative weight of the various barriers and limitations.

In Table 16, the percentages for the same year on each row add up to 100%. This shows how the various limitations vary according to whether pharmacy-based vaccination is present or not.

What can be concluded is that, within the group of countries without pharmacy-based vaccination, all perceived limitations have increased, while in the group of respondents with pharmacy-based vaccination, these perceptions have all decreased.

These data seem to suggest that, as the implementation of vaccination services becomes more established and consolidated, the perceived barriers — including the resistance from other healthcare professions or governments, the lack of confidence of pharmacists, the limited patient demand and acceptance or even the limited financial support to the service from health systems — seem to wane. The production of evidence of the contribution of pharmacist-led vaccination to improving vaccination coverage also adds to diminishing

such barriers and to consolidating the service as part of mainstream pharmacy practice. This confirms the general perception that several of these barriers are often related to a resistance to change, both within the profession and for other stakeholders who may perceive this expansion of pharmacists' services as a threat.

Table 16. Comparison between perceived limitations to the development of pharmacists' role in vaccination in 2016 and 2020

Countries and territories with or without pharmacy-based vaccination (PBV)	Without PBV		With PBV	
	2016	2020	2016	2020
Lack of confidence by pharmacists	46% (6)	81% (26)	54% (7)	19% (6)
Limited access to training opportunities	50% (8)	82% (31)	50% (8)	18% (7)
Limited patient demand / acceptance	80% (4)	95% (18)	20% (1)	5% (1)
Limited financial support from health system	42% (8)	63% (29)	58% (11)	37% (17)
Limited acceptance by other HCPs	60% (12)	70% (45)	40% (8)	30% (19)
Limited acceptance by government	64% (18)	71% (47)	36% (10)	29% (19)
No perceived limitations or barriers	17% (1)	67% (2)	83% (5)	33% (1)

9 Summary and conclusions

Since the previous survey report, progress is evident. More countries and territories have been involved in support and advocacy activities to promote pharmacy-based vaccination, which resulted in a significant increase in the availability of this service around the world. An important increase in the number of countries where policy development is under way was also noted, which will only further pharmacists' engagement in immunisation, increase accessibility to vaccine services, and increase vaccination coverage. Moreover, respondents noted a generally positive attitude toward pharmacy-based vaccination and the removal of certain limitations and barriers.

The expansion of pharmacists' role in immunisation is encouraging, but not sufficient. Legislative and regulatory barriers must be overcome through evidence-based, quality advocacy, and they must address key issues, including reimbursement schemes. The framework for pharmacy-based vaccination, including vaccination records as well as training and certification should be structured and harmonised. Collaboration with stakeholders, including governmental representatives and healthcare providers should be maintained in addition to patient education and awareness.

As medicines experts, first-line healthcare providers and integral members of the healthcare team, pharmacists are valuable contributors to the health of their patients. Expanding pharmacists' scope of practice as vaccinators will ultimately further their contributions to immunisation and to public health.

10 References

1. Finnegan G. Vaccines Today. [Online]; 2018 [cited 2020 July 24. Available from: <https://www.vaccinestoday.eu/stories/does-pharmacy-vaccination-increase-overall-uptake/>.
2. Finnegan G. Pharmacy pilot project increases flu vaccination by 32%. [Online]; 2019 [cited 2020 July 24. Available from: <https://www.vaccinestoday.eu/stories/pharmacy-pilot-project-increases-flu-vaccination-by-32>.
3. International Pharmaceutical Federation. Give it a shot: Expanding immunisation coverage through pharmacists. [Online]; 2020 [cited 2020 July 24. Available from: <https://www.fip.org/file/4699>.

11 Special thanks

FIP would like to thank all organisations that kindly contributed to this study.

Afghanistan

Afghanistan Nationwide Pharmacists Association

Albania

Pharmacists Order of Albania

Algeria

Algerian Pharmaceutical Federation

Argentina

Argentinian Pharmaceutical Confederation

Armenia

Pharmprogress NGO

Australia

Pharmaceutical Society of Australia

Austria

Austrian Chamber of Pharmacists

Bangladesh

Bangladesh Pharmaceutical Society

Belgium

Association of Pharmacists Belgium

Bosnia and Herzegovina

Chamber of Pharmacists of the Federation of Bosnia and Herzegovina
Pharmaceutical Society of the Republika Srpska

Brazil

Brazilian Federal Council of Pharmacy

Bulgaria

Bulgarian Pharmaceutical Union

Cameroon

National Council of Pharmacists in Cameroon

Canada

Canadian Pharmacists Association

Cape Verde

Order of Pharmacists of Cape Verde

Chad

National Order of Pharmacists of Chad

China

Chinese Pharmaceutical Association

China Taiwan

Taiwan Society of Health-System Pharmacists

Colombia

National Board of Pharmacists of Colombia

Congo (Rep. of)

National Order of Pharmacists of the Republic of Congo

Costa Rica

College of Pharmacists of Costa Rica

Côte d'Ivoire

National Order of Pharmacists of Côte d'Ivoire

Croatia

Croatian Pharmaceutical Society

Cyprus

Cyprus Turkish Pharmacists' Association

Czech Republic

Czech Chamber of Pharmacists

Denmark

Association of Danish Pharmacies

Ecuador

College of Chemists, Biochemists and Pharmacists of Pichincha

Egypt

Egyptian Pharmacists Syndicate
Directorate of Health Affairs, Assiut

Estonia

Pharmaceutical Society of Estonia

Fiji

Fiji Pharmaceutical Society

Finland

Finnish Pharmacists' Association
Association of Finnish Pharmacies
Finnish Pharmacists Society

France

French Chamber of Pharmacists
Federation of Pharmaceutical Unions of France
Union of French Pharmacists' Unions

Germany

Federal Union of German Associations of Pharmacists

Ghana

Pharmaceutical Society of Ghana

Greece

Pharmacists' Association of Kozani

Haiti

Active Pharmacists for the Medical Rebirth through Health Information and Education

Hong Kong, China

Pharmaceutical Society of Hong Kong

Hungary

Hungarian Society for Pharmaceutical Sciences

Iceland

Pharmaceutical Society of Iceland

India

Indian Pharmaceutical Association

Indonesia

Indonesian Pharmacists Association

Ireland

Irish Pharmacy Union

Israel

Pharmaceutical Association of Israel

Italy

Federfarma — Italian Private Pharmacy Owners' Federation

Japan

Japan Pharmaceutical Association

Jordan

Jordan Pharmacists Association

Kenya

Pharmaceutical Society of Kenya

Korea, Republic of

Korean Pharmaceutical Association

KosovoKosova Chamber of Pharmacists
Kosova Pharmaceutical Society**Kuwait**

Kuwait Pharmaceutical Association

Latvia

Pharmacists' Society of Latvia

Lebanon

Lebanese Order of Pharmacists

Lithuania

Lithuanian Pharmaceutical Association

Madagascar

National Order of Pharmacists of Madagascar

Malaysia

Malaysian Pharmaceutical Society

Mali

National Council of the Order of Pharmacists of Mali

Malta

Malta Chamber of Pharmacists

Mauritius

Pharmaceutical Association of Mauritius

Mongolia

Association of Mongolian Pharmacy Professionals

Montenegro

Pharmaceutical Chamber of Montenegro

Nepal

Nepal Pharmaceutical Association

Netherlands

Royal Dutch Pharmacists' Association

New Zealand

Pharmaceutical Society of New Zealand

NigeriaPharmaceutical Society of Nigeria
Association of Community Pharmacists of Nigeria**North Macedonia**

Pharmaceutical Chamber of Macedonia

Norway

Norwegian Pharmacy Association

Oman

Directorate General of Medical Supplies

Pakistan

Pakistan Pharmacists Association

Panama

National College of Pharmacists of Panama

Paraguay

Pharmacists' Association of Paraguay

Philippines

Philippine Pharmacists Association Inc

Poland

Polish Pharmaceutical Society

PortugalNational Association of Pharmacies
Portuguese Pharmaceutical Society**Romania**

Ethica Independent Pharmacies Association

Russian Federation

Moscow Pharmaceutical Society

Rwanda

Rwanda Community Pharmacists Union

Serbia

Pharmaceutical Chamber of Serbia

Sierra Leone

Pharmaceutical Society of Sierra Leone

Singapore

Pharmaceutical Society of Singapore

Slovakia

Slovak Chamber of Pharmacists

Slovenia

Slovenian Pharmaceutical Society

South Africa

Pharmaceutical Society of South Africa

Spain

General Pharmaceutical Council of Spain

Sri Lanka

Pharmaceutical Society of Sri Lanka

Sudan

Sudanese Pharmacists Union

Sweden

Swedish Pharmacists Association

Switzerland

pharmaSuisse

Tanzania

Pharmaceutical Society of Tanzania

Thailand

Pharmaceutical Association of Thailand under Royal Patronage

Turkey

Turkish Pharmacists' Association

Ukraine

All-Ukrainian Pharmaceutical Chamber

United Arab Emirates

Emirates Medical Association: Emirates Pharmacy Society

United Kingdom

Royal Pharmaceutical Society

United States of America

American Pharmacists Association

Uruguay

Uruguayan Association of Chemistry and Pharmacy

Venezuela

Venezuelan Pharmaceutical Federation

Yemen

Community Pharmacy Owners' Syndicate

Zambia

Pharmaceutical Society of Zambia

Zimbabwe

Pharmaceutical Society of Zimbabwe

FIP would also like to thank the following persons for their collaboration in translating the survey questionnaire:

Arabic

Marwan Akel
Luna El Bizri

French

Lidia Soria

Russian

Daria Kargopoltseva

Spanish

Lidia Soria

Appendix 1 — Survey questionnaire (English version)

International Pharmaceutical Federation

FIP GLOBAL SURVEY ON THE ROLE OF PHARMACISTS IN IMMUNISATION 2019

BACKGROUND AND SURVEY AIMS

In 2016, FIP conducted a global survey on the role of pharmacists in immunisation and vaccination and published the ensuing report. Since then, this important development in the scope of practice of pharmacists not only gained momentum for FIP, but for the profession around the world, with several countries introducing pharmacy-based vaccination services and related activities. In the past three years, FIP organised several events and congress sessions on this subject, advocated for the roles of pharmacists in improving vaccination coverage to WHO and launched in September 2019 the “FIP Global Vaccination Advocacy Toolkit” to support our member organisations in introducing or expanding such roles in their countries.

In light of these developments, FIP would now like to update our intelligence about this area of our professional practice through a new survey of our member organisations. Our goals are to continue advocating for a greater role for pharmacists in expanding vaccination coverage based on current data and evidence, and to monitor recent developments since our last survey.

SURVEY COMPLETION

This survey will take you approximately **15–25 minutes** to complete and the deadline for submission is **20 December 2019**. [Note: the deadline was then extended to March 2020.]

If you feel that you are not able to participate in this study we would be grateful if you could forward it to the appropriate person or organisation and inform us. If you have any questions regarding this survey please contact Mr Gonçalo Sousa Pinto (gspinto@fip.org).

Thank you very much for your time and support.

DATA PRIVACY

As part of the FIP membership benefits, you and selected stakeholders within your organisation are entitled to receive information from FIP on trends, publications, reports, databases and other relevant information on developments in the pharmacy sector. Please provide your contact details in this form so we can send you and them these updates and information as necessary for FIP to deliver your membership benefits. Your personal data will be used exclusively to send you this information and will not be shared with third parties, without permission. You and the selected stakeholders will be offered the opportunity to opt out of our mailing list at any time. All additional relevant information on the processing by FIP of personal data can be found in the Privacy Statement at <https://www.fip.org/files/content/footer/privacy-statement.pdf>.

I agree that the personal data provided in this survey may be used for professional correspondence between FIP and the officers or staff members of my organisation.

Keywords:

Immunisation: the process by which an individual becomes immune against an infectious disease either by natural contact with an infectious agent or by vaccination.

Vaccination: the administration of a vaccine to stimulate immunisation.

Respondent details

Country/Territory	
Name of your organisation in English	
Title (Mr/Ms/Dr/etc)	
First name	



Family name	
Job title	
Email	

SECTION 1. PROMOTING VACCINATION AWARENESS AND UPTAKE, ADVOCATING FOR VACCINATION

1.1. Do pharmacists play an active role in informing the public about vaccine-preventable diseases and vaccines, and in advocating for vaccination in your country/territory?

- Yes, pharmacists can discuss directly with customers regarding disease awareness and vaccination
- Yes, pharmacists can discuss directly with customers regarding disease awareness but not vaccination
- No, pharmacists are not authorised to discuss directly with customers regarding disease awareness and/or vaccination
- Other/Comments. Please specify.

1.2 In what type of information and advocacy activities do pharmacists participate? Mark all that that apply.

- Pharmacists distribute vaccination leaflets
- Pharmacists take part in online awareness campaigns, such as on webpages or on social media
- Pharmacists provide immunisation information and advice to patients (e.g., raising awareness about the benefits of vaccination, dispelling common vaccination myths, etc.)
- Pharmacists organise and/or are actively involved in vaccination campaigns
- Pharmacists participate in multi-disciplinary immunisation campaigns
- Pharmacists verify patients' immunisation status/schedule and remind them when their next vaccination is due
- Pharmacists identify and advise high risk patient groups about their vaccination (e.g., advising patients aged 65 and over, diabetic patients, travellers, etc.)
- Pharmacists serve on immunisation advisory committees
- Other/Comments:

SECTION 2. REGULATORY AND CONTRACTUAL FRAMEWORK FOR PHARMACY-BASED VACCINATION

2.1 Can vaccines be legally administered in pharmacies or by pharmacists in your country/territory?

- No, administration of vaccines (or some vaccines) cannot be performed in pharmacies or by pharmacists in my country/territory
- Yes, administration of vaccines (or some vaccines) can be performed in pharmacies by trained pharmacists
- Yes, administration of vaccines (or some vaccines) can be performed in pharmacies by trained pharmacy technicians
- Yes, administration of vaccines (or some vaccines) can be performed in pharmacies by other healthcare professionals (e.g., nurses or doctors)

2.2 Who is legally accountable for the vaccination process?

- The professional administering the vaccine
- The managing pharmacist of the pharmacy

- The pharmacy owner (Mark the following box if the managing pharmacist is the owner)
- Another health professional who delegated the authority to vaccinate
- Other. Please specify:

2.3 Is your country currently proposing or undergoing the development of policy/legislation/regulations allowing pharmacists to vaccinate?

- Yes
- No

2.4 When do you expect this policy/legislation/regulation to be passed?

2.5 Which vaccines will be included in this new law, all or some? Please specify:

2.6 Are pharmacists authorised to prescribe vaccines for administration, apart from administering the vaccine?

- Yes, for all vaccines
- Yes, for some vaccines. Please specify: [Click or tap here to enter text.](#)
- No

2.7 Which specific requirements for the administration of vaccines in pharmacies exist in your country/territory? (mark all the types of official requirements that exist in your country or territory)

- Requirements on pharmacy premises
- Specific immunisation protocols or standard operating procedures
- Certified training for the administration of vaccines
- Storage and conservation of vaccines in the pharmacy (compliance with cold chain requirements)
- Recording and reporting all administered vaccines to health authorities
- Reporting suspected adverse reactions or medication errors related to vaccines
- Management of hazardous (potentially infectious and contagious) materials and waste products from the administration of vaccines
- Management of emergencies arising from the administration of vaccines in the pharmacy
- Other requirements. Please specify:

2.9 Are pharmacists or pharmacies reimbursed by third-party payers for their vaccination services?

- Yes, by public (state-run) health systems or insurers
- Yes, by private health systems or insurers
- No, but the service is paid by the customer.
- No, the service is provided free of charge (i.e., the pharmacy takes on the cost of the service)

2.10 If yes, is the reimbursement for all types of vaccines that pharmacists are allowed to administer, or just for certain vaccines and/or population groups?

- For all types of vaccines
- Only for vaccines included in the national vaccination schedule. Please specify: [Click or tap here to enter text.](#)
- Only for vaccines not included in the national vaccination schedule. Please specify: [Click or tap here to enter text.](#)

- Only for specific vaccines (no relation to the national vaccination schedule). Please specify: [Click or tap here to enter text.](#)
- Only for certain population groups. Please specify: [Click or tap here to enter text.](#)

2.11 On a scale from 1 to 5, how important is it to receive compensation for vaccination services?

- 1 (not important)
 2
 3
 4
 5 (very important)

2.12 You may use the space below to provide any additional information or links to documents related to this section of the survey.

SECTION 3. ADMINISTERING VACCINES

3.1 Which of the following vaccines can be administered at pharmacies? (mark all that apply, even if included in a combined vaccine)

- | | | |
|---|--|--|
| <input type="checkbox"/> Cholera | Meningococcal meningitis: | <input type="checkbox"/> Poliomyelitis |
| <input type="checkbox"/> Dengue | <input type="checkbox"/> Bivalent serogroups A and C polysaccharide vaccine | <input type="checkbox"/> Rabies |
| <input type="checkbox"/> Diphtheria | <input type="checkbox"/> Trivalent serogroups A, C and W-135 polysaccharide vaccine | <input type="checkbox"/> Rotavirus gastroenteritis |
| <input type="checkbox"/> <i>Haemophilus influenzae</i> type b | <input type="checkbox"/> Tetravalent serogroups A, C, Y and W-135 polysaccharide vaccine | <input type="checkbox"/> Rubella |
| <input type="checkbox"/> Hepatitis A | <input type="checkbox"/> Monovalent serogroup A conjugate vaccine | <input type="checkbox"/> Shingles (Herpes zoster) |
| <input type="checkbox"/> Hepatitis B | <input type="checkbox"/> Monovalent serogroup C conjugate vaccine | <input type="checkbox"/> Tetanus |
| <input type="checkbox"/> Hepatitis E | <input type="checkbox"/> Bivalent serogroups A and C conjugate vaccine | <input type="checkbox"/> Tick-borne encephalitis |
| <input type="checkbox"/> Human papillomavirus | <input type="checkbox"/> Tetravalent serogroups A, C, Y, W-135 conjugate vaccine | <input type="checkbox"/> Tuberculosis |
| <input type="checkbox"/> Influenza (flu) | <input type="checkbox"/> Serogroup B (recombinant) vaccine | <input type="checkbox"/> Typhoid fever |
| <input type="checkbox"/> Japanese encephalitis | <input type="checkbox"/> Mumps | <input type="checkbox"/> Varicella (chickenpox) |
| <input type="checkbox"/> Malaria | <input type="checkbox"/> Pertussis (whooping cough) | <input type="checkbox"/> Yellow fever |
| <input type="checkbox"/> Measles | Pneumococcal disease: | |
| | <input type="checkbox"/> PCV10 (conjugate vaccine) | |
| | <input type="checkbox"/> PCV13 (conjugate vaccine) | |
| | <input type="checkbox"/> PPV23 (polysaccharide vaccine) | |

3.2 Which of the following vaccines are included in the national vaccination schedule? (mark all that apply, even if included in a combined vaccine)

- | | | |
|---|--|--|
| <input type="checkbox"/> Cholera | Meningococcal meningitis: | <input type="checkbox"/> Poliomyelitis |
| <input type="checkbox"/> Dengue | <input type="checkbox"/> Bivalent serogroups A and C polysaccharide vaccine | <input type="checkbox"/> Rabies |
| <input type="checkbox"/> Diphtheria | <input type="checkbox"/> Trivalent serogroups A, C and W-135 polysaccharide vaccine | <input type="checkbox"/> Rotavirus gastroenteritis |
| <input type="checkbox"/> <i>Haemophilus influenzae</i> type b | <input type="checkbox"/> Tetravalent serogroups A, C, Y and W-135 polysaccharide vaccine | <input type="checkbox"/> Rubella |
| <input type="checkbox"/> Hepatitis A | <input type="checkbox"/> Monovalent serogroup A conjugate vaccine | <input type="checkbox"/> Shingles (Herpes zoster) |

- | | | |
|--|--|--|
| <input type="checkbox"/> Hepatitis B | <input type="checkbox"/> Monovalent serogroup C conjugate vaccine | <input type="checkbox"/> Tetanus |
| <input type="checkbox"/> Hepatitis E | <input type="checkbox"/> Bivalent serogroups A and C conjugate vaccine | <input type="checkbox"/> Tick-borne encephalitis |
| <input type="checkbox"/> Human papillomavirus | <input type="checkbox"/> Tetravalent serogroups A, C, Y, W-135 conjugate vaccine | <input type="checkbox"/> Tuberculosis |
| <input type="checkbox"/> Influenza (flu) | <input type="checkbox"/> Serogroup B (recombinant) vaccine | <input type="checkbox"/> Typhoid fever |
| <input type="checkbox"/> Japanese encephalitis | <input type="checkbox"/> Mumps | <input type="checkbox"/> Varicella (chickenpox) |
| <input type="checkbox"/> Malaria | <input type="checkbox"/> Pertussis (whooping cough) | <input type="checkbox"/> Yellow fever |
| <input type="checkbox"/> Measles | Pneumococcal disease: | |
| | <input type="checkbox"/> PCV10 (conjugate vaccine) | |
| | <input type="checkbox"/> PCV13 (conjugate vaccine) | |
| | <input type="checkbox"/> PPV23 (polysaccharide vaccine) | |

3.3 Which population groups can pharmacists vaccinate? Please mark all that apply.

- Babies, children, and adolescents
- Adults (18 years old or greater)
- Older adults. Please specify above which age: [Click or tap here to enter text.](#)
- Pregnant women
- Other/comments

3.4 What is the most recently published national vaccination rate for seasonal influenza in older adults (65 years old and above) in your country or territory?

3.5 What percentage of that population (adults of 65 years of age or above) were vaccinated against seasonal flu at a pharmacy?

3.6 Are pharmacists allowed to administer vaccines outside the pharmacy premises (for example at nursing or care homes, schools, work environments)?

