

“There’s No Touching in Pharmacy”: Training Pharmacists for Australia’s First Pharmacist Immunization Pilot

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ABSTRACT

Background: Vaccination is a safe, efficient, and cost-effective means of preventing, controlling, and eradicating many life-threatening infections and diseases. Globally, the World Health Organization estimates that vaccination saves between 2 million and 3 million lives annually. However, low immunization rates are a significant public health concern. Individual factors, along with the vaccination process and system, have been reported as perceived barriers and challenges to immunization. Lack of time, on the part of both health care professionals and patients, has also been reported as a key factor influencing patterns of immunization. Despite the accessibility of pharmacists in community pharmacies in Australia, and initiatives by other countries to introduce pharmacist vaccination services, pharmacists in Australia had not previously delivered this service. The Queensland Pharmacist Immunisation Pilot (QPIP), initially implemented for the 2014 influenza season and later expanded, as QPIP2, to include other vaccines, allowed Australian pharmacists to vaccinate for the first time.

Objectives: To develop, implement, and evaluate a training program for pharmacists undertaking vaccination services in community pharmacies in Australia.

Methods: Background content was developed and delivered through 2 online modules. Pharmacists were required to successfully answer a series of multiple-choice questions related to the background reading before attending a face-to-face workshop. The workshop provided practical training in injection skills and anaphylaxis management. Participants were also asked to evaluate the training program.

Results: Of the 339 pharmacists who completed the training program, 286 (84%) provided an evaluation. Participants were satisfied with the training, as indicated by consistently high scores on the “overall satisfaction” question (mean 4.65/5 for the QPIP and QPIP2 training combined). Participants described the background reading as relevant to their practice and stated that it met their expectations. They also valued the opportunity to practise injections on each other during the face-to-face workshop, and this aspect was noted as a key component of the training.

Conclusions: QPIP demonstrated that a pharmacist-specific training program could produce competent and confident immunizers and could be used to “retrofit” the profession, to facilitate delivery of vaccination services in Australia.

RÉSUMÉ

Contexte : La vaccination est un moyen sécuritaire et efficace de prévenir, d’endiguer et d’éradiquer bon nombre d’infections et de maladies potentiellement mortelles. L’Organisation mondiale de la santé estime que, dans le monde, la vaccination permet de sauver entre 2 millions et 3 millions de vies par année. Cependant, les faibles taux d’immunisation représentent un enjeu de santé publique important. On a noté que des facteurs individuels ainsi que le processus et le système de vaccination sont perçus comme des obstacles à l’immunisation. Le manque de temps, tant de la part des professionnels de la santé que des patients, a aussi été présenté comme un facteur clé influençant les schémas d’immunisation. Malgré la disponibilité de pharmaciens dans les pharmacies communautaires en Australie et les initiatives lancées par d’autres pays pour mettre en place des services de vaccination offerts par les pharmaciens, les pharmaciens en Australie n’avaient pas prodigué ce service auparavant. L’étude *Queensland Pharmacist Immunisation Pilot* (QPIP), d’abord mise en place pour la saison de la grippe de 2014, puis reconduite en une version bonifiée nommée QPIP2 afin d’inclure d’autres vaccins, a permis aux pharmaciens australiens de vacciner pour la première fois.

Objectifs : Élaborer, mettre en place et évaluer un programme de formation pour les pharmaciens qui offrent des services de vaccination dans les pharmacies communautaires en Australie.

Méthodes : La matière du programme a été élaborée et offerte sous forme de deux modules en ligne. Les pharmaciens devaient répondre adéquatement à une série de questions à choix multiples portant sur les lectures préparatoires à un atelier en personne. L’atelier offrait une formation pratique sur les techniques d’injection et sur la prise en charge de l’anaphylaxie. On a aussi demandé aux participants d’évaluer le programme de formation.

Résultats : Des 339 pharmaciens ayant terminé le programme de formation, 286 (84 %) ont fourni une évaluation. Les participants étaient satisfaits de la formation, comme l’indiquaient des cotes systématiquement élevées à la question concernant la satisfaction globale (moyenne de 4,65 sur 5 pour la formation des études QPIP et QPIP2 prises ensemble). Les participants ont indiqué que les lectures préparatoires étaient pertinentes pour leur pratique et qu’elles répondaient à leurs attentes. Ils ont aussi apprécié l’occasion de s’exercer à faire des injections les uns sur les autres au cours de l’atelier en personne; on a d’ailleurs noté que cet aspect représentait un élément clé de la formation.

Keywords: Australia, immunization, influenza, pharmacist, training, vaccination

Conclusions : L'étude QPIP a permis de constater qu'un programme de formation destiné aux pharmaciens pouvait produire des vaccinateurs compétents et sûrs d'eux et qu'il pouvait servir à « moderniser » la profession afin de faciliter la prestation de services de vaccination en Australie.

Mots clés : Australie, immunisation, grippe, pharmacien, formation, vaccination

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INTRODUCTION

Suboptimal uptake of vaccinations overall is an ongoing global issue. The 2013 Grattan Institute report on Australia's health workforce identified the opportunity to extend pharmacists' scope of practice to include vaccination, to assist in alleviating the shortage of general practitioner services in rural areas.¹ There is also evidence that national immunization programs affect the prevalence of infection.² Australia has led the way in national immunization programs for children (e.g., diphtheria, pertussis, poliomyelitis, measles, mumps, rubella, pneumococcus, and *Haemophilus influenzae* type b vaccines).³ However, there has been suboptimal uptake of vaccinations overall in certain population groups, including elderly patients with chronic disease.⁴

As such, Queensland Health (the Queensland Government's Department of Health) announced its intention to pilot pharmacist vaccination for influenza in the 2014 influenza season. This was the genesis of the Queensland Pharmacist Immunisation Pilot (QPIP) for influenza.

Pharmacist-delivered vaccination in the community setting has become part of the solution to increase overall vaccination uptake in countries such as the United Kingdom, the United States, Canada, and, more recently, New Zealand.⁵⁻⁹ In some of these countries, pharmacists have been administering vaccines for more than a decade. When pharmacist vaccination services have been introduced in these countries in response to suboptimal vaccine uptake, the outcome has been increased vaccine uptake, decreased disease burden, and positive economic benefits. The type of vaccines delivered varies between and within countries, and can include vaccines for influenza, human papillomavirus, measles, and whooping cough, as well as travel-related vaccines. Pharmacists have developed the competency to perform vaccination either as part of an undergraduate pharmacy qualification or through pharmacist-specific training programs designed to "retrofit" the profession in each country.

In Australia, being a pharmacist has traditionally been considered, and in many instances still is, a very "hands-off" profession. Before QPIP, most Australian pharmacists would never

have considered the possibility of being able to administer vaccines.¹⁰ Therefore, a factor critical to the success of QPIP was ensuring that pharmacists who participated in the pilot became competent in providing vaccinations. However, before QPIP, pharmacists in Australia were not trained to provide immunization services, and there was no existing training program to develop this competency in Australian pharmacists. Therefore, the aim of QPIP was to develop, implement, and evaluate a training program for pharmacist vaccination that would be relevant to the needs of Australian pharmacists.

METHODS

Ethics approval for QPIP was obtained from the Queensland University of Technology Human Research Ethics Committee (QUT approval no. 140000098), which included delivery of the vaccination training program and subsequent evaluation of the program by pharmacist participants.

Identifying Competency Gaps

Competency gaps, namely related to the administration of injections, represented a key barrier to pharmacists providing immunization services in Australia. The Vaccination Working Group of the Advanced Pharmacy Practice Framework Steering Committee mapped competencies for pharmacists against those of nurse immunizers to identify these gaps in competency.¹¹ The training program was then developed to address the gaps.

Developing the Training Program

The QPIP steering committee, in consultation with Queensland Health, decided that pharmