

# Give it a shot

Expanding  
immunisation coverage  
through pharmacists

2020

#FIP4vaccination  
#VaccinesWork

# Colophon

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# Foreword

By the Secretary-General of the International Federation on Ageing

The United Nations 2030 Agenda for Sustainable Development makes clear that a healthy life and the right to health, well-being and optimal function does not start or end at a specific age. In 2020 the world has faced the coronavirus pandemic, arguably the most serious threat to global health and well-being of our time. It has brutally exposed broken, absent, and inadequate health and social care systems, and healthcare professionals, including pharmacists, have been in the frontline in acute care settings as well as the community.

Vaccination throughout life is a cornerstone of public health and one of the most effective methods of preventing the spread of infectious disease. It saves not only millions of lives of healthy citizens and those most vulnerable, but also the livelihoods of tens of millions of families around the world. The World Health Organization's Immunization Strategy 2021–2030 is an opportunity for the International Pharmaceutical Federation to be a bridge to the Decade of Healthy Ageing and for pharmacists to be drivers of a life course approach to vaccination.

“Give it a shot: Expanding immunisation through pharmacists” is the gold standard guide to help drive the expansion of coverage rates. Especially in the community, pharmacists represent essential vaccination gateways and, at the same time, trusted information sources for individuals of all ages and diversities. More than just contributing to accessibility, pharmacists are champions in the reduction of immunisation inequity, being able to reach unreachable marginalised and isolated populations and individuals.

Pharmacists are that rare profession making the connection between persons most at-risk of vaccine preventable diseases, such as older people and those with chronic non-communicable diseases, and the management of their conditions. They listen, advise, and promote the importance of adherence to treatments, and provide a series of support services that inherently optimise a person's functional ability.

Longer lives bring great opportunities, including the possibility of rethinking how our entire life course might unfold. The International Federation on Ageing, in its strong partnership with the International Pharmaceutical Federation, believes that historic transformations in the quality of life for every human being will only be achieved through diligence and commitment in creating an environment for all people to live with dignity and continued personal growth. Let us work together and invest in a future where all older people have this precious freedom.

Jane Barratt

# Preface

By the President of the International Pharmaceutical Federation (FIP)

Based on the conviction that pharmacists should be involved in vaccination strategies in a multitude of roles everywhere around the world, FIP has given high priority to this area for a decade. Since the definition of the administration of medicines, vaccines and other injectable medications as a key role of pharmacists in the joint World Health Organization-FIP Good Pharmacy Practice Guidelines in 2011, and up until this publication, FIP has advocated for this role to the WHO and other global stakeholders, supported its member organisations in their advocacy work to introduce these services in their countries, monitored the implementation of the service around the world, and provided multiple opportunities to debate this topic at its meetings and congresses.

In recent years, the number of countries that have introduced vaccination by pharmacists or at community pharmacies has increased. However, barriers and opposition to this expansion of pharmacists' scope of practice remain in many countries.

With this resource document, we aim to further demonstrate the commitment and impact of pharmacists in increasing vaccination coverage and uptake through a multitude of roles, including vaccine administration. Its primary objective is to showcase evidence and best practices, and to raise awareness in pharmacists and decision makers of the extraordinary opportunities that exist to harness the professional competence, broad distribution and accessibility of pharmacists in the community to improve collective health through higher vaccination rates.

With this resource document, we also aim to support individual pharmacists around the world in understanding the various roles they can play in the vaccination arena and offer guidance on how to implement these in their practice where regulatory frameworks permit.

In addition to administering vaccines and facilitating access to immunisation across all ages, another tremendous challenge we need to address together is to build trust in vaccines, provide evidence-based advice to the public, and dispel myths and fake news related to vaccines. Vaccination is one of the most successful, safest and most cost-effective health interventions of all time, second only to clean water. Improving vaccination coverage is a global imperative and pharmacists, together with our colleagues in other health professions, must join efforts to ensure no-one is left behind in vaccination strategies.

Dominique Jordan

# 1 Introduction

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## 1.1 The value, safety and cost-effectiveness of vaccines

Vaccines are proven to control and eliminate otherwise life-threatening diseases, preventing between two and three million deaths each year around the world.<sup>1</sup> In fact, vaccination is one of the most successful and cost-effective health interventions of all time, second only to clean water.<sup>2</sup> Vaccines are responsible for numerous accomplishments in public health, including the elimination of smallpox in 1980, one of the world's most feared diseases. This is considered one of the biggest achievements in international public health history.<sup>3</sup> Vaccines have also saved countless lives by nearly eliminating the polio virus by reducing cases by 99%. In addition, the number of people who experience illness, disability or death from diphtheria, tetanus, whooping cough, measles, *Haemophilus influenzae* type b disease, and epidemic meningococcal A meningitis is at an all-time low.<sup>3</sup>

The influenza vaccine prevents millions of illnesses and flu-related physician office visits each year, prevents tens of thousands of hospitalisations, and prevents serious medical events associated with chronic conditions. It also reduces the risk of certain complications in women during and after pregnancy, reduces the risk of a child dying of influenza, and protects people around those who are vaccinated, especially young children and the elderly.<sup>4</sup>

The only way to protect against shingles and postherpetic neuralgia, the most common complication from shingles, is the shingles vaccine. The risk of shingles and postherpetic neuralgia increases with age, so protection is especially important.

The human papillomavirus (HPV) vaccine is also extremely effective as it decreases the prevalence of HPV infection and genital warts. Decreases in vaccine-type prevalence, genital warts and cervical dysplasia have also been observed in various countries with HPV vaccination programmes.<sup>6</sup>

Vaccines are effective not only from a public health perspective, but also from an economic perspective: they are one of the most cost-effective health investments. Although vaccination requires an immediate investment, the economic savings they generate through reduced health care costs, lost productivity, and work and school absenteeism due to illness are far higher than the initial cost. According to Ozawa and collaborators, for every US\$1 spent on immunisation, an estimated \$16 is saved from childhood immunisation in low- and middle-income countries over a decade. With the broader benefits of people living longer and healthier lives, the return on investment rises to \$44 per \$1 spent.<sup>7</sup>

In the United States, for every \$1 spent on childhood vaccinations, the country saves over \$10. Since 1994, vaccination in children has saved the US nearly \$406 billion in direct medical costs and \$1.88 trillion in total society costs.<sup>8</sup> In Brazil, the universal childhood vaccination programme against hepatitis A could be a cost-saving strategy in all regions of the country. At \$7.23 per dose, there was a 64% reduction in the number of cases of icteric hepatitis, a 59% reduction in deaths from the disease, and a 62% decrease of life years lost.<sup>9</sup> In China, publicly financed HPV vaccination to prevent cervical cancer is cost-effective across all income groups when the cost is less than \$50 per vaccinated girl.<sup>10</sup>

Vaccines are tested extensively by scientists to ensure they are effective and safe. No vaccine is 100% safe or effective for everyone as each person's body reacts to vaccines differently. However, vaccines are the safest they have ever been and pass multiple levels of quality control procedures and safety evaluations before they reach the public. As vaccine-preventable infectious diseases become less common, we hear less about the serious consequences of such diseases and more about the risks associated with vaccines. Any vaccine can cause side effects, but for the most part they are minor and transient, such as a sore arm or low-grade fever. As vaccines are the best defence we have against infectious diseases, the decision not to vaccinate involves much more serious risks. Not vaccinating may jeopardise not only that individual but also others who come into contact with him or her because they are at risk of contracting a potentially deadly disease. In reality, the benefits of vaccines far outweigh the risks.

## 1.2 Life-course vaccination: healthy ageing and adult immunisation

Life expectancy has risen dramatically in the past century, with issues specific to an ageing population becoming a priority. Increased susceptibility to vaccine-preventable diseases and increased likelihood of living with one or more chronic conditions are some of the issues that must be addressed. Vaccine-preventable diseases such as influenza, pneumococcal diseases, herpes zoster, and pertussis are a significant cause of morbidity, loss of quality of life and mortality in older people.

Along the disease burden of vaccine-preventable diseases, there is a gradual deterioration of the immune system brought on by increased age.<sup>11</sup> The progressive decline includes both innate and adaptive immunity, thus contributing to the increased incidence and severity of infections in older adults.<sup>12</sup> These severe infections are associated with long-term effects, such as impairments in activities of daily living, onset of frailty or the loss of independence.

Life-long vaccination programmes and the importance of vaccination for the elderly are often underestimated.<sup>13</sup> It is of paramount importance to increase the focus on vaccination throughout the life course and ensure access to vaccines that are relevant for each age group, namely, adolescents, adults and older persons.

## 1.3 Targeting specific adult populations: pregnant women, healthcare professionals and women as caregivers

It is paramount to increase vaccination coverage of specific adult groups, such as pregnant women and health workers. With regard to pregnancy, the World Health Organization indicates that there is no evidence of adverse pregnancy outcomes from the vaccination of pregnant women with inactivated virus, bacterial vaccine or toxoid. Therefore, pregnancy should not preclude women from immunisation with these vaccines, if medically indicated. The use of selected vaccines in pregnancy is an important aspect of prenatal care which not only protects maternal health but also benefits the neonate. The WHO specifically recommends that pregnant women are vaccinated against seasonal influenza, tetanus and meningococcal infections.<sup>14</sup>

With regard to health workers — including all persons involved in patient care such as healthcare professionals, residents, students, laboratory staff, administrative and service staff, as well as persons in public health such as field workers, epidemiologists, laboratory staff and community health workers — the WHO recommends that they are vaccinated against multiple diseases, including influenza.<sup>15</sup> Community pharmacists and pharmacy support personnel may be particularly exposed to influenza and it is recommended not only that they protect themselves from the disease, but also that they avoid becoming a vector for further disease transmission. In some countries, vaccination of healthcare professionals against influenza is mandatory, and this has raised concerns over the ethical obligation versus the autonomy of individual health professionals to be vaccinated. On this note, an article by Perl and Talbot suggests that, although it is important to recognise these arguments, it is also important to place them within the context of a healthcare professional's ethical duty to protect patient safety. This duty consists of acting in the patient's interest, working to protect vulnerable patients, and not placing patients at undue risk of harm. Furthermore, it is key to understand that up to 50% of influenza infections in healthcare professionals are asymptomatic, paucisymptomatic or simply unrecognised.<sup>16</sup>

Another group for whom vaccination advocacy is particularly important is women. Women are the non-professional caregivers closest to healthcare professionals; it is often women who encourage family members to visit healthcare professionals and who make sure they take medicines and understand their treatment. With an ageing population, women are increasingly volunteering or being asked to care for their elderly family members.<sup>17</sup> As such, women are key allies in building trust in vaccines and improving vaccination coverage not only of young children and adolescents, but also of adults and older adults.

Pharmacists are in a unique position to reach out to these groups, inform them and advocate the benefits of vaccination and thus reduce the prevalence of vaccine-preventable diseases. They are a valuable, trusted resource in the community through their accessibility, distribution and knowledge.

## 1.4 Increasing vaccination coverage and uptake: a global imperative

At the Global Conference on Primary Health Care in October 2018, organised by the WHO in Astana, Kazakhstan, the Astana Declaration on Primary Health Care was endorsed. This declaration emphasises the critical role of primary health care around the world and aims to refocus efforts on primary health care to ensure that everyone everywhere is able to enjoy the highest possible standard of health.<sup>18</sup> This includes prioritising prevention across health policies, in order to reduce the global burden of disease and make health systems more efficient, resilient and sustainable. Vaccination plays a major role in the prevention agenda.

In addition, the global threat posed by antimicrobial resistance requires urgent and coordinated actions by all stakeholders to reduce the emergence of multi-resistant pathogens and preserve the effectiveness of antibiotics in our arsenal. Vaccines help reduce the need for antibiotics by reducing the incidence of communicable diseases. They are, therefore, an essential part of this global strategy to address antimicrobial resistance.

While the effectiveness of vaccinations is well documented, barriers to immunisation exist and have a significant impact on vaccination rates and the incidence and prevalence of vaccine-preventable diseases. These barriers affect the implementation of effective strategies for vaccination, thus hindering national and global immunisation rates. Misinformation regarding vaccines, lack of understanding regarding their important benefits, and limiting fears and beliefs are factors that present challenges to vaccination. The amount of misinformation about vaccines circulating on the Internet in recent years has generated a worrying level of hesitancy or outright opposition to the use of vaccines by growing anti-vaccination groups in many countries. This has been associated with the return or increase of diseases such as measles and whooping cough.<sup>19</sup>

Another set of barriers is with vaccination administration and record processes along with their accessibility and distribution, including supply and storage. Other challenges include political, legal, financial and administrative constraints to vaccination provision, namely by pharmacists, in many countries.<sup>20</sup>

## 1.5 Pharmacists' contribution to vaccination

Pharmacists play a role in overcoming these barriers through education, providing evidence-based information and advice to overcome misbeliefs and misconceptions regarding vaccinations. Pharmacists have an essential public health role by acting as educators and advisers, facilitating and participating in national and global routine immunisation strategies and practices and/or delivering pharmacy-based vaccinations. All these roles have already been successfully implemented in various countries around the world and there is a wealth of evidence of the impact of pharmacists' vaccination-related roles, as included in this publication.

The accessibility and distribution of community pharmacies usually makes them a first point of contact for patients and the public in general, providing the opportunity to promote and increase vaccination services. Due to their easy accessibility, pharmacists can more easily identify and target patients who are at higher risk of vaccine-preventable diseases and their complications. As advocates for vaccination, they build trust with the community to establish the crucial nature of vaccines and their benefits. With their knowledge of the vaccine supply chain and storage of cold products, pharmacists ensure safety and quality of vaccines.<sup>21</sup> They are essential contributors for expanding vaccination coverage and overcoming the challenges necessary to improving vaccination compliance.

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## 2 Supporting evidence and bibliography on the impact of pharmacy-based vaccination

### Editor:

Blake Barta, University of North Carolina, USA

This section includes a selection of abstracts of published studies that demonstrate the impact of pharmacy-based vaccination.

### 2.1.1 Vaccinations in community settings could improve uptake, public health report finds

Date of publication: January 2019

Study location: United Kingdom

#### Objectives:

To provide a snapshot of public and professional attitudes to vaccinations.

#### Method:

A narrative literature review of relevant articles and three public surveys: one with 2,000 UK adults aged 18 years and over; one with 2,622 UK parents; and one with 216 healthcare professionals working to deliver vaccination programmes in the UK.

#### Results:

- While the public trusts healthcare providers, misinformation regarding vaccinations in the media could be affecting vaccination uptake across the UK.
- Timing, availability and location of appointments are all barriers to vaccination uptake.
- The findings show that improving access to vaccinations is crucial to tackling inequalities in uptake, particularly those related to ethnicity or socio-economic status.

#### Conclusions:

The Royal Society for Public Health has called for a multi-pronged approach to help improve and maintain uptake of vaccination in the UK, including efforts to protect the public from fake news and negative messages on social media and to offer vaccinations in a more diverse range of locations, such as gyms and high-street pop-ups.

#### Bibliographical reference:

Robinson J. Vaccinations in community settings could improve uptake, public health report finds [Internet]. *Pharmaceutical Journal*; 2019 [cited 2019 Jul 16]. Available from: <https://www.pharmaceutical-journal.com/news-and-analysis/news/vaccinations-in-community-settings-could-improve-uptake-public-health-report-finds/20206041.article?firstPass=false>

### 2.1.2 Evidence for pharmacist vaccination

Date of publication: September/October 2018

Study location: Most studies were completed in the United States and one was completed in Canada

#### Objectives:

To carry out a systematic review and meta-analysis of the impact of pharmacists in their various immunisation roles.

#### Method:

The research methods (search strategy, study selection and data extraction) and results are available in detail in the original publication. Briefly, PubMed, EMBASE, Cochrane Libraries, Cumulative Index to Nursing and Allied Health Literature, International Pharmaceutical Abstracts and Google Scholar were searched from



inception until October 2015. Grey literature searches and hand searches of journals and publications of interest were also completed. Inclusion criteria were clinical or epidemiologic studies in which pharmacists were involved in the immunisation process.

#### Results:

- All studies demonstrated an increase in vaccine coverage when pharmacists were involved in the immunisation process, regardless of role (educator, facilitator, administrator), setting or vaccine administered, compared with vaccine provision by traditional providers without pharmacist involvement. Pooled analysis of the four randomised controlled trials evaluating pharmacists as educators and facilitators demonstrated a statistically significant increase in immunisation rates with the addition of pharmacists (relative risk [RR] 2.96; 95% confidence interval [CI] 1.02–8.59), with similar results seen in the two randomised controlled trials evaluating pharmacists as vaccine administrators (RR 2.64; 95% CI 1.81–3.85). Pooled analysis of all six randomised controlled trials demonstrated a statistically significant increase in immunisation rates with the addition of pharmacists as educators, facilitators and administrators (RR 2.74; 95% CI 1.58–4.74).
- Other outcomes of interest, such as safety and incidence of vaccine-preventable morbidity and mortality, were evaluated by very few studies. Four studies evaluated adverse events following immunisation and reported no change in adverse events with the addition of pharmacists. One study evaluated clinical outcomes and found a decreased risk of self-reported influenza-like illness with the addition of pharmacists as immunisation educators and/or facilitators.

#### Conclusions:

Research evidence strongly supports immunisation by pharmacists to improve vaccination rates. The positive effects were seen regardless of the role played (educator, facilitator and administrator), the vaccine administered or the setting. Expanding the range of publicly funded vaccines that can be administered by pharmacists has potential to reduce vaccine-preventable diseases and complications through increased uptake. Further study is needed in this area in Canada.

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Isenor JE, Bowles SK. Evidence for pharmacist vaccination. *Can Pharm J* [Internet]. 2018 Jun [cited 2019 Jul 16];151(5):301-4. Available from: <https://journals.sagepub.com/doi/abs/10.1177/1715163518783000> DOI: 10.1177/1715163518783000

### 2.1.3 Vaccination in the pharmacy: Review and experience of the pharmacies

Date of publication: August 2018

Study location: Switzerland

#### Objectives:

To provide a comprehensive assessment of the distribution, design, use and implementation of flu vaccine administration by pharmacies in Switzerland.

#### Method:

- The database consists of vaccination data from pharmacies (phS-net database) for the 2016–17 and 2017–18 influenza seasons, the tariff pool of the Health insurer and CSS Insurance data.
- Supplementary information was collected from pharmacies in the vaccination cantons by means of online surveys. Various statistical approaches were used in the evaluation, taking particular account of the fact that only a partial survey is available.

#### Results:

- The number of vaccinations offered by pharmacies and their use increased significantly between the 2016–17 and 2017–18 influenza seasons: the number of vaccination pharmacies rose from 316 to around 470 (+48%) and the number of influenza vaccinations carried out from 8,366 to 19,648 (+135%)
- The 56% increase in the number of vaccinations per pharmacy indicates that the offer has become better known among customers. The results show that the introduction of the vaccination service increased the overall vaccination coverage rate.

- There are no valid indications of major shifts from doctors' offices to pharmacies: the number of flu vaccinations carried out in doctors' surgeries in 2016 was even slightly higher than in 2014.
- Another relevant result is that the information campaign and the assumption of costs by CSS Insurance led to significantly more flu vaccinations, but the effect of the vaccination on the cost of illness was not sufficiently precise, hence no statistically reliable statements are possible.
- The survey of pharmacies shows that the cost of influenza vaccination on average is around 38 Swiss francs.
- Around 80% of all vaccinations carried out in pharmacies are against influenza; however, many pharmacies also offer vaccinations against early summer meningoencephalitis (TBE), hepatitis A and B and other diseases. The most important reasons given by pharmacies for introducing vaccination are the improvement of the range of services, positioning in prevention, better customer loyalty and an increase in vaccination coverage. The most common obstacles and difficulties cited are training, high infrastructure costs and restrictions imposed by cantonal authorisations, which are perceived as rather costly.
- Pharmacists cite the expansion to additional target groups (above all people with well treatable underlying diseases and chronically ill people) and the inclusion of further vaccines (above all TBE and diphtheria tetanus) as the thrust for further development of the range.
- The survey of non-vaccination pharmacies in vaccination cantons showed that around 30% would like to introduce a vaccination range by the 2019–20 vaccination season, so the number of vaccinations in pharmacies should continue to increase in the coming years. In addition, the number of vaccination pharmacies should also continue to rise.

#### Conclusions:

- The study shows that the still young "Vaccination in pharmacies" service has already achieved a high degree of penetration and meets a customer need.
- The introduction of the vaccination service is expected to have led to a slight overall increase in influenza vaccination coverage, thereby contributing to the health policy vaccination strategy.
- Although the introduction of the vaccination service was or is partly associated with challenges, pharmacies are very positive about the new service and show interest and willingness to further develop the existing service
- Due to the amendment of the Medical Profession Act of 2015, pharmacists will in the future acquire the vaccination competence already in the basic university training. This will simplify the training, which is currently perceived as expensive.
- It is important to mention that the vaccines that pharmacists are currently allowed to supply vary from canton to canton. In some cantons TBE vaccination is already possible; in others it is not.
- In May 2018, another canton (Basel Stadt) introduced vaccination in pharmacies without a medical prescription. Further cantons are expected to follow.
- The aim is to expand the scope of our activities in the field of vaccines and vaccine groups if the regulatory framework conditions are created for this purpose.

#### Bibliographical reference:

B,S,S. Volkswirtschaftliche Beratung AG and CSS Institut. Impfen in der Apotheke: Bestandsaufnahme und Erfahrungen der Apotheken; 2018. Available from: <https://www.pharmasuisse.org/fr/?Article=1478246>

### 2.1.4 An economic analysis of flu vaccination

Date of publication: July 2018

Study location: England

#### Objectives:

- To chart, using available evidence, some of the challenges faced by society in the face of seasonal influenza, as well as document the key areas where flu outbreaks have tangible economic costs.
- To model a cost-benefit analysis of flu vaccination. There are a number of approaches taken within the literature, each with its own strengths and weaknesses.
- To estimate the number of cases averted due to vaccination.

**Method:**

- This report's critical contribution is to outline findings from a new economic model of the costs and benefits from flu vaccination in England using actual recent efficacy data. It did so by producing a conservative, static model which provides a partial cost-benefit analysis of vaccination under various scenarios. The model allows the creation of a cost-benefit analysis under different plausible scenarios for vaccine efficacy, the vaccination rate and the cost of the vaccine as it applies to various risk groups.

**Results:**

- Our findings underscore the importance of 1) raising efficacy among older age groups in particular and 2) better evidence on actual efficacy values, particularly for older people and those with underlying health conditions
- It cannot be taken for granted that flu vaccination will generate economic benefits that exceed the cost of vaccination, but if efficacy and coverage were to both improve beyond recently recorded rates, the potential for cost savings are significant as well as benefits which are not monetary.
- Vaccination can play a vital role in saving lives and relieving some of the burden that falls upon the NHS in winter.
- To allow comparison with the wider literature, the headline vaccination costs per death averted were calculated. Where the vaccine is well-matched, results suggest that it is likely to be cost effective (ranging between £20,000 and £30,000 per death averted).

**Conclusions:**

- Public policy should focus on increasing coverage rates among young people (0–15) where efficacy and incidence are higher as this would seem to be the most efficient approach to improving overall benefits relative to costs.
- The efficacy of the vaccine among individuals over 65 years old is a significant issue. High levels of demand for the vaccine among this age group combined with recent low efficacy rates means that the costs of delivering the vaccine outweigh the benefits in the model. More research and innovation are needed to specifically explore vaccination efficacy for this age group.
- Overall, the cost-benefit analysis is highly sensitive to vaccine administration costs. If the health service can take advantage of economies of scale to reduce the unit cost for delivering the vaccine (critically, without it affecting the efficacy), this would also support improving the potential benefits relative to the costs.
- The wider societal costs of premature death from flu, such as lost years of work and care, account for the largest component of total costs.

**Bibliographical reference:**

Franklin B, Hochlaf D. An economic analysis of flu vaccination [Internet]. UK: International Longevity Centre; 2018 [cited 2019 Jul 16]. Available from: <https://ilcuk.org.uk/an-economic-analysis-of-flu-vaccination/>

**2.1.5 The organisation and delivery of vaccination services in the European Union**

Date of publication: 2018

Study location: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

**Objectives:**

To conduct an overview of systematic reviews, supplemented by European reports and reviews, that evaluate health system components, barriers and facilitators to establishing effective childhood immunisation and influenza vaccination programmes at health system and health service level. To identify gaps in the evidence and make recommendations for future research.

**Method:**

- A search of systematic reviews of health system factors affecting the implementation of immunisation programmes, including barriers and facilitators. European reports and reviews (including non-Cochrane systematic reviews) were incorporated to supplement the results of the search. A protocol was registered

beforehand on PROSPERO, an international database of prospectively registered systematic reviews in health and social care (<https://www.crd.york.ac.uk/prospero>).

- A search of electronic databases, including the Cochrane Database of Systematic Reviews (CDSR), Ovid Medline, Ovid Embase, Web of Science, PsychInfo and Google Scholar), using a pre-defined search strategy. European health organisation websites were also searched, and any relevant publications retrieved (for example: WHO Regional Office for Europe, ECDC (European Centre for Disease Prevention and Control), VENICE (Vaccine European New Integrated Collaboration Effort) Project, European Council, European Commission, VaccinesEurope.eu). The investigators also searched the London School of Hygiene and Tropical Medicine database of all systematic reviews for vaccines, created for the WHO ([www.nitag-resource.org](http://www.nitag-resource.org)) (reported in Fernandes *et al* 2018 in the bibliographical reference below). Reference lists of included reports and reviews were manually searched to identify any additional reviews from the grey literature. Papers with abstracts published in English, French or German between January 2000 and May 2018 were considered for inclusion in order to provide the most up-to-date evidence.

#### Results:

- In all EU member states, vaccination programmes are organised at the national level, whereas the regional level tends to be charged with overseeing implementation of vaccinations and monitoring vaccination coverage. However, there are some countries where the regional level has latitude to modify national vaccination programmes and recommendations to local needs. This includes Denmark, Germany, Spain and Sweden.
- In nine EU member states (Bulgaria, Croatia, Czech Republic, France, Hungary, Italy, Poland, Slovakia and Slovenia), vaccinations against measles are mandatory for children, while in the remaining 19 states they are voluntary, but recommended by the relevant authorities. However, the distinction between voluntary and mandatory immunisation is not always clear-cut. In three countries (Cyprus, Germany and Greece) vaccinations are formally voluntary, but vaccination certificates are required for the enrolment of children in schools or kindergartens.
- In contrast, vaccinations for adults against influenza are voluntary in almost all EU member states. The sole exception is Slovakia, where vaccination against influenza is mandatory for any person living in social care facilities, as well as for any person at increased risk of infection due to living or working in an area where avian influenza is present.
- EU countries have embraced a mix of incentives and sanctions to improve vaccination coverage. These include awareness campaigns, financial rewards for parents or healthcare providers, and financial sanctions or denying school or kindergarten entry for those who refuse (mandatory or even voluntary) vaccinations.
- Specific targeted measures for vulnerable groups of the population are adopted in a number of countries (including Croatia, Finland, Germany, Greece, Ireland, Luxembourg, Malta, the Netherlands, Portugal, Romania, the United Kingdom). These include, in particular, actions for refugees and asylum-seekers, often as part of routine medical screening upon entry to the country. Some countries (including Croatia, the United Kingdom, Ireland and Romania) also offer targeted measures for minority ethnic groups, such as the Roma and traveller communities.

#### Conclusions:

This report documents the sustained efforts undertaken by EU member states in addressing vaccine-preventable diseases. They provide an insight into what has been achieved, but also where further improvements could be made. The main perceived barriers for improved vaccination coverage are vaccine hesitancy and lack of awareness not only in the general population, but also among health workers. However, the country profiles also identify many other actions that health systems can take to improve coverage. These include a mix of incentives and sanctions, targeted measures and outreach services for vulnerable population groups, and an expansion of public financing for vaccinations against influenza, as well as the removal of administrative barriers.

#### Bibliographical reference:

Rechel B, Richardson E, McKee M. The organization and delivery of vaccination services in the European Union (2018) [Internet]. World Health Organization; 2018 [cited 2019 Jul 16]. Available from: <http://www.euro.who.int/en/publications/abstracts/the-organization-and-delivery-of-vaccination-services-in-the-european-union-2018>

### 2.1.6 Repeated influenza vaccination for preventing severe and fatal influenza infection in older adults: A multicentre case-control study

Date of publication: January 2018

Study location: Spain

Objectives:

To evaluate the effectiveness of influenza vaccination on preventing admissions to hospital for influenza and reducing disease severity.

Method:

The researchers conducted a case-control study in 20 hospitals in Spain during the 2013–14 and 2014–15 influenza seasons. Community-dwelling adults aged 65 years or older who were admitted to hospital for laboratory-confirmed influenza were matched with inpatient controls by sex, age, hospital and admission date. The effectiveness of vaccination in the current and three previous seasons in preventing influenza was estimated for inpatients with non-severe influenza and for those with severe influenza who were admitted to intensive care units (ICUs) or who died.

Results:

The researchers enrolled 130 inpatients with severe influenza and 598 with non-severe influenza who were matched to 333 and 1,493 controls, respectively. Compared with patients who were unvaccinated in the current and three previous seasons, adjusted effectiveness of influenza vaccination in the current and any previous season was 31% (95% CI 13%–46%) in preventing admission to hospital for non-severe influenza, 74% (95% CI 42%–88%) in preventing admissions to ICU and 70% (95% CI 34%–87%) in preventing death. Vaccination in the current season only had no significant effect on cases of severe influenza. Among inpatients with influenza, vaccination in the current and any previous season reduced the risk of severe outcomes (adjusted OR 0.45; 95% CI 0.26–0.76).

Conclusions:

Among older adults, repeated vaccination for influenza was twice as effective in preventing severe influenza compared with non-severe influenza in patients who were admitted to hospital, which is attributable to the combination of the number of admissions to hospital for influenza that were prevented and reduced disease severity. These results reinforce recommendations for annual vaccination for influenza in older adults.

Bibliographical reference:

Casado I, Domínguez Á, Toledo D, Chamorro J, Astray J, Egorola M, et al. Repeated influenza vaccination for preventing severe and fatal influenza infection in older adults: a multicentre case-control study. *CMAJ* [Internet]. 2018 Jan [cited 2019 Jul 16]; 190(1):E3-12. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/29311098>

### 2.1.7 Population characteristics associated with pharmacy-based influenza vaccination in United States survey data

Date of publication: November/December 2017

Study location: United States of America and Puerto Rico

Objectives:

To examine the population characteristics associated with the health behaviour of receiving an influenza vaccine from a pharmacy-based setting.

Method:

Secondary analysis of data from states that participated in an optional influenza module in the 2014 Behavioural Risk Factor Surveillance System, a state-based observational survey of US adults.

Results:

Multinomial logistic regression results showed that environmental, predisposing, enabling, and need factors in the Andersen model were salient features associated with odds of using pharmacy-based influenza vaccination settings instead of a doctor's office. Residents of states that allowed pharmacists as immunisers before 1999 reported greater use of pharmacy-based store settings (Odds ratio [OR] 1.31). Compared with

young adults, individuals 65 years of age and older were more likely to choose a pharmacy-based store than a doctor's office (OR 1.41) and less likely to use other community settings (OR 0.45). Compared with non-Hispanic whites, black respondents were less likely to use pharmacy-based store vaccination (OR 0.51), and multiracial and Hispanic respondents were more likely to use other settings (OR 1.47 and 1.60, respectively). Enabling and need factors were also associated with the setting.

Conclusions:

Based on this dataset of selected states from 2014, almost a quarter of US adults who reported receiving an annual influenza vaccination did so from a pharmacy-based store; 35% reported using other community-based settings that may enlist pharmacists as immunisers. There were striking disparities in use of non-traditional vaccination settings by age and race or ethnicity. Pharmacists and pharmacies should address missed opportunities for vaccination by targeting outreach efforts based on environmental and predisposing characteristics.

Bibliographical reference:

Inguva S, Sautter JM, Chun GJ, Patterson BJ, McGhan WF. Population characteristics associated with pharmacy-based influenza vaccination in United States survey data. J Am Pharm Assoc [Internet]. 2017 Nov [cited 2019 Jul 22];57(6):654-60. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28830660>

### 2.1.8 Pharmacy influenza vaccination service review

Date of publication: September 2017

Study location: Ireland

Objectives:

To review the pharmacy influenza vaccination service and look at other vaccinations suitable for community pharmacy provision.

Results:

- 84% of respondents said they had received the flu vaccination before. Overall, almost a third indicated it was their first time receiving the flu vaccine in a pharmacy.
- 19 out of 20 respondents said they were very satisfied with the amount of information received at the time of vaccination.
- 99% said that they would be likely to go to the pharmacist for their flu vaccination again.
- Patient satisfaction with the pharmacy-delivered flu vaccination service is high; 79% of respondents rated their overall satisfaction as 10 out of 10; 93% rated overall satisfaction as 9 or 10 out of 10; 99% of respondents rated their overall satisfaction as either 8, 9 or 10 out of 10.

Conclusions:

The ability to monitor vaccination coverage is a key component of any vaccination programme. In order to identify gaps and weaknesses, all EU member states need to reconsider their approach in order to collect more comprehensive and accurate information on vaccination coverage for all of those population groups that are targeted for seasonal influenza vaccination, in order to enable public health organisations to track their progress and identify obstacles to achieving national and EU targets. The Health Service Executive (HSE) vaccination portal, which pharmacists use to record all vaccines administered, could form the basis of such a system and supports the appropriateness of pharmacies as a location for receiving vaccinations. There is still great potential for the pharmacy vaccination service to grow. The HSE estimates that, between older people and at-risk people, over one million people should be vaccinated in Ireland. As the population ages and chronic disease rates keep increasing, this cohort will continue to grow.

Bibliographical reference:

Pharmacy influenza vaccination service review [Internet]. IPU Review; 2017 [cited 2019 Jul 16].

### 2.1.9 Relationship between pharmacist density and adult influenza vaccination after controlling for individual and neighbourhood effects

Date of publication: July/August 2017



Study location: United States of America

Objectives:

Since 2009, all 50 states have passed legislation to allow pharmacists to administer influenza vaccinations. Pharmacies have become the second most common place for influenza vaccination, after a doctor's office. The aim of this study was to provide nationally representative results on the relationship between pharmacist density and influenza vaccination after controlling for both individual- and county-level characteristics.

Method:

Retrospective data analysis with the use of merged individual data from the 2008–2012 Behavioural Risk Factor Surveillance System (BRFSS) and county data from the 2010 Area Health Resources Files. Sample-weighted multivariate logistic models were estimated to predict influenza vaccinations with the use of number of pharmacists per 1,000 population as the key predictor.

Results:

The number of pharmacists per 1,000 population was associated with higher odds of influenza vaccination (adjusted odds ratio [AOR] 1.13, 95% CI 1.11–1.15) and was significant for non-Hispanic whites (AOR 1.06, 95% CI 1.04–1.08) and Hispanics (AOR 1.35, 95% CI 1.24–1.48). It varied across county types and employment status. The largest effects were found in urban counties (AOR 1.16, 95% CI 1.11–1.21) and among the self-employed (AOR 1.18, 95% CI 1.10–1.26), homemakers (AOR 1.18, 95% CI 1.10–1.26), and the retired (AOR 1.18, 95% CI, 1.14–1.22).

Conclusions:

Pharmacists play an important role in influenza vaccination and are an important alternative to traditional settings such as doctors' offices and health clinics. Future research is needed to investigate reasons and barriers behind their different effects in different regions and population groups. By covering in-pharmacy vaccinations in health plans and removing other barriers, pharmacists can help to alleviate the shortage of other healthcare providers and help increase vaccination rates.

Bibliographical reference:

Gai Y, Feng L. Relationship between pharmacist density and adult influenza vaccination after controlling for individual and neighborhood effects. *J Am Pharm Assoc* [Internet]. 2017 Jul [cited 2019 Jul 22];57(4):474-82.e2. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/28479195>

### 2.1.10 Seasonal influenza vaccination in Europe

Date of publication: July 2017

Study location: 28 EU countries, Norway, Iceland, Liechtenstein

Objectives:

To update data on seasonal influenza immunisation policies (collected in previous VENICE surveys) and obtain vaccination coverage rates in EU/EEA member states for the 2012–13 influenza season in order to monitor progress — or lack thereof — towards the 2014–2015 EU target of 75% in all at-risk or targeted groups.

Method:

The survey was carried out through a web-based platform with protected access restricted to nominated experts from each EU/EEA member state. This survey was a collaborative study between the European Centre for Disease Prevention and Control (ECDC), the Vaccine European New Integrated Collaboration Effort (VENICE) Project, and the EU/EEA member states. Currently, 28 EU and three EEA (Iceland, Norway, and Liechtenstein) member states participate in VENICE. Croatia and Liechtenstein participated for the first time. The survey was conducted in March 2014.

Results:

- Of 31 responding member states, 30 recommended influenza vaccination for healthcare workers (HCWs); 25 of these had recommendations to vaccinate all HCWs; four recommended vaccination for only some HCWs. In the United Kingdom countries of Northern Ireland and Scotland, vaccination was offered to all HCWs; while in England and Wales only some HCWs were recommended vaccination.

- In all member states people with immunosuppression due to diseases or treatment, metabolic disorders, chronic pulmonary, cardiovascular and renal diseases were recommended influenza vaccination. Twenty-eight member states recommended vaccination of individuals with hepatic disease or HIV/AIDS. Fifteen recommended vaccination for those on long-term aspirin use (children <18 years old). Fifteen had recommendations to vaccinate those with morbid obesity.
- Of 31 responding member states, 28 recommended vaccination of pregnant women. Twenty-six member states recommended vaccination of all pregnant women; two recommended vaccination only for those pregnant women with chronic medical conditions. Nineteen recommended influenza vaccination for pregnant women in any trimester of pregnancy.
- Vaccination coverage rates, which were measured by analysis of administrative returns or estimated by survey methods, were known in 24 member states for older target populations and ranged from 1.0% to 77.4% (median 44.7%) in 2012–13. The coverage among HCWs was known in 13 member states, ranging from 9.5% to 75% (median 28.6%). The coverage for chronic medical conditions was provided by seven member states and ranged from 28% to 80.2% (median 45.6%) in 2012–13. The coverage for pregnant women was known in seven member states, ranging from 0.2% to 64.6% (median 25.5%) in 2012–13. Three member states were able to report vaccination coverage rates for residents of long-stay care facilities (73% in Ireland, 71.1% in Slovakia, and 89% in Portugal).

#### Conclusions:

- The results of the survey indicate that recommendations for influenza vaccination exist in most of the member states for all population groups targeted for seasonal influenza vaccination — those with chronic medical conditions, pregnant women, older age groups and HCWs. However, there was a notable discrepancy between having recommendations and the ability to monitor, and report on, vaccination coverage among those with chronic medical conditions and pregnant women. Data on vaccination for these groups was only available for less than 25% of the member states. With regard to HCWs, less than half of the member states were able to report on vaccination coverage in this group.
- Although there has been widespread consensus for many years that the older age groups should be vaccinated, the EU target of 75% was reached in only two member states in the 2012–13 season.
- The ability to monitor vaccination coverage is a key component of any vaccination programme. In order to identify gaps and weaknesses, all member states may need to reconsider their approach in order to collect more comprehensive and accurate information on vaccination coverage for all of those population groups that are targeted for seasonal influenza vaccination.

#### Bibliographical reference:

Mereckiene J. Seasonal influenza vaccination in Europe [Internet]. European Centre for Disease Prevention and Control. 2017 [cited 2019 Jul 22]. Available from: <https://ecdc.europa.eu/en/publications-data/seasonal-influenza-vaccination-europe-vaccination-recommendations-and-coverage-2007-2015>

### 2.1.11 Implementation of a vaccine screening programme at an independent community pharmacy

Date of publication: March/April 2017

Study location: North Carolina, United States of America

#### Objectives:

To implement a comprehensive vaccine screening programme and to identify best practices in workflow for such a programme.

#### Method:

- A pharmacy team member used a screening tool to identify vaccination opportunities in the patient population. Patients aged 18 years or older who entered the pharmacy workflow process were eligible for screening.
- If pharmacy staff identified needed vaccinations for a patient, a pharmacist evaluated the screening and recommended immunisation(s) to the patient. If the recommendation was accepted, the vaccine was administered. If the patient declined vaccination, a brief reason was designated from a predefined selection of choices.



**Results:**

During the 30-day study period, 631 screenings were performed. Pharmacy technicians and pharmacists performed 95.4% and 4.6% of screenings, respectively. Of completed screenings, 81.5% were completed at data entry, 13.9% at the fill station, 4.1% at prescription verification, and 0.5% during a clinical consultation. As a result of this study the following vaccines were administered: influenza (n=11), pneumococcal conjugate (n=5), pneumococcal polysaccharide (n=1), Tdap (n=5), and zoster (n=6).

**Conclusions:**

A comprehensive vaccine screening tool was successfully used by pharmacy technicians and pharmacists at data entry and fill station during the traditional workflow at an independent community pharmacy.

**Bibliographical reference:**

Rhodes LA, Branham AR, Dalton EE, Moose JS, Marciniak MW. Implementation of a vaccine screening program at an independent community pharmacy. *J Am Pharm Assoc* [Internet]. 2017 Mar [cited 2019 Jul 22];57(2):222-8. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27964886>

### 2.1.12 Impact of pharmacists as immunisers on vaccination rates: A systematic review and meta-analysis

Date of publication: November 2016

Study location: Various

**Objectives:**

To complete a systematic review of the literature on the impact of pharmacists as educators, facilitators, and administrators of vaccines on immunisation rates.

**Method:**

The study identified 2,825 articles searching the following databases from inception until October 2015: PubMed, EMBASE, Cochrane Libraries, Cumulative Index to Nursing and Allied Health Literature, International Pharmaceutical Abstracts, Google Scholar. Grey literature was identified through use of the Canadian Agency for Drugs and Technology in Health “Grey Matters” search tool. Content from relevant journals and references of included studies were also searched. Inclusion criteria were clinical or epidemiologic studies in which pharmacists were involved in the immunisation process. Studies were excluded if no comparator was reported. Two reviewers independently completed data extraction and bias assessments using standardised forms.

**Results:**

Thirty-six studies were included in the review; 22 assessed the role of pharmacists as educators and/or facilitators and 14 assessed their role as administrators of vaccines. All studies reviewed found an increase in vaccine coverage when pharmacists were involved in the immunisation process, regardless of role (educator, facilitator, administrator) or vaccine administered (e.g., influenza, pneumococcal), when compared with vaccine provision by traditional providers without pharmacist involvement. Limitations of the results include the large number of non-randomised trials and the heterogeneity between study designs.

**Conclusions:**

Pharmacist involvement in immunisation, whether as educators, facilitators, or administrators of vaccines, resulted in increased uptake of immunisations.

**Bibliographical reference:**

Isenor JE, Edwards NT, Alia TA, Slayter KL, MacDougall DM, McNeil SA, et al. Impact of pharmacists as immunizers on vaccination rates: a systematic review and meta-analysis. *Vaccine* [Internet]. 2016 Nov [cited 2019 Jul 22]; 34(47):5708-23. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27765379>

### 2.1.13 Patient feedback on the flu vaccination service provided in pharmacies

Date of publication: 2016

Study location: Ireland

Objectives:

To gain feedback, through a Pharmaceutical Society of Ireland survey, from a large number of patients on their experience of the seasonal influenza vaccination service in pharmacies across Ireland.

Method:

- A random sample of 300 pharmacies participating in the flu vaccination service were selected from the pharmacy register. The supervising pharmacist from each of these pharmacies was contacted and asked to invite people who had been vaccinated in the pharmacy to provide feedback on their experience. If the person was willing to do so, they were asked to sign a consent form and provide their telephone number so that they could be contacted by Behaviours & Attitudes for a short telephone interview.
- A total of 571 patient consent forms were returned to Behaviours & Attitudes and from this a total of 374 patient telephone interviews were completed.

Results:

- One in six respondents were receiving the flu vaccine for the first time and a third of respondents had not received the vaccine from a pharmacy before.
- Satisfaction with the service is high: 79% of respondents rated their overall satisfaction with the pharmacy-delivered service as 10 out of 10, 93% as 9 or 10 out of 10, and 99% as 8, 9 or 10 out of 10.
- Respondents stated that the primary motivation for attending a pharmacy for the flu vaccination in 2015 was the convenience and efficiency of availing of it there (longer opening hours, no need for appointments etc.) with the add-on benefit of perceived better value/lower expense.

Conclusions:

Most respondents are keen to access other services from pharmacies, and this underscores the level and extent of satisfaction with the flu vaccine service.

Bibliographical reference:

Patient feedback on the flu vaccination service provided in pharmacies [Internet]. Evaluation of the seasonal influenza vaccination service. PSI; 2016 [cited 2019 Jul 16]. Available from: [https://www.thepsi.ie/gns/Pharmacy\\_Practice/practice-guidance/PharmacyServices/Vaccination\\_Service/](https://www.thepsi.ie/gns/Pharmacy_Practice/practice-guidance/PharmacyServices/Vaccination_Service/)

### 2.1.14 Impact of pharmacists providing immunisations on adolescent influenza immunisation

Date of publication: July/August 2016

Study location: Oregon, United States of America

Objectives:

To determine if the Oregon law change in 2011 to allow pharmacists to immunise adolescents aged 11 to 17 years increased influenza immunisations or changed existing immunisation venues.

Method:

With the use of Oregon's ALERT Immunisation Information System (IIS), two measures of impact were developed. First, the change in adolescent age 11–17 influenza immunisations before (2007–10) and after (2011–14) the pharmacy law change was evaluated against a reference cohort (aged 7–10) not affected by the law. Community pharmacies were also compared with other types of influenza immunisation sites within one of the study influenza seasons (2013–14).

**Results:**

From 2007 to 2014, adolescent influenza immunisations at community pharmacies increased from 36 to 6,372 per year. After the 2011 pharmacy law change, adolescents aged 11 to 17 were more likely to receive an influenza immunisation compared with the reference population (odds ratio 1.21; 95% CI 1.19–1.22). Analysis of the 2013–14 influenza season suggests that community pharmacies immunised a different population of adolescents than other providers.

**Conclusions:**

The 2011 change in Oregon law allowed pharmacists to increase the total of influenza immunisations given to adolescents.

**Bibliographical reference:**

Robison SG. Impact of pharmacists providing immunizations on adolescent influenza immunization. *J Am Pharm Assoc* [Internet]; 2016 Jul [cited 2019 Jul 16]; 56(4):446-9. Available from: <https://www.sciencedirect.com/science/article/abs/pii/S1544319116300279> DOI: 10.1016/j.japh.2016.03.012

### 2.1.15 A national examination of pharmacy-based immunisation statutes and their association with influenza vaccinations and preventive health

Date of publication: June 2016

Study location: United States of America

**Objectives:**

To estimate the effects of pharmacy-based immunisation statutes changes on per capita influenza vaccine prescriptions, adult vaccination rates, and the utilisation of other preventive health services.

**Method:**

A quasi-experimental study that compares vaccination outcomes over time before and after states allowed pharmacy-based immunisation. Measures of per capita pharmacy prescriptions for influenza vaccines in each state came from a proprietary pharmacy prescription database. Data on adult vaccination rates and preventive health utilisation were studied using multiple waves of the Behavioural Risk Factor Surveillance System. The primary outcomes were changes in per capita influenza vaccine pharmacy prescriptions, adult vaccination rates, and preventive health interventions following changes.

**Results:**

Between 2007 and 2013, the number of influenza vaccinations dispensed in community pharmacies increased from 3.2 to 20.9 million. After one year, adopting pharmacist immunisation statutes increased per capita influenza vaccine prescriptions by an absolute difference (AD) of 2.6% (95% CI: 1.1–4.2). Adopting statutes did not lead to a significant absolute increase in adult vaccination rates (AD 0.9%, 95% CI: –0.3–2.2). There also was no observed difference in adult vaccination rates among adults at high-risk of influenza complications (AD 0.8%, 95% CI: –0.2–1.8) or among standard demographic subgroups. There also was no observed difference in the receipt of preventive health services, including routine physician office visits (AD –1.9%, 95% CI: –4.9–1.1).

**Conclusions:**

Pharmacists are providing millions of influenza vaccines as a consequence of immunisation statutes, but no significant differences in adult influenza vaccination rates are observed. The main gains from pharmacy-based immunisation may be in providing a more convenient way to obtain an important health service.

**Bibliographical reference:**

McConeghy KW, Wing C. A national examination of pharmacy-based immunisation statutes and their association with influenza vaccinations and preventive health. *Vaccine* [Internet]. 2016 Jun [cited 2019 Jul 22];34(30):3463-8 Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27219340>

### 2.1.16 National community pharmacy NHS influenza vaccination service in Wales: a primary care mixed methods study

Date of publication: March 2016

Study location: Wales

Objectives:

To explore and verify the factors that influence the relative performance of pharmacies providing NHS influenza vaccinations.

Method:

Interviews were conducted with 16 pharmacists who participated in the Welsh national pharmacy influenza service in 2013–14. A purposive sampling strategy was used. Qualitative findings were analysed using framework analysis. Potential predictors of vaccination numbers were identified from interviews and a literature review, and included in a multivariable regression model.

Results:

The contribution of community pharmacies towards vaccination in Wales is small. Findings suggest that community pharmacies reach younger at-risk individuals, in whom vaccine uptake is low, in greater proportion than influenza vaccination programmes as a whole. Extended opening hours and urban locations were positively associated with the number of vaccinations given, although pharmacists reported that workload, vaccine costs, unforeseen delays, lack of public awareness, and GPs' views of the service limited their contribution. Pharmacists, aware of the potential for conflict with GPs, moderated their behaviour to mitigate such risk.

Conclusions:

Before community pharmacies take greater responsibility for delivering healthcare services, obstacles including increasing pharmacist capacity, vaccine procurement, health service delays, managing GP-pharmacy relationships, and improving public awareness must be overcome.

Bibliographical reference:

Evans AM, Wood FC, Carter B. National community pharmacy NHS influenza vaccination service in Wales: a primary care mixed methods study. *Br J Gen Practice* [Internet]. 2016 Apr [cited 2019 Jul 22];66(645):e248-57. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4809708/>

### 2.1.17 Influenza vaccination: A cross-sectional survey of knowledge, attitudes and practices among the Lebanese adult population

Date of publication: December 2015

Study location: Lebanon

Objectives:

To evaluate the 2014–15 seasonal influenza vaccination rate as well as assess the knowledge, attitudes and beliefs among a select Lebanese population towards the seasonal influenza vaccine.

Method:

A cross-sectional survey was performed in 30 pharmacies randomly selected across Lebanon. A 19-item questionnaire was used to record influenza vaccination status, knowledge and attitudes towards the influenza vaccine among the Lebanese general population.

Results:

The survey response rate was 93%. Among the 640 study participants, the overall 2014–15 seasonal influenza vaccination rate was 27.6%. The majority of participants (72.4%) reported irregular uptake of the vaccine. Results of the multivariate analysis revealed that elderly people (odds ratio [OR] 2.25, CI 1.08–4.71), with higher education (OR 1.42, CI 1.09–1.84), higher physical activity (OR significantly higher than 1 for all categories), and

chronic respiratory disease (OR 3.24, CI 1.58–6.62) were more regularly vaccinated, while those who visit the doctor “only when needed” (OR 0.55, CI 0.34–0.88) and those who consume more than seven drinks/week (OR 0.24, CI 0.09–0.65) were less regularly vaccinated. When introducing knowledge and attitude variables to the model, “thinking that the vaccine was not needed” was the only correlate that demonstrated a significant inverse association with regular influenza vaccination (OR 0.15;  $P=0.017$ ).

Conclusions:

Suboptimal vaccination rates exist among the Lebanese ambulatory adult population. Clear misinformation on the importance of regular influenza immunisation is highlighted. This evidence underscores a compelling need to raise public awareness regarding the efficacy of the influenza vaccine.

Bibliographical reference:

El Khoury G, Salameh P. Influenza vaccination: a cross-sectional survey of knowledge, attitude and practices among the Lebanese adult population. *Int J Environ Res Public Health* [Internet]. 2015 Dec [cited 2019 Jul 16];12(12):15486-97. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/26690189>

### 2.1.18 Seven Seasons of Influenza immunisation campaigns in Portuguese pharmacies

Date of publication: 2015

Study location: Portugal

Objectives:

To provide an overview of the percentage of vaccines administered in pharmacies and other indicators over the years.

Method:

A cross-sectional study was performed at each influenza season (October to March) based on data recorded in pharmacies from 2008–09 to 2014–15. Data were first recorded on paper records and spreadsheet, and from 2012 on they were recorded directly in the pharmacy’s specific software (SIFARMA). All records are anonymously (regarding patients and pharmacy individual data) and automatically transmitted for evaluation purposes by the Portuguese National Association of Pharmacies (ANF). Vaccination records include patient name, age and sex, vaccine and batch used, route of administration, date and pharmacist name.

Results:

The estimated percentage of vaccines administered (on total vaccines dispensed) was 36.4% (2008–09), 49.7% (2009–10), 44.2% (2010–11) and 49% (2011–12). In 2012–13, the percentage was the lowest ever (38%) but increasing (40.9% in 2012–13, 49.2% as preliminary estimate for 2014–15). The preference for pharmacies was established. Until 2011–12, flu vaccines were administered almost solely in pharmacies.

Conclusions:

The first four seasons demonstrate an increase in major indicators. Since 2012–13, flu vaccines are administered free of charge in health centres to individuals aged 65 and over with no need for a prescription. By contrast, the NHS financing of vaccines and service does not occur for pharmacies. The last Government’s Report (2013–14) reports influenza coverage of 49.9% in the 65 and over subgroup, lower than in 2008–09. In 2014, the Ministry of Health and ANF signed an agreement which foresees possible incentives for pharmacies’ collaboration in public health objectives, including immunisation services. This could be an opportunity to integrate pharmacies in a national influenza immunisation campaign.

Bibliographical reference:

Horta R, Jacinto I, Guerreiro JP, Torre C, Costa Z. 7 seasons of influenza immunisation campaigns in Portuguese pharmacies. National Association of Pharmacies (ANF); 2015.

### 2.1.19 National seasonal influenza vaccination in Europe, overview of surveys conducted by the Vaccine European New Integrated Collaboration Effort (VENICE) Project

Date of publication: 2015

Study location: 28 EU countries, Norway, Iceland, Liechtenstein

Objectives:

- To collect country-specific recommendations for age, risk and targeted groups.
- To obtain vaccination coverage data.
- To update country-specific vaccination recommendations for targeted and risk groups.
- To obtain latest data on vaccination coverage.
- To identify changes and compliance with EC and WHO recommendations among the EU/EEA countries during different influenza seasons.

Method:

- Annual collaborative studies between EU/EEA countries/ECDC/VENICE Project.
- Surveys with the same methodology each year.

Results:

- All countries recommended vaccinating older age groups in the 2014–15 influenza season.
- 23 countries recommended vaccine for individuals  $\geq 65$  years.
- 10 countries reported a lower age cut-off (ranging from  $\geq 50$  to  $\geq 60$  years of age).
- Seven countries recommended vaccination of healthy children.

Conclusions:

- Recommendations for seasonal influenza vaccination are standard in most of the countries and comply with EC and WHO recommendations.
- Vaccination of children is still uncommon.
- The gap between vaccination recommendations and actual vaccination coverage exists for clinical risk groups, pregnant women and healthcare workers (HCWs), and some countries do not monitor vaccination coverage for older age groups.
- Vaccination coverage for the elderly is lagging in most of the countries except the Netherlands and UK. It did not increase in five influenza seasons and did not meet EU target.
- Vaccination coverage for HCWs and those with chronic medical conditions was moderate or low for these groups of individuals, and did not increase in five influenza seasons.
- Vaccination coverage for pregnant women was monitored by one third of countries, was moderate in the UK, but low in the remaining countries.

Bibliographical reference:

Mereckiene J, Cotter S, Johansen K, Tsoлова S, Penttinen P, Lopalco P, et al. National seasonal influenza vaccination in Europe, overview of surveys conducted by Vaccine European New Integrated Collaboration Effort (VENICE) Project. VENICE Project Gatekeepers Group; 2015

### 2.1.20 Increasing the uptake of herpes zoster vaccinations via community pharmacies

Date of publication: August 2014

Study location: USA (Massachusetts, Florida and New York)

Objectives:

To investigate the uptake of herpes zoster vaccinations in community pharmacies and the influence of state authorised pharmacist immunisation privileges on vaccination uptake rates.

Method:

- This cross-sectional study analysed herpes zoster vaccination records from 2012 administered at the Walgreens pharmacy chain.
- Vaccination uptake rates were calculated as the number of patients aged  $\geq 60$  years who received a herpes zoster vaccine per 1,000 pharmacy patients  $\geq 60$  years filling a prescription for any medicine at Walgreens during the study period.

- Rates of vaccination were examined three months before and after implementation of pharmacist immunisation privilege for herpes zoster in Massachusetts (May 2012), Florida (July 2012), and New York (October 2012).

#### Results:

- In Massachusetts, the rate of herpes zoster vaccinations per 1,000 pharmacy patients increased from 3.3 to 28.1 after pharmacists were authorised to administer vaccinations under a protocol, a 745% increase ( $P<0.001$ )
- In Florida, the vaccination rate increased from 3.4 to 16.2, a 377% increase ( $P<0.001$ )
- In New York, vaccination rate increased 803% from 1.3 to 11.6 ( $P<0.001$ ).
- These states authorised pharmacists to administer vaccinations with a patient-specific prescription.

#### Conclusions:

- After the legislation, study pharmacies had a significantly higher rate of herpes zoster vaccinations than that before the legislation. Uptake rate was highest in Massachusetts, which granted pharmacists full authorisation to administer the vaccines.
- Results suggest that community pharmacists provided additional access and convenience to herpes zoster vaccines for high-risk populations, resulting in increased uptake.
- Given the suboptimal vaccination rate of herpes zoster, states with limited or no immunisation authorisation for pharmacists should consider expanding pharmacist privileges.

#### Bibliographical reference:

L. Fensterheim, M. Taitel, A. Cannon, H. Leider. Increasing the uptake of Herpes Zoster vaccinations via community pharmacies. *Journal of the American Academy of Dermatology*, May 2014, Vol.70(5), pp. AB81-AB81.

### 2.1.21 Pharmacists as providers: targeting pneumococcal vaccinations to high risk populations

Date of publication: October 2011

Study location: United States of America

#### Objectives:

To evaluate the impact of pharmacists educating at-risk patients on the importance of receiving a pneumococcal vaccination.

#### Method:

Using anonymised claims from a large, national pharmacy chain, all patients who had received an influenza vaccination between 1 August and 14 November 2010 and who were eligible for pneumococcal polysaccharide vaccine (PPSV) were identified for the analysis. Based on the Advisory Committee on Immunisation Practices recommendations, at-risk patients were identified as being aged over 65 years or as aged two to 64 with comorbid conditions. A benchmark medical and pharmacy claims database of commercial and Medicare health plan members was used to derive a PPSV vaccination rate typical of traditional care delivery to compare with pharmacy-based vaccination. Period incidence of PPSV was calculated and compared.

#### Results:

Among the 1.3 million at-risk patients who were vaccinated by a pharmacist during the study period, 65,598 (4.88%) also received a pneumococcal vaccine. This vaccination rate was significantly higher than the benchmark rate of 2.90% (34,917/1,204,104;  $P<0.001$ ) representing traditional care. Patients aged 60–70 years had the highest vaccination rate (6.60%; 26,430/400,454) of any age group.

#### Conclusions:

Pharmacists were successful at identifying at-risk patients and providing additional immunisation services. Concurrent immunisation of PPSV with influenza vaccination by pharmacists has potential to improve PPSV coverage. These results support the expanding role of community pharmacists in the provision of wellness and prevention services.



Bibliographical reference:

Taitel M, Cohen E, Duncan I, Pegus C. Pharmacists as providers: targeting pneumococcal vaccinations to high risk populations. *Vaccine* [Internet]. 2011 Oct [cited 2019 Jul 22]; 29(45):8073-6. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/21864625>

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4. Goad J, Taitel M, Fensterheim L, Cannon A. Vaccinations administered during off-clinic hours at a national community pharmacy: implications for increasing patient access and convenience. *Ann Fam Med* [Internet]. 2013 Sep [cited 2019 Aug 16]; 11(5):429-36. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/24019274>



## 3 Roles and technical requirements for pharmacy-based vaccine-related services

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### 3.1.1 Introduction

Pharmaceutical services play an important role in public health, contributing to the improvement of the quality of life of patients and communities. Community pharmacies stand as a reference point for patients and represent, in many cases, the first point of contact with the health system.

Pharmacists' functions and responsibilities have evolved in recent years, with pharmacists nowadays playing the role of health promoters, advocates of responsible use of medicines, and pharmaceutical care providers among other important roles. Vaccination services are a part of this dynamic shift of the role of the pharmacist beyond dispensing, with pharmacists having the potential to be involved in all stages of the development, promotion, supply, administration and monitoring of vaccines. However, their participation in such a process is quite heterogeneous, mainly depending on the country of practice.

Many of the points described below are applicable to any country, irrespective of its income level. However, in every nation, it is paramount to consider the existing scenario, the regulatory framework, the available resources (including workforce and infrastructure, among others) and the country's needs in terms of vaccination services.

### 3.1.2 Vaccine-related roles of community pharmacists

Vaccination services in community pharmacies, whether intra- or extramural, are made up of a set of activities that pharmacists deliver to meet the health needs related to immunisation and the vaccination status of individuals. The purpose of these services is to improve public health by optimising access and vaccination coverage. In this regard, six working areas were identified in which the pharmacist should participate to ensure timely, safe, accessible and efficient services for the patient.

#### 3.1.2.1 Advocacy for vaccination

Advocacy for health is a combination of individual and social actions aimed at achieving political commitments, social acceptance, and support for health policies and systems for a specific health objective or programme. In this case, advocacy is focused on vaccination services by community pharmacy and it can be achieved through the following actions:

- Participating in and/or advising national or local immunisation committees and groups
- Actively participating in educational processes and providing updated and timely information to patients and the population regarding vaccination
- Distributing printed or electronic information addressed to patients and the community
- Conducting and/or participating in national vaccination campaigns

#### 3.1.2.2 Management of the vaccine supply chain

Management of the vaccine supply chain includes information, acquisition, programming, storage, distribution, control, and evaluation stages. In each of these phases, pharmacists must be involved as medicines experts, both nationally and locally. Actions include the following:

- Participating in the definition of the vaccines that will be supplied

- Participating in the needs analysis about provision and assignment of financial resources, according to vaccination objectives and priorities
- Participating in the acquisition processes of vaccines, ensuring that they come from reliable and recognised quality sources
- Establishing and complying with the technical conditions related to conservation and safekeeping of vaccines
- Ensuring the compliance with technical requirements related to vaccines conservation at all stages of their distribution and transfer, all the way from manufacturers to the administration to an individual
- Ensuring compliance with the quality, safety and efficacy of vaccines
- Participating in the administrative control of the supply process
- Performing studies to determine the consumption, costs and impact of vaccines (for example, increased coverage)
- Obtaining, analysing and interpreting data corresponding to the vaccines supply process

### 3.1.2.3 Counselling on vaccination status

Pharmacists are experts in medicines and thus possess the knowledge and skills to offer information, advice and assistance in immunisation and vaccination. Their role as a counsellor with regard to medicines and vaccines includes the following actions:

- Reviewing patients' vaccination status according to vaccination schemes established in the country
- Developing vaccination reminder systems for the patient to keep their vaccination schedule up to date
- Evaluating special health situations and contraindications related to vaccination and, if appropriate, refer the patient to a physician for evaluation
- Identifying and providing guidance to risk groups, especially those that are not covered by national and/or mandatory vaccination schemes
- Detecting, reporting and following up on events that have been reported to be attributable to vaccinations (in other words, suspected adverse reactions to vaccines) to the national and/or regional pharmacovigilance unit
- Detecting, reporting and monitoring medication errors (prescription, indication, dispensing, administration) related to vaccines

### 3.1.2.4 Dispensing vaccines

It is important to note that dispensing vaccines is subject to regulation in each country, depending on whether there is a need for a medical prescription or not. In any case, dispensing involves the delivery of information to the patient, including the essential conditions for the adequate conservation of the vaccine until its administration. It is necessary to keep a record of all vaccines dispensed at the pharmacy, either with or without a prescription.

### 3.1.2.5 Pharmaceutical recommendation (indication) of vaccines

Pharmaceutical recommendation/indication of vaccines is carried out according to national vaccination programmes and/or guidelines about the prevention of infectious diseases. It is important to highlight the importance of registering the vaccines recommended by the pharmacists.

### 3.1.2.6 Administration of vaccines to patients

The administration of a vaccine in a community pharmacy corresponds to the procedure by which patients receive a vaccine administered by the pharmacist or another authorised member of the pharmacy team, either orally or parenterally (intramuscular, intradermal or subcutaneous), to produce the specific immunity induced by the product. Actions related to the administration of vaccines include:

- Registering and documenting all administered vaccines: registration in the patient's vaccination record (electronic record or vaccination card) and in the pharmacy records
- Reporting the vaccines administered to the official national immunisation record
- Managing waste products related to the administration of the vaccine
- Following up on patients to promote compliance with vaccination schemes

### 3.1.3 Essential requirements

To ensure pharmacists can perform activities related to vaccination services in the community pharmacy, it is necessary to have the following elements in place:

#### 3.1.3.1 Legal and technical framework

As part of the legal and technical framework, it is necessary to have:

- National regulation that identifies and defines the vaccination activities that may be performed by pharmacists or other authorised professionals in the pharmacy
- Guidelines and standard operating procedures for every vaccination-related activity performed at the pharmacy: promotion of vaccination, management of the supply chain of vaccines, counselling on the vaccination status of the patient, dispensing of vaccines, pharmaceutical indication/recommendation of vaccines, and administration/application of vaccines, either intra- or extramurally
- Technical specifications of the professionals required, infrastructure, equipment, materials, management, safety and hygiene, documentation and continuing education that a pharmacy must comply with if it offers vaccine administration services

These technical specifications should include guidelines and/or standard operating procedures for:

- Storage and conservation of vaccines in the pharmacy (compliance with cold chain requirements)
- Vaccine administration
- Registration of vaccines indicated/recommended and/or administered
- Registration and reporting of administered vaccines
- Reporting suspected adverse reactions or medication errors related to vaccines
- Elimination of hazardous (potentially infectious and contagious) materials and waste products from the administration of vaccines
- Cleaning the area reserved for the administration of vaccines in the pharmacy
- Managing emergencies arising from the administration of vaccines in the pharmacy

#### 3.1.3.2 Requirements of pharmaceutical professionals

The requirements of pharmaceutical professionals include:

- Knowledge about infectious diseases preventable by vaccination, immunisations, type of vaccines available in the country, management of the supply chain of vaccines, national vaccination schemes, specific vaccines for the various risk groups, basic considerations in administration of vaccines (oral or injectable), pharmacovigilance of vaccines, handling of materials and infectious waste
- Communication skills and teamwork with other health professionals and the community
- Technical skills for the administration of injectable medicines by the intramuscular, intradermal and subcutaneous routes
- Participation in a continuous education programme in the vaccination area, according to vaccination activities authorised to be carried out in the pharmacy

For more in-depth information about the required competencies for vaccine-related roles by pharmacists, see Chapter 4, Developing a competent pharmacist workforce for vaccine-related roles.

### 3.1.3.3 Infrastructure

Good pharmacy practice (GPP) is the practice of pharmacy that responds to the needs of the people who use pharmacists' services to provide optimal, evidence-based care.<sup>1</sup> In the context of vaccination, GPP requirements serve to ensure safe, timely and effective immunisation. The following requirements regard the logistics and operational conditions for offering optimal vaccination services.

The requirements regarding infrastructure include:

- Pharmacies should include a suitable and comfortable room in compliance with the technical requirements for the administration of injectable medicines.
- This room should be sufficiently isolated to ensure confidentiality to address patient concerns and administer the vaccine.
- As vaccination services may require a considerable amount of time, including waiting time after receiving a vaccine to assess for any adverse effects, the waiting area should be sufficiently spacious for all patients to wait comfortably.

### 3.1.3.4 Orders and procurement

Vaccines should be procured from reliable sources that offer a wide selection of vaccines with updated information regarding stock levels and pricing. Policies and procedures should be redacted and reviewed to ensure substandard, adulterated, unlicensed and spurious, falsely labelled, falsified or counterfeit vaccines are neither procured nor allowed into the system.

Policies and procedures regarding the procurement of vaccines in the case of shortages or disaster or pandemic preparedness strategies as well as regarding stock rotation and product recalls should also be developed and reviewed.

### 3.1.3.5 Storage conditions and storage equipment

Vaccines are sensitive medical products that require particular attention with regard to their storage. Vaccines should be stored in their designated area, away from potential sources of contamination (such as food, beverages or high risk medicines) or potential changes in their storage conditions (such as sources of water, light or extreme temperatures).<sup>2</sup>

For refrigerated vaccines, measures should be taken to ensure the integrity of the cold chain.<sup>2</sup> Policies and procedures regarding the management of the cold chain should be developed and reviewed.

Refrigeration equipment should provide the necessary temperature regulation system and temperature monitoring capacity. The equipment should also be regularly evaluated to ensure its optimal functioning capacity.<sup>2</sup>

### 3.1.3.6 Dispensing and patient records

It is important to safely archive documentation regarding prescriptions for vaccines, immunisation records, and other relevant information. Utilising an organised archive system or ensuring sufficient electronic resources to keep record of this information is necessary.

### 3.1.3.7 Equipment for vaccine administration and disposal

The necessary supplies for vaccine administration should be readily available at all times. These supplies include syringes, needles, alcohol wipes, sticking plasters, sterile gauze pads and medical gloves.<sup>3</sup>

The necessary supplies to ensure safe disposal of vaccines and other supplies should be readily available at all times. These include disposal containers specifically designed for sharp objects. Policies and procedures should be developed and reviewed to ensure the adequate disposal of these products.

### 3.1.3.8 Equipment and medicines for anaphylaxis management

The necessary supplies and medicines for anaphylaxis management should be readily available at all times. These supplies include tongue depressors, light sources, stethoscope, sphygmomanometer and pocket masks.<sup>3,4</sup> Oxygen, IV lines and fluids may also be included.<sup>3,4</sup> Necessary medicines include epinephrine for anaphylactic reactions, and H<sub>1</sub> antihistamines, such as diphenhydramine, for hives or pruritus.<sup>3,4</sup>

Policies and procedures regarding anaphylaxis management should be developed and reviewed.

### 3.1.3.9 Information, policies, and procedures

Documents regarding vaccination, including the benefits and common concerns about vaccination as well as vaccine-specific information, should be readily available to distribute to patients.

Policies and procedures should be readily available for consultation by the pharmacy workforce.

### 3.1.3.10 Materials and supplies

The requirements regarding materials and supplies include:

- Access to objective and updated sources of information on immunisations, vaccines, clinical guidelines for managing infectious diseases preventable by vaccination, and official national vaccination schemes
- Printed or electronic materials designed to be used in informative, educational processes, and vaccination campaigns according to the target population
- Access to the patient's vaccination history, either physical (for example, vaccination card) or electronic (patient's medical history, centralised national immunisation record)
- Medicines and medical materials for the administration of vaccines and those used in case of an emergency secondary to the administration of a vaccine
- Materials for the proper disposal of infectious-contagious materials (waste materials and products from the administration of vaccines)

### 3.1.3.11 Economic sustainability of vaccination services in the pharmacy

The requirements regarding the economic sustainability of vaccination services in the pharmacy include:

- Definition of the types of vaccines that will be supplied by the pharmacy
- Definition of the providers of vaccines that will be supplied by the pharmacy (public and/or private)
- Definition of payment fees for the provision of the vaccination service by the pharmacy (public fee, payment for private health insurance, payment for reimbursement, direct payment, or other)

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## 4 Developing a competent pharmacist workforce for vaccine-related roles

### Author:

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Pharmacists play a key role in immunisation, including the safe supply and dispensing of vaccines. The accessibility and expertise of pharmacists also contribute to educating their patients and advocating for vaccination as part of health promotion initiatives and activities. Nonetheless, expanding pharmacists' scope of activity to administer vaccines themselves — as they are already authorised to do in several countries — will assuredly contribute to increasing vaccine coverage and ultimately improving the health of their communities. This opportunity thus sheds light on the need for the pharmacy workforce to develop and maintain the necessary competencies to safely and effectively deliver vaccination services.

The suggested set of competencies encompasses the knowledge, skills, and abilities to provide optimal services related to vaccines and should be considered according to the relevant framework and to the distinctive features of pharmacy practice of each respective country or territory. The competencies outlined in the American Pharmacists Association Pharmacy-Based Immunisation Delivery activity describe key information in determining the following competencies.<sup>1</sup>

### Competency 1: Integrate public health knowledge in advocating for vaccines

Knowledge regarding the legal, ethical and health implications of vaccinations is required by the pharmacy workforce because they interact directly with patients. The pharmacy workforce should be equipped to promote the benefits of vaccines for patients, communities and health systems, and to address any questions or concerns.

In countries where pharmacists can administer vaccines, the legal framework surrounding their authorisation to vaccinate is foundational and is thus required to be known, understood and applied by the pharmacy workforce. Educating patients regarding this legal framework also reinforces the breadth of potential ways in which pharmacists are invaluable partners in helping manage and improve their patients' health.

The potential health benefits of vaccines, at both individual and societal levels, are also important for the pharmacy workforce to comprehend and communicate to patients. The development of vaccines has led to the reduction in rates of diseases, even to the point of eradicating certain diseases that were once severe and even deadly.<sup>2</sup> Healthcare-associated costs to manage these diseases are also avoided through vaccination.<sup>2</sup>

### Competency 2: Utilise principles of immunology, vaccine development and vaccine-preventable diseases to optimise vaccine services

The pharmacy workforce's knowledge of vaccine services is not only limited to the framework that surrounds it, but should also integrate immunological principles, adequate comprehension of the developmental process of vaccines and information on the specific diseases that are prevented by vaccination.

Grasping principles of immunology will essentially allow the pharmacy workforce to explain in appropriate, clear terms how vaccines work from a physiological perspective. The knowledge of passive and active types of immunity, the mechanism of action of vaccines, and the principles of herd immunity are among some of the essential topics to not only understand and integrate, but also to educate patients.<sup>3,3</sup>

Furthermore, understanding how vaccines are developed is equally important, and knowing how to access information regarding doses, methods of administration as well as the characteristics of different vaccines are necessary to individualise vaccine administration.

The understanding of vaccine-preventable diseases is also an essential component in educating patients.<sup>3,3</sup> The clinical features of these diseases that are prevented by vaccination, as discussed from a public health perspective, make up a significant portion of reinforcing the benefits of vaccines. Information regarding vaccination regimens as well as the immunisation schedule are also important matters to discuss.

### Competency 3: Utilise clinical judgement to screen patients as well as individualise and monitor vaccine therapy



The pharmacy workforce is required to put into practice their public health and theoretical knowledge of vaccines along with their clinical analysis to provide effective and safe vaccine services. Appropriate leaflets and informational resources should be provided to patients to furnish them with useful information regarding the vaccine.

The development of this competency is necessary to screen patients for vaccine eligibility, identify contraindications and precautions to administration of vaccines and individualise immunisation, as well as monitor for and manage potential adverse effects, among other measures.<sup>3,3</sup>

Screening patients for vaccine eligibility as well as identifying contraindications and precautions to vaccine administration requires a proper analysis of the patient's health record and medication profile among other clinically relevant information. Pharmacy support personnel can also assist pharmacists in screening patients based on pre-determined algorithms and procedures.

The individualisation of vaccine therapy primarily consists of the analysis of the patient's characteristics, past medical history and medication profile, but also resonates with the principle of patient-centred care. For example, selecting the appropriate vaccine according to the immunisation schedule or the timing of other vaccines, as well as the preferred route of administration, are all part of the practical competency of pharmacists.<sup>4</sup> Pharmacy support personnel can also assist pharmacists in individualising vaccination therapy by administering standardised questionnaires to patients to better understand their preferences.

The monitoring of adverse effects as well as their management is pivotal to the pharmacists' role in vaccination. With the authorisation to administer vaccines comes the responsibility of providing appropriate follow up, particularly for adverse events. Pharmacists should possess knowledge on the potential of adverse events, their incidence, their risk for harm, and their methods of management, including basic life support and management of anaphylactic reactions.<sup>5</sup> Pharmacy support staff may also assist pharmacists by monitoring for any signs or symptoms that may be attributed to occurrence of any adverse effects that would require the attention of the pharmacist.

#### **Competency 4: Ensure the safe administration of vaccines**

Knowing how to safely administer vaccines is an important competency to be developed as well as be periodically reassessed. The knowledge of different sites of administration as well as methods of administration of intramuscular, subcutaneous, intradermal or intranasal vaccines are essential to ensure the safe administration of vaccines.

Having access to the necessary equipment to ensure secure administration of vaccines and proper disposal is equally important.

#### **Competency 5: Optimise vaccination services in the pharmacy setting**

The logistical requirements for offering optimal vaccine services, including the necessary infrastructure and equipment, must not be overlooked. The knowledge of these requirements and the capacity to set them in place in an organised manner remains a foundational competency to ensuring optimal vaccination services in the pharmacy setting.

Ensuring efficient pharmacist-led vaccination services begins with integrating knowledge on the current vaccine market, supply chain and local health services as well as utilising the necessary resources for construction, disposal and waste management, and information technology. Knowledge of the operational requirements of vaccination services to ensure the appropriate ordering, reception, storage and disposal of vaccines is an important competency to be acquired. Integrating these requirements is necessary to ensuring there are adequate physical spaces and informational resources to deliver optimal vaccination services.

Optimising vaccination services also includes developing and reviewing policies and procedures to address optimal workflow practices as well as utilising promotional strategies to advocate for pharmacist-led vaccination services.

By integrating public health knowledge, theoretical principles on immunology and vaccination, clinical analysis, and safe administration techniques with knowledge on the logistical needs of vaccination services, the pharmacy workforce will be well equipped to safely and effectively deliver services related to vaccines.



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## 5 Implementing a vaccination service at the pharmacy level

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The time and resources required to set up and implement a vaccination service should not be underestimated. There are a number of factors that need to be considered and addressed in advance of setting up and implementing a successful vaccination service in your pharmacy, and it is important that you fully understand the requirements and potential pitfalls. To ensure that you are able to roll out a successful service it is good practice to:

1. Start small by developing and delivering a small and structured pilot service
2. Evaluate your pilot service, identifying successes and challenges
3. Use the data from your evaluation to make recommendations for continuous service improvement
4. Use the above learning to improve and expand your service

The purpose of this chapter is to provide you with a series of practical checklists to assist you with your planning, set up and coordination of the essential tasks and activities involved at each stage of the process, including guidance on how best to develop, deliver and evaluate your service.

### 5.1 What type of vaccination service will you be offering?

The type of vaccination service you will be offering will depend on the priority and demands in a particular geographical area (e.g., does demand exceed supply?), the service users and the feasibility of implementing a particular vaccination service in a pharmacy. In advance of choosing and setting up a vaccination service, it may be helpful to consider the following points:

- What are the regulatory requirements in your country/jurisdiction?
- Are there any professional guidelines and/or standards that you will need to adhere to, to ensure best practice?
- Which stakeholders (e.g., department of health, relevant regulatory bodies and other vaccination providers) are likely to be able to help you develop and implement your vaccination service? You should aim to collaborate/coordinate with other healthcare providers where possible.
- Are there any existing vaccination campaigns (local, regional or national) that could help you with the development, implementation and evaluation of your vaccination service?
- Who is legally authorised and competent to provide vaccination services in your pharmacy?
- Who can be vaccinated in your pharmacy and which vaccines can be administered?
- Does the service user need a prescription and, if so, what impact would this have on the delivery of your service?
- Is consent from the service user required?
- What procedures need to be followed if there is an adverse event following vaccination (reporting to vaccination registers, reporting adverse events, monitoring and auditing of vaccination services)?
- What documentation and records (mandatory and non-mandatory) need to be kept?
- Will you be audited to ensure compliance with standards and regulatory requirements?
- Are the pharmacy's insurance policies adequate for the delivery of vaccination services you wish to offer?

For the development and delivery of a small pilot that can then be expanded we suggest the following approach:

1. Choose one area for service delivery, e.g., a small number of pharmacies in a particular region of the country where you think you could generate encouraging results
2. Choose one type of vaccination, e.g., influenza (flu)
3. Choose one target population, e.g., adults over 65 years old

## 5.2 Plan and organise your team

To deliver a successful service you will need a supportive and effective team working with you. Take the time to ensure that everyone in your pharmacy, even those not directly involved, are informed and comfortable with this new service and the associated change. Staff should also be fully vaccinated to protect their health and the health of your service users. Other considerations include:

- Assign a lead or coordinator (and a co-lead backup) for your vaccination service to ensure the service runs as smoothly as possible
- Determine who (legally) can and will be responsible for:
  - Informing and advising service users about their vaccination
  - Arranging appointments and handling or referral of service user queries or complaints
  - Managing the inventory and ordering supplies
  - Monitoring the temperature in the vaccines' storage units (at least twice a day)
  - Administering vaccines
  - Dealing with adverse events and emergencies
  - Dealing with all related administrative tasks (vaccination records, invoices, reimbursements, etc.).
- Determine who will be legally accountable for the service provided:
  - The pharmacy owner
  - The superintendent
  - The manager
  - The professional administering the vaccine
- Determine who needs to be present when a vaccine is administered; in some countries, in addition to the pharmacist administering influenza vaccine, a second (appropriately trained) pharmacy staff member must also be present

### 5.2.1 Ensure your team is appropriately trained

All healthcare professionals providing vaccination services must possess relevant knowledge and be appropriately trained to administer vaccines and injectable medicines. It is also important to consider whether training requirements will vary for different staff involved in the service, e.g., for students, registered pharmacists, pharmacy technicians and assistants.

The content of the training courses may vary. However, they generally include the following topics:

- General immunisation concepts, vaccine preventable diseases
- Roles and responsibilities of the staff involved in the vaccination service
- Communicating with patients and the public about vaccination
- Strategies for improving vaccination rates
- National Vaccination Schedule and vaccines provided under the vaccination service
- Policies and procedures, legislation and good practices
- Safe handling, storage and disposal of vaccines and vaccination material
- Administration of vaccines and injectable medicines
- Safety procedures, warnings and precautions
- Infection prevention and control
- Waste management
- Contraindications, adverse events that may occur from a vaccination, allergic reactions, anaphylaxis and counter-measures
- Roles and responsibilities during an emergency situation arising from a vaccination
- First aid, basic life support (may include automated external defibrillation), cardiac pulmonary resuscitation (CPR)
- Monitoring requirements for the vaccination service
- Documentation, record keeping and reporting, including policies and procedures for collecting patient information
- Privacy and confidentiality
- Relevant resources — legislation, standards, guidelines, and references

Other factors to consider when organising staff training include:

- Does the training have to be recognised, approved, accredited or certified?
- What level will the training be delivered at, e.g., undergraduate, postgraduate?
- How will the training be delivered, and by whom?
- What will the duration of the training be?
- What is the cost? Will it be paid by the employer or by the employee?
- Will there be a final assessment?
- Will a certificate of completion be issued? If so, for how long will it be valid?
- Will there be a mandatory refresher? If so, how frequently?

### 5.2.2 Ensure you have sufficient human resources

The type of service you offer will impact on your staffing levels so it is important to coordinate this with your staffing plan. You will need to make decisions on the following:

- Will you be offering your vaccination service every day or only on specified days/times?
- Will the service be offered by appointment or on a walk-in basis, or a combination of both? If so, a vaccination booking and reminding service will need to be developed.
- The actual time required to administer the vaccine will need to be taken into account. In addition, the time required to provide a vaccination service will vary depending on the number of staff members involved. You may need to consider whether additional staff, including pharmacists, will need to be recruited.

## 5.3 Logistical considerations

### 5.3.1 Plan your vaccination area and workspace

Your workspace should be well planned to enable the delivery of an effective vaccination service:

- Aim to have a private (or semi-private) consultation area
- The area should be large enough to:
  - Accommodate the service user and their carer, if required
  - Accommodate the equipment needed to store, prepare, administer and dispose of vaccines and supplies
  - Allow surface, space and equipment required to respond to any adverse events and medical emergencies
  - Allow space for a computer if required to record vaccination data
- Good lighting, ventilation and hand washing facilities should be made available

### 5.3.2 Managing your vaccination supplies

You will need to ensure you have the following supplies in place before you offer your vaccination service:

- Vaccine administration supplies, including syringes, needles, alcohol wipes and medical gloves
- Appropriate equipment for safe disposal of biohazardous materials, sharps and other medical waste, e.g., a sharps container; you will also need to set up a waste disposal service if you do not already have one in place
- Emergency response supplies — materials required to treat an anaphylactic event and other emergencies, e.g., anaphylaxis response kit
- Consider where you will order your vaccination supplies from:
  - Directly from pharmaceutical manufacturer(s)
  - Directly from pharmaceutical wholesaler(s)
  - Provision through your health department
- Ensure you gather and file all the necessary documentation pre- and post-ordering your vaccines
- Ensure you have adequate vaccination supplies to meet service demands

### 5.3.3 Ordering your vaccines

Influenza (flu) is the vaccination most commonly administered in pharmacies around the world<sup>1</sup>. Other frequently administered vaccinations include pneumococcal and travel vaccines and, in some countries, pharmacies are permitted to provide vaccinations which are part of the national vaccination schedule.

There are currently over 26 infectious diseases that can be effectively prevented by a vaccine<sup>2</sup>:

Human papillomavirus (HPV)	Lyme disease	Rubella
Cholera	Malaria	Shingles
Dengue	Measles	Smallpox
Diphtheria	Meningococcal meningitis	Tetanus
<i>Haemophilus influenzae</i> type b (Hib)	Mumps	Tick-borne encephalitis
Hepatitis A	Pertussis (whooping cough)	Typhoid fever
Hepatitis B	Pneumococcal disease	Tuberculosis (TB)
Hepatitis E	Poliomyelitis	Varicella (chickenpox)
Influenza (flu)	Rabies	Yellow fever
Japanese encephalitis (JE)	Rotavirus gastroenteritis	+ Combined vaccines

Ordering the vaccines should be the last step before service delivery. Vaccines are expensive and have a limited shelf-life so careful planning and effective stock management systems are essential.

### 5.3.4 Ensure you have effective vaccine storage systems

It is important that correct storage procedures for vaccines are adhered to, including:

- Appropriate vaccine storage equipment to ensure cold-chain maintenance:
  - It is recommended that you have separate fridge and freezer units (rather than one combined fridge/freezer unit) with capacity to ensure the safe storage of vaccine products
- Temperature monitoring equipment:
  - Before ordering the vaccines, ensure your storage equipment is working properly, i.e., ensure the fridge/freezer temperatures have been stable within the recommended range for at least one week prior to ordering your vaccines

Continuously develop, improve and adhere to the relevant protocols for safe and effective storage of vaccines and vaccination supplies.

## 5.4 Costing, service payment and reimbursement

It is important that you develop a project plan, including timelines, for service implementation, budgeting and costing to patients. You will need to determine the following:

- How much will it cost to setup and run your vaccination service?
- Do reimbursement schemes apply (e.g., through national government schemes)? See Chapter **Error! Reference source not found.**
- Will the vaccination service be paid for by the service user (including the cost of the vaccine and/or administration service)? If so, ensure that the costs are clearly visible in your pharmacy (e.g., on a poster).

## 5.5 Providing care to service users

It is essential that you implement a system that ensures you are offering an equitable vaccination service, i.e., that all your service users are offered appropriate vaccination information and/or vaccine administration. Specific considerations when providing care to your service users include:

- Ensuring the patient's history is reviewed
- Ensuring you consider service users' age (child, adolescent or adult), special populations, health status and high-risk patient groups (e.g., patients with long-term conditions or multi-morbidity, immunocompromised patients, pregnant patients and patients under specific treatments)

- Ensuring pre-immunisation checklists are used to identify contraindications or precautions to the vaccines to be administered
- Ensuring you are compliant with regulatory prescription requirements
- Ensuring you have robust processes in place for vaccine administration, to identify and manage adverse events following vaccination and to ensure adequate provision of aftercare to service users
- Ensuring patient confidentiality

### 5.5.1 Providing vaccination information and advice to service users

Pharmacies have an essential role in public health and can make a significant contribution to vaccination uptake by informing and educating service users about their vaccines. To help raise awareness, it may be useful to integrate promotional activities into your vaccination service; these could include developing and distributing leaflets, letters and chart stickers, or displaying posters and other resources in public spaces. It may also be useful to coordinate your promotional activities with other existing (multidisciplinary) campaigns. You could, for example, consider setting up a partnership with a physician to establish a local vaccination protocol.

The type of information you provide will depend on your service users and the type of vaccination services you provide. Ensure you have considered the following points:

- Information and advice should be provided to service users, including information about the pros and cons of vaccinations; your staff must also be mindful of different cultural and religious beliefs and prepared to address any misconceptions about vaccination
- Ensure that the services provided are clearly visible in the pharmacy, including information about schedules, cost or other important considerations
- Emergency response protocols should also be clearly displayed.

### 5.5.2 Vaccination records

Effective and systematic vaccination records are essential for service delivery as they can help identify patients and target groups for vaccination, ensure vaccination schedules are met and, as a result, contribute to an increase in vaccine uptake. The information recorded can also be used for service evaluation and improvement and to ensure integration of local vaccination services (e.g., physician-pharmacy-school) through information sharing. Ensure you are compliant with regulatory requirements (national/jurisdiction) — check with your health department or regulatory body if there is a systematic vaccination record system or registry that you should adhere to. Other considerations include:

- Consent — is a patient-signed consent form required before administration of the vaccine?
- Record format — will records be paper or digital/electronic; will there be a patient's vaccination card? Consider whether you will need new software
- Record storage — where will vaccination records be kept? How will they be organised? How long will you keep them for?
- Details that should be recorded:
  - Individual details: identification number, name, age, gender, contact details, medication, allergies
  - Product details: name/type, name of manufacturer, brand, marketing authorisation number, batch number and expiry date of the vaccine
  - Administration service details: route and site of administration, dose, date/time, funding source, details of the professional who prescribed the vaccine, details of the professional who administered the vaccine, adverse events
- Storage and use and sharing of recorded information:
  - Healthcare centres, community pharmacies, hospitals, schools, private sector; be aware that there may be significant differences in procedures and systems between the public and private sector
  - Consider patient confidentiality, data ownership and management.
- It is important to ensure you also record enough information to assist you with monitoring and auditing of vaccination services; you may also need to collect additional information to help with the service evaluation

## 5.6 Evaluating your vaccination service

In most cases, evaluation is used to assess the extent to which a service has achieved its objectives. The findings from a robust evaluation can not only inform you whether your vaccination service was successful, but also why it was successful, and how you can improve and/or expand your service. If your service has not achieved its objective, the findings from the evaluation can help explain why, and identify areas for improvement.

The most well-known distinction in evaluation types is between formative and summative evaluation. The formative evaluation examines the delivery and the quality of the implementation of a service in order to suggest areas for improvement. It is used to feed into a continuous development of a project/service, through ongoing learning and development in response to interim findings. Some examples of formative evaluation questions might include:

- What are the strengths and weaknesses?
- What works and what doesn't work?
- What is the feedback from service users about what should or could be improved?
- How can you make it more cost-effective?

In contrast, the summative evaluation looks at the effects or outcomes of a project/service, for example, what has happened subsequent to delivery of your service, and assessing whether you can confidently infer that your service caused a particular outcome. Some example of summative evaluation questions might include:

- Does your vaccination service meet your service users' needs effectively and efficiently?
- What difference is your vaccination service making? To whom and why?
- To what extent can the outcomes be attributed to your vaccination service, e.g., increased uptake of vaccinations in the area due to increased service hours/convenience?
- How do outcomes and costs compare with those of other options available? Is your service cost-effective?
- Should your service continue to be delivered?
- Is your vaccination service ready for a roll-out or expansion?

It may not be possible to formulate evaluation questions without using a comparator (baseline) — your service led to improved outcomes compared with what? Ultimately, the comparison made will depend on the evaluation questions that need to be addressed, as well as practical issues such as budget and expertise.

### 5.6.1 Formulating questions

Important points to consider when developing evaluation questions:

- What are the aims and objectives of your vaccination service?
- Why are you conducting an evaluation?
- What are your intended outcomes and how will you use the information collected?

Ensure your evaluation questions are developed with stakeholders' involvement (including service users), or that you at least obtain feedback from stakeholders as part of the process.

When drafting questions, ensure they are:

- Clear and easy to understand
- Coherent, relevant, measurable and time-bound

Ensure, also, that it is possible to identify what information is required to answer and how the information can be collected.

### 5.6.2 Choosing your method

The approach you take for your evaluation will be determined by its aims and objectives and therefore the methods and tool used will need to be appropriate for your questions and desired outcomes. Generally, an evaluation involves a combination of quantitative (numbers) and qualitative (words) methods but this will depend on a number of factors: the purpose, scale, time and resources available. It is recommended that you explore further resources and seek expert assistance as and when required.



### 5.6.3 Collecting and analysing data

Where possible, data that is routinely available (e.g., collected as part of your vaccination records) should be utilised for the evaluation. However, additional information may be required, such as understanding the public opinion about your service. It is vital that a practical approach to collecting data is developed and integrated into your service so that it does not impact on the day-to-day workflow.

A simple method of collecting feedback from your service users could be in the form of a survey (example in [Appendix 1](#)). Your survey will need to be tailored to your service and what you are trying to find out:

- Keep it clear and simple; use closed questions as much as possible (i.e., yes/no, good/bad, etc.) and provide response categories for respondents to select — this will make the survey easier for your service users to complete and for you to analyse
- Keep it short (ideally, no longer than one page and taking less than five minutes to complete)
- Be careful not to include any sensitive questions
- Do not use jargon, abbreviations or vague terms
- Make sure you can keep all the information confidential and, if possible, anonymous
- Explain the purpose of the survey and what will you be doing with the information collected
- Avoid small fonts and limit number of different fonts used
- Make sure you proof read, review and user test to improve both the format and content prior to pilot

Data analysis can be a complex process and the approach taken will depend on the design of the evaluation. There is a plethora of resources available which provide useful guidance on how to analyse data. It is recommended that you explore further resources and seek expert assistance when required.

Examples of service impact/success measures may include:

- Total number of vaccinations provided and impact on vaccine update/rate, e.g., patients vaccinated in your pharmacy have not previously been vaccinated, the pharmacy increased accessibility to vaccines due to the service provided (no appointment required, location the pharmacy, etc.)
- Total number of responses/questionnaires received and service users' feedback

### 5.6.4 Top tips for service evaluation

Perfect evaluations are often not possible, and compromises will sometimes need to be made as a result of constraints on time, expertise and resources available. However, being aware of this from the outset should ensure you collect the most reliable and objective information possible. Some useful tips with the development of your evaluation are summarised below:

- Start planning your evaluation from the beginning so you can learn from it — ensure you have a comparator (baseline) and collate data/feedback continuously
- Be prepared for the likelihood of change when designing an evaluation — balance flexibility and robustness
- Explore whether similar evaluations have been conducted; others who have developed a similar service may be happy to share their learning and evaluation tools

Once your vaccination service is developed and established, you will need to ensure the service is continuously monitored to identify areas for improvement, such as improving documentation, procedures and cost-effectiveness. A robust evaluation can inform best practice and significantly influence decision-making so make sure you allocate time for careful planning and effective execution.

## 5.7 Service expansion and wider implementation

If service expansion is something you are considering, then this should be built into your evaluation. Findings from your evaluation will be able to tell you whether your service is meeting your users' needs, help you understand the public perception of your service, strengths and weaknesses, and whether roll out/expansion is feasible. If designed properly, the information collected as part of your evaluation will also be able to advise you on how best to expand your service. These may include:

- Improving your communication methods in order to increase vaccine uptake by your service users, or specific patient groups

- Increasing access to vaccine information by creating robust distribution systems that effectively reach service users, or particular hard-to-reach groups
- Improving access to your vaccination services — location and times offered
- Improving the efficiency and cost-effectiveness of your service
- Improving your systems, processes and procedures (including vaccination record systems)

It is important to stress that the information collected, including the robustness of the data, will be dependent on your evaluation design.

## 5.8 Additional practical tools and resources

Additional practical tools and resources can be found in [Appendix 2](#).

## 5.9 References

1. International Pharmaceutical Federation (FIP). An overview of current pharmacy impact on immunisation – A global report 2016. The Hague: International Pharmaceutical Federation; 2016. Available from: <https://www.fip.org/file/162> [cited 2019 Aug 16].
2. Immunization, Vaccines and Biologicals – Vaccines and Diseases. World Health Organization. Available online at <https://www.who.int/immunization/diseases/en> [Accessed 4 July 2019].

## 6 Conclusions

FIP has prioritised and supported an expanded role for pharmacists in improving vaccination coverage rates around the world through a variety of roles — from raising awareness and trust in vaccines to providing evidence-based advice on vaccinations, to administering vaccines and updating vaccination records. This commitment is driven by the evidence of the impact that pharmacists already have in the vaccination landscape in several countries and by our profession's alignment with the global health agenda and priorities of the World Health Organization.

Over the years, FIP has conducted surveys, published reports, organised seminars and congress sessions, and advocated on behalf of our member organisations about the contribution of pharmacists to reducing the burden of communicable diseases through an expanded use of vaccines.

Some of the key final messages that can be extracted from this publication include that:

- It is a global imperative to consolidate primary health care and disease prevention strategies to reduce the burden of disease and make health systems more efficient and resilient. Vaccines are among the safest and most effective tools to prevent and eradicate communicable diseases, and it remains a global priority to improve access to vaccines and vaccination coverage rates among all age groups.
- It is paramount to adopt a life-course approach to vaccination in all countries. From new-born infants to older adults, each age-group has particular needs in terms of disease prevention and deserves the highest possible standards of quality of life and disease-free well-being.
- Vaccines are second only to clean water in terms of their impact on public health.
- Vaccines are a sound investment, with up to USD \$ 44 return on investment for every \$1 spent on immunisations.
- There is established evidence of the advantages of pharmacists' roles in immunisation in terms of improved accessibility and supply, vaccination rates and coverage, and public acceptance and trust in vaccines.
- There is a growing trend for an active involvement of pharmacists with vaccination-related services, with a rapid development in the past decade.
- Access to education and training is key in progressing development of vaccination and vaccine-related services.
- Balanced reimbursement systems would contribute to growth of vaccination services, both in terms of widespread implementation and sustainability over time.
- Perceived competition threats to other healthcare professionals providing immunisation services are diminishing but remain a challenge in some countries. An expanded role for pharmacists in vaccination is aimed at increasing vaccination coverage rates, not shifting demand from one provider to another.

FIP will continue to support and advocate for this role by pharmacists around the world.

[#FIP4vaccination](#) / [#VaccinesWork](#) / [#Pharmacists](#)

# Appendix 1. Pharmacy vaccination service — Patient satisfaction questionnaire

Please note that the survey questions and response categories should be tailored to the purpose of your evaluation, your vaccination service(s) and how these are promoted.

**Your opinion counts and can make a difference. We use feedback from patients to improve our service.**

We would be grateful if you could complete this questionnaire — it should take less than five minutes. All responses are anonymised and all information will be kept confidential. If you have any questions please ask a member of our staff who will be happy to assist you.

## Your gender

- Male                       Female                       Other

## Your age

- Under 18                       18–24                       25–34                       35–44  
 45–54                       55–64                       65 or over

## Did you have a flu vaccination last year/winter?

- Yes, in this pharmacy                       Yes, in another pharmacy                       Yes, in my healthcare centre  
 No, I wasn't able to                       No, I chose not to                       Other, please specify \_\_\_\_\_

## How did you hear about our pharmacy's flu vaccination service? (Select all that apply)

- I have used this service before                       From the pharmacy staff                       Poster in this pharmacy  
 From my doctor/nurse                       Poster in the healthcare centre                       Word of mouth  
 An advert (newspaper, TV or radio)                       Other, please specify \_\_\_\_\_

## What did you like most about our vaccination service? (Select all that apply)

- Not having to book an appointment  
 This is the pharmacy I regularly use  
 Difficulty getting an appointment at my healthcare centre  
 Convenient location (i.e., easier for me to get to the pharmacy)  
 Convenient opening hours  
 Treated well by staff  
 I was given the right amount of information  
 Quick and easy  
 Other, please specify \_\_\_\_\_

## What is your level of satisfaction with the following?

a) How soon you were able to book an appointment

- Very satisfied                       Fairly satisfied                       Not very satisfied                       Not at all satisfied

b) Information provided by pharmacy staff about your vaccination and/or the pharmacy vaccination service

- Very satisfied                       Fairly satisfied                       Not very satisfied                       Not at all satisfied

c) Waiting time before getting your vaccination administered



- Very satisfied
- Fairly satisfied
- Not very satisfied
- Not at all satisfied

d) The consultation room where you had your vaccine administered

- Very satisfied
- Fairly satisfied
- Not very satisfied
- Not at all satisfied

**Overall, how satisfied are you with the vaccination service you received today?**

- Very satisfied
- Fairly satisfied
- Not very satisfied
- Not at all satisfied

**Would you recommend our vaccination service to your family and friends?**

- Yes
- Maybe/Not sure
- No

**How can we improve our service?**

*Thank you for your time*

## Appendix 2. Pharmacy vaccination service — Additional practical tools and resources

### Resources to support the development of a vaccination service

- ACT pharmacist vaccination standards [Internet]. Australian Capital Territory Government, Health Directorate. Available from: <https://www.legislation.act.gov.au/View/di/2019-42/current/PDF/2019-42.PDF>
- Guidance on the provision of vaccination services by pharmacists in retail pharmacy businesses [Internet]. The Pharmaceutical Society of Ireland; 2019. Available from: [https://www.thepsi.ie/gns/Pharmacy\\_Practice/practice-guidance/PharmacyServices/Vaccination\\_Service.aspx](https://www.thepsi.ie/gns/Pharmacy_Practice/practice-guidance/PharmacyServices/Vaccination_Service.aspx)
- Guidelines for conducting pharmacist initiated and administered vaccination service within a New South Wales community pharmacy environment [Internet]. The Pharmacy Guild of Australia; 2016. Available from: [https://www.guild.org.au/\\_data/assets/pdf\\_file/0022/49405/NVCP-Guidelines.pdf](https://www.guild.org.au/_data/assets/pdf_file/0022/49405/NVCP-Guidelines.pdf)
- Vaccinating adults: a step-by-step guide [Internet]. Immunisation Action Coalition. Available from: <http://www.immunize.org/guide/>
- Vaccination en pharmacie [Internet]. pharmaSuisse. Available from: <https://vaccinationenpharmacie.ch>
- Vaccine storage and handling toolkit [Internet]. Centers for Disease Control and Prevention.. Available from: <https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html>
- Vaccines [Internet]. Geneva: World Health Organization. Available from: <https://www.who.int/topics/vaccines/en>.

### Resources to support staff education and training

- Plácido GM, Guerreiro MP. Administração de vacinas e medicamentos injetáveis por farmacêuticos - uma abordagem prática [Internet]. Lisbon: Ordem dos Farmacêuticos, 2015. Available from: <https://www.ordemfarmaceuticos.pt/pt/publicacoes/manuais/administracao-de-vacinas-e-medicamentos-injetaveis-por-farmacuticos-uma-abordagem-pratica>
- The Australian immunisation handbook [Internet]. Australian Government, Department of Health. Available from: <https://immunisationhandbook.health.gov.au>
- The pink book: course textbook 13e [Internet]. Centers for Disease Control and Prevention; 2015 . Available from: <http://www.cdc.gov/vaccines/pubs/pinkbook/index.html>
- The green book - immunisation against infectious disease [Internet]. Public Health England. Available from: <https://www.gov.uk/government/collections/immunisation-against-infectious-disease-the-green-book>
- Immunization education & training [Internet]. Centers for Disease Control and Prevention. Available from: <https://www.cdc.gov/vaccines/ed/index.html>
- Immunization, vaccines and biologicals [Internet]. Geneva: World Health Organization. Available from: <https://www.who.int/immunization/en>
- Pharmacist initiation and administration of vaccines [Internet]. New South Wales Government, Department of Health. Available from: <https://www.health.nsw.gov.au/pharmaceutical/pharmacists/Pages/pharmacist-vaccinations.aspx>
- Standards for the accreditation of programs to support pharmacist administration of vaccines [Internet]. Australian Pharmacy Council. Available from: <https://www.pharmacycouncil.org.au/policies-procedures/standards/>
- Fondation mesvaccines - Le carnet de vaccination électronique suisse [Internet]. Available from: [www.myvaccines.ch](http://www.myvaccines.ch)

## Resources to support service evaluation

- Flu vaccination – patient questionnaire [Internet]. Pharmaceutical Services Negotiating Committee. Available from: <https://psnc.org.uk/services-commissioning/advanced-services/flu-vaccination-service/flu-vaccination-patient-questionnaire>
- Evaluation of the seasonal influenza vaccination service [Internet]. The Pharmaceutical Society of Ireland. Available from: [https://www.thepsi.ie/gns/Pharmacy\\_Practice/practice-guidance/PharmacyServices/Vaccination\\_Service/Evaluation\\_of\\_the\\_Seasonal\\_Influenza\\_Vaccine.aspx](https://www.thepsi.ie/gns/Pharmacy_Practice/practice-guidance/PharmacyServices/Vaccination_Service/Evaluation_of_the_Seasonal_Influenza_Vaccine.aspx)
- Quality improvement projects targeting immunization [Internet]. Centers for Disease Control and Prevention.. Available from: <https://www.cdc.gov/vaccines/ed/quality-improvement-proj.html>

## Resources to support patients and the public with their vaccinations

- The adult vaccine assessment tool [Internet]. Centers for Disease Control and Prevention. Available from: <https://www2.cdc.gov/nip/adultimmsched>
- Chickenpox vaccination service toolkit [Internet]. Merck Sharp & Dohme Ltd. Available from: <https://www.msdconnect.co.uk/therapy-areas/vaccines/chickenpox-toolkit.xhtml>
- Communication toolkit on immunisation: how to increase immunisation uptake [Internet]. European Centre for Disease Prevention and Control. Available from: <https://ecdc.europa.eu/en/publications-data/communication-toolkit-immunisation-how-increase-immunisation-uptake>
- GSKVacciNATION [Internet]. GSK group. Available from: <https://www.gsksource.com/pharma/content/gsk/source/us/en/campaign/gskvaccination.html>
- Immunisation [Internet]. Australian Government, Department of Health. Available from: <https://beta.health.gov.au/health-topics/immunisation>
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