- Yes No

3.7 If yes, please specify where pharmacists may administer vaccines outside the pharmacy premises.

- At nursing or care homes
- At schools
- At work places
- At patients' homes
- Other. Please specify:

3.8 Please provide links to further information or documents (including relevant legislation/regulations, prescription requirements, reimbursement programmes, pharmacy vaccination rates, patient satisfaction or feedback on the pharmacy service.)

SECTION 4. TRAINING THE PHARMACY WORKFORCE FOR VACCINATION SERVICES

4.1 Do pharmacists receive any formal or comprehensive training about vaccine administration in your country/territory?

- Yes for all pharmacists
- Yes, some pharmacists do
- No

4.2 At what career stage(s) do pharmacists receive formal or comprehensive immunisation training?

- Undergraduate/university
- Post-registration/Post-graduate/Continuous professional development

4.3 Is the training mandatory?

- Yes
- No

4.4 Do pharmacists need to renew their certification (i.e., the training is only valid for a certain period of time)?

- Yes
- No

4.5 If yes, how long is the certificate valid for?

4.6 Where do pharmacists currently get their vaccination training? (mark all that apply)

- From a professional organisation (association, chamber, etc.)
- From the ministry of health
- From a university
- From the industry
- Others. Please specify:

4.7 Is the training accredited, certified, recognised or approved by a regulator or competent authority?

- Yes
- No

4.8 If yes, please indicate the name of the certifying authority

4.9 Please indicate which of the following competencies are developed through the required training course (mark all that apply)

- Integrating public health knowledge in advocating for vaccines (knowledge regarding the legal, ethical and health implications of vaccinations and the individual and societal benefits of vaccines)
- Utilising principles of immunology, vaccine development and vaccine-preventable diseases to optimise vaccine services
- Utilising clinical judgement to screen patients as well as individualise and monitor vaccine therapy (screening patients for vaccine eligibility, identifying contraindications and precautions to administration of vaccines and individualise immunisation, as well as monitoring for and managing potential adverse effects)
- Ensuring the safe administration of vaccines (knowing how to safely administer vaccines including different sites of administration and methods of administration of intramuscular, subcutaneous, intradermal or intranasal vaccines)

- Optimising vaccination services in the pharmacy setting** (logistical requirements for offering optimal vaccine services, including the necessary infrastructure, equipment and procedures)
- Other. Please specify:

4.10 What is the minimum number of training hours to achieve certification as a vaccinator?

SECTION 5. VACCINATION RECORDS

5.1 Do pharmacies have access (reading rights) to vaccination records?

- Yes for all records
- Yes for some records. Please specify:
- No

5.2 Are pharmacies authorised to record (write) vaccination details in a shared vaccination record?

- Yes, and it is mandatory to record both the patient's details and the vaccination details
- Yes, and it is mandatory to record the vaccination details but not the patient's details
- Yes, but it is not mandatory.
- No

5.3 In what format (and where) are vaccination records kept?

- In paper format (a vaccination card or booklet kept by the patient)
- In paper format (a vaccination card or booklet kept by the general practitioner)
- In a national shared electronic system
- In an electronic file kept by the pharmacy
- In an electronic file kept by the patient's general practitioner
- Other/Comments. Please specify:

5.4 Which vaccination details are recorded?

- Patient's details (e.g., name, age, gender, medication profile, etc.)
- Vaccine details (e.g., name, batch, expiry date, etc.)
- Vaccination administration details (e.g., name of the professional administering the vaccine, route of administration, administration date, etc.)
- Other/Comments. Please specify:

5.5 For how long do vaccination records have to be kept?

- A minimum of 5 years
- A minimum of 10 years
- Indefinitely
- There is no legal requirement
- Other. Please specify:

5.6 Are vaccination records shared?

- Yes, they are shared between all pharmacies
- Yes, they are shared between the pharmacies of the same owner/chain/franchise

- Yes, they are shared with the patient's physician(s)
- Yes, they are shared nationally/state-wide with health authorities
- No
- Other. Please provide details

5.7 How is the recorded information used?

- Pharmacists are able to retrieve patient vaccination records to help assess patients' immunisation status
- Records are analysed to determine vaccination rates
- Other/Comments. Please specify:

5.8 Is there any available evidence of the specific impact of pharmacy-based vaccination on immunisation coverage rates?

- Yes No

5.9 If yes, please provide details and links to any published evidence.

SECTION 6. ADDITIONAL SERVICES RELATED TO VACCINATION

6.1 Please describe below any services (not covered by previous questions) provided by pharmacies to support immunisation.

SECTION 7. LIMITATIONS TO THE DEVELOPMENT OF PHARMACISTS' ROLE IN VACCINATION

7.1 What are the main limitations and or challenges that pharmacists face regarding the provision of immunisation services in your country/territory? Mark all options that apply. Feel free to clarify any answers or leave any comments in the box provided at the end of the section.

- No significant limitations
- Limited acceptance and/or support by the government/health system
- Limited acceptance and/or support by other healthcare professionals
- Limited financial support from government/health system
- Lack of patient demand/acceptance
- Limited access to training opportunities for pharmacists
- Lack of confidence by pharmacists to perform immunisation services and activities
- Other/Comments

Appendix 2: Data summary from the global survey

Country or territory	WHO Region	OECD Member	Income level	Advocacy for vaccination	Pharmacy-based vaccination**	Access to records
Afghanistan	EMRO		Low	Y	N	N
Albania	EURO		Upper middle	Y	N	N
Algeria	AFRO		Upper middle	Y	N	N
Argentina	PARO		Upper middle	Y	P/H	Y
Armenia	EURO		Upper middle	Y	N	N
Australia	WPRO	Y	High	Y	P/H	Y
Austria	EURO	Y	High	Y	N	N
Bangladesh	SEARO		Lower middle	N	T/H	Y
Belgium	EURO	Y	High	Y	N	Y
Bosnia and Herzegovina	EURO		Upper middle	Y	N	N
Brazil	PARO		Upper middle	Y	P/H	Y
Bulgaria	EURO		Upper middle	Y	N	N
Cameroon	AFRO		Lower middle	N	N	N
Canada	PARO	Y	High	Y	P/H	N
Cape Verde	AFRO		Lower middle	Y	N	N
Chad	AFRO		Low	Y	P/T	Y
China	WPRO		Upper middle	Y	N	Y
China Taiwan	WPRO		High	Y	N	N
Colombia	PARO	Y	Upper middle	Y	N	N
Congo (Rep. of)	AFRO		Lower middle	Y	N	N
Costa Rica	PARO		Upper middle	Y	P	Y

Country or territory	WHO Region	OECD Member	Income level	Advocacy for vaccination	Pharmacy-based vaccination**	Access to records
Côte d'Ivoire	AFRO		Lower middle	Y	N	Y
Croatia	EURO		High	Y	N	N
Cyprus	EURO		High	Y	N	N
Czech Republic	EURO	Y	High	Y	N	N
Denmark	EURO	Y	High	Y	P/T	Y
Ecuador	PARO		Upper middle	Y	N	N
Egypt	EMRO		Lower middle	Y	N	Y
Estonia	EURO	Y	High	Y	H	N
Fiji	WPRO		Upper middle	Y	N	N
Finland	EURO	Y	High	Y	H	N
France	EURO	Y	High	Y	P	N
Germany	EURO	Y	High	Y	N	N
Ghana	AFRO		Lower middle	Y	N	Y
Greece	EURO	Y	High	Y	P	N
Haiti	PARO		Low	Y	N	N
Hong Kong, China	WPRO		High	Y	P	Y
Hungary	EURO	Y	High	Y	N	N
Iceland	EURO	Y	High	Y	H	N
India	SEARO		Lower middle	Y	N	Y
Indonesia	SEARO		Lower middle	Y	H	Y
Ireland	EURO	Y	High	Y	P	Y
Israel	EURO	Y	High	Y	P	N

Country or territory	WHO Region	OECD Member	Income level	Advocacy for vaccination	Pharmacy-based vaccination**	Access to records
Italy	EURO	Y	High	Y	N	N
Japan	WPRO	Y	High	Y	N	N
Jordan	EMRO		Upper middle	Y	N	N
Kenya	AFRO		Lower middle	Y	P	Y
Korea, Rep. of	WPRO		High	Y	N	N
Kosovo	EURO		Upper middle	Y	N	N
Kuwait	EMRO		High	Y	N	Y
Latvia	EURO	Y	High	Y	N	N
Lebanon	EMRO		Upper middle	Y	P	N
Lithuania	EURO	Y	High		N	N
Madagascar	AFRO		Low	Y	N	N
Malaysia	WPRO		Upper middle	N	N	Y
Mali	AFRO		Low	Y	N	Y
Malta	EURO		High	Y	P/H	N
Mauritius	AFRO		Upper middle	Y	N	N
Mongolia	WPRO		Lower middle	N	N	N
Montenegro	EURO		Upper middle	Y	N	N
Nepal	SEARO		Low	Y	H	N
Netherlands	EURO	Y	High	Y	H	N
New Zealand	WPRO	Y	High	Y	P/H	Y
Nigeria	AFRO		Lower middle	Y	M	Y
North Macedonia	EURO		Upper middle	Y	N	N

Country or territory	WHO Region	OECD Member	Income level	Advocacy for vaccination	Pharmacy-based vaccination**	Access to records
Norway	EURO	Y	High	Y	P/T/H	N
Oman	EMRO		High	Y	N	Y
Pakistan	EMRO		Lower middle	Y	N	N
Panama	PARO		High	Y	N	N
Paraguay	PARO		Upper middle	Y	P	N
Philippines	WPRO		Lower middle	Y	P/H	Y
Poland	EURO	Y	High	Y	N	N
Portugal	EURO	Y	High	Y	P/H	N
Romania	EURO		Upper middle	Y	N	N
Russian Federation	EURO		Upper middle	N	N	N
Rwanda	AFRO		Low	Y	N	N
Serbia	EURO		Upper middle	Y	N	N
Sierra Leone	AFRO		Low	Y	P/T/H	N
Singapore	WPRO		High	Y	N	N
Slovakia	EURO	Y	High	Y	N	N
Slovenia	EURO	Y	High	Y	N	N
South Africa	AFRO		Upper middle	Y	P/H	Y
Spain	EURO	Y	High	Y	N	N
Sri Lanka	SEARO		Upper middle	Y	N	N
Sudan	EMRO		Lower middle	Y	N	N
Sweden	EURO	Y	High	Y	H	N
Switzerland	EURO	Y	High	Y	P/H	N

Country or territory	WHO Region	OECD Member	Income level	Advocacy for vaccination	Pharmacy-based vaccination**	Access to records
Tanzania	AFRO		Low	Y	N	N
Thailand	SEARO		Upper middle	N	N	Y
Turkey	EURO	Y	Upper middle	Y	N	Y
Ukraine	EURO		Lower middle	Y	N	Y
United Arab Emirates	EMRO		High	Y	N	N
United Kingdom	EURO	Y	High	Y	P	Y
United States of America	PARO	Y	High	Y	P/T/H	Y
Uruguay	PARO		High	Y	N	N
Venezuela	PARO		Upper middle	Y	P	N
Yemen	EMRO		Low	Y	N	Y
Zambia	AFRO		Lower middle	Y	N	Y
Zimbabwe	AFRO		Lower middle	Y	N	Y

Y: Yes
N: No
P: Pharmacist
T: Pharmacy technician
H: Other healthcare professionals

Data summary for the global survey listed according to WHO regions, Income Groups, or OECD membership

WHO region	All WHO Member States	Percentage of region	In this report (n)	Advocacy for vaccination	Vaccination in pharmacies	Vaccination by pharmacists	Training required	Access to records
Africa	23.7% (46)	39.1% (18)	18.2% (18)	18.2% (18)	4.0% (4)	4.0% (4)	18.1% (18)	18.1% (18)
Eastern Mediterranean	11.3% (22)	45.5% (10)	10.1% (10)	10.1% (10)	1.0% (1)	1.0% (1)	10.1% (10)	10.1% (10)
Europe	27.3% (53)	77.4% (41)	41.4% (41)	40.4% (40)	14.1% (14)	10.1% (10)	40.4% (40)	41.4% (41)
South East Asia	5.7% (11)	54.5% (6)	6.1% (6)	6.1% (6)	7.1% (7)	7.1% (7)	6.1% (6)	6.1% (6)
The Americas	18.0% (35)	34.3% (12)	12.1% (12)	12.1% (12)	3.0% (3)	0.0% (0)	12.1% (12)	12.1% (12)
Western Pacific	13.9% (27)	44.4% (12)	12.1% (12)	12.1% (12)	4.0% (4)	4.0% (4)	12.1% (12)	12.1% (12)

Income group			In this report (n)	Advocacy for vaccination	Vaccination in pharmacies	Vaccination by pharmacists	Training required	Access to records
High			43.4% (43)	42.4% (42)	20.2% (20)	15.2% (15)	42.4% (42)	43.4% (43)
Upper middle			28.3% (28)	10.1% (10)	3.0% (3)	2.0% (2)	10.1% (10)	10.1% (10)
Lower middle			18.2% (18)	18.2% (18)	3.0% (3)	2.0% (2)	18.2% (18)	18.2% (18)
Low			10.1% (10)	28.3% (28)	7.1% (7)	7.1% (7)	28.3% (28)	28.3% (28)

OECD			In this report (n)	Advocacy for vaccination	Vaccination in pharmacies	Vaccination by pharmacists	Training required	Access to records
OECD members			33.3% (33)	32.3% (32)	18.2% (18)	13.1% (13)	32.3% (32)	33.3% (33)
Non-OECD members			66.7% (66)	66.7 (66)	16.2% (16)	13.1% (13)	66.7% (66)	66.7% (66)

Total	100% (194)		100% (99)	99.0% (98)	33.3% (33)	26.3% (26)	99.0% (98)	100% (99)
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Appendix 3. The 15 vaccines most commonly administered at pharmacies

	Influenza (flu)	Hepatitis B	Tetanus	Diphtheria	Hepatitis A	Measles	Pertussis (whooping cough)	Pneumococcal disease: PPV23 (polysaccharide vaccine)	Rubella	Mumps	Pneumococcal disease: PCV13 (conjugate vaccine)	Polio	Meningococcal meningitis: Tetravalent serogroups A, C, Y, W-135 conjugate vaccine	Shingles (Herpes zoster)	Human papillomavirus
Argentina	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Australia	Yes		Yes	Yes		Yes	Yes		Yes	Yes			Yes		
Bangladesh	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes			
Brazil	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Canada	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Chad		Yes	Yes			Yes						Yes			
Costa Rica	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Denmark	Yes	Yes	Yes	Yes	Yes										
Estonia	Yes														
Finland	Yes	Yes			Yes			Yes			Yes				
France	Yes														
Greece	Yes														
Hong Kong, China	Yes														
Iceland	Yes														
Indonesia															
Ireland	Yes							Yes						Yes	
Israel	Yes														
Kenya	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Lebanon	Yes														
Malta															
Nepal	Yes	Yes	Yes	Yes					Yes						
Netherlands	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
New Zealand	Yes		Yes	Yes		Yes	Yes		Yes	Yes			Yes	Yes	
Norway	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Paraguay	Yes		Yes												

	Influenza (flu)	Hepatitis B	Tetanus	Diphtheria	Hepatitis A	Measles	Pertussis (whooping cough)	Pneumococcal disease: PPV23 (polysaccharide vaccine)	Rubella	Mumps	Pneumococcal disease: PCV13 (conjugate vaccine)	Poliomyelitis	Meningococcal meningitis: Tetravalent serogroups A, C, Y, W-135 conjugate vaccine	Shingles (Herpes zoster)	Human papillomavirus
Philippines	Yes							Yes			Yes				
Portugal	Yes	Yes		Yes	Yes	Yes	Yes	Yes			Yes		Yes	Yes	Yes
Sierra Leone		Yes													
South Africa	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes
Sweden	Yes	Yes			Yes			Yes			Yes	Yes		Yes	
Switzerland	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes			
United Kingdom	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
United States of America	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Venezuela															
Countries per vaccine	29	19	18	17	16	16	15	15	15	14	13	13	12	12	11

Appendix 4. Who is accountable for the vaccination process? (n=34)

Country or territory	The professional administering the vaccine	The managing pharmacist of the pharmacy	The pharmacy owner	<i>The managing pharmacist must be the owner (or one of the owners)?</i>	Another health professional who delegated the authority to vaccinate	Other	Sole or shared accountability
Argentina		✓					Sole
Australia	✓	✓	✓		✓		Shared
Bangladesh					✓		Sole
Brazil	✓	✓	✓		✓		Shared
Canada	✓						Sole
Chad	✓	✓			✓		Shared
Costa Rica	✓						Sole
Denmark					✓	A doctor who delegates to a pharmacist or pharmacy technician	Sole
Estonia	✓	✓					Shared
Finland					✓		Sole
France	✓		✓	✓			Shared
Greece	✓						Sole
Hong Kong, China					✓	Pharmacists can vaccinate but the doctor has the final responsibility	Sole
Iceland					✓	A physician is legally accountable for the vaccination; a nurse can administer the vaccine	Sole
Indonesia					✓		Sole
Ireland		✓					Sole
Israel	✓	✓					Shared
Kenya	✓						Sole

Country or territory	The professional administering the vaccine	The managing pharmacist of the pharmacy	The pharmacy owner	<i>The managing pharmacist must be the owner (or one of the owners)?</i>	Another health professional who delegated the authority to vaccinate	Other	Sole or shared accountability
Lebanon		✓					Sole
Malta	✓					At present the legislation is being scrutinised and may be reviewed to mention the pharmacist specifically.	Sole
Nepal					✓		Sole
Netherlands	✓				✓		Shared
New Zealand	✓		✓				Shared
Norway	✓	✓					Shared
Paraguay						There is no formal regulation of the accountability	
Philippines	✓	✓	✓				Shared
Portugal		✓					Sole
Sierra Leone	✓	✓					Shared
South Africa	✓	✓					Shared
Sweden	✓						Sole
Switzerland	✓						Sole
United Kingdom	✓	✓					Shared
United States	✓	✓	✓		✓		Shared
Venezuela		✓					Sole

Appendix 5. Vaccination training — country details (where pharmacy-based vaccination is authorised)

Country or territory	Formal or comprehensive training about vaccine administration?	Career stage(s) of vaccination training		Training mandatory?	Mandat. period/renewal of certification?	How long is the certificate valid for?	Vaccination training providers				Training accredited by a regulator?	Competencies developed through required training				
	(No/ Yes, some pharmacists do/ Yes for all pharmacists)	Undergraduate	Post-registration / Post-grad./ CPD				From a professional organisation (association, chamber, etc.)	From the ministry of health	From a university	From the industry		Integrating public health knowledge in advocating for vaccines	Utilising principles of immunology, vaccine development and preventable diseases	Utilising clinical judgement to screen patients as well as individualise and monitor vaccine	Ensuring the safe administration of vaccines	Optimising vaccination services
Argentina	No															
Australia	Yes (some)	✓	✓	No	Yes		✓		✓	Yes	✓	✓	✓	✓	✓	
Bangladesh	Yes (some)		✓	No	Yes	5 years	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Brazil	Yes (all)		✓	Yes	No		✓	✓	✓	Yes	✓	✓	✓	✓	✓	
Canada	Yes (all)	✓	✓	Yes	Yes	Varies (annual)	✓		✓	Yes		✓	✓	✓	✓	
Chad	Yes (some)		✓	No	No		✓			No				✓		
Costa Rica	Yes (all)	✓	✓	Yes	No				✓	✓	✓	✓	✓	✓	✓	
Denmark	Yes (some)		✓	Yes	Yes	one year				No	✓		✓			
Estonia	No															
Finland	No															
France	Yes (all)	✓	✓	Yes	No				✓	Yes	✓	✓	✓	✓	✓	
Greece	Yes (some)		✓	No	No		✓	✓	✓	Yes	✓	✓	✓	✓		
Hong Kong, China	Yes (some)		✓	No	No					No	✓		✓			
Iceland	No															
Indonesia	No															
Ireland	Yes (some)		✓	Yes	Yes	1-2 years				Yes	✓	✓	✓	✓	✓	
Israel	Yes (some)	✓	✓	Yes	Yes		✓	✓	✓	Yes	✓		✓	✓	✓	
Kenya	Yes (some)		✓	No	No				✓	No	✓	✓	✓	✓	✓	

Country or territory	Formal or comprehensive training about vaccine administration?	Career stage(s) of vaccination training		Training mandatory?	Mandat. period/renewal of certification?	How long is the certificate valid for?	Vaccination training providers			Training accredited by a regulator?	Competencies developed through required training				
	(No/ Yes, some pharmacists do/ Yes for all pharmacists)	Undergraduate	Post-registration / Post-grad./CPD				From a professional organisation (association, chamber, etc.)	From the ministry of health	From a university		From the industry	Integrating public health knowledge in advocating for vaccines	Utilising principles of immunology, vaccine development and preventable diseases	Utilising clinical judgement to screen patients as well as individualise and monitor vaccine	Ensuring the safe administration of vaccines
Lebanon	No														
Malta	No														
Nepal	No														
Netherlands	No														
New Zealand	Yes (some)	✓	✓	No	Yes	2 years				Yes	✓	✓	✓	✓	✓
Norway	Yes (some)	✓	✓	Yes	No					No	✓	✓		✓	✓
Paraguay	No														
Philippines	Yes (some)	✓	✓	Yes	Yes	3 years	✓			Yes	✓	✓	✓	✓	✓
Portugal	Yes (some)	✓	✓	Yes	Yes	5 years	✓			Yes	✓	✓	✓	✓	✓
Sierra Leone	No														
South Africa	Yes (some)	✓	✓	Yes	No				✓	No				✓	
Sweden	No														
Switzerland	Yes (some)	✓	✓	Yes	Yes	2 years	✓			Yes	✓	✓	✓	✓	✓
UK	Yes (all)	✓	✓	Yes	Yes	3 years	✓		✓	Yes	✓	✓	✓	✓	✓
USA	Yes (all)	✓	✓	Yes	No		✓		✓	Yes	✓	✓	✓	✓	✓
Venezuela	Yes (all)	✓	✓	Yes	No				✓	Yes	✓	✓		✓	✓

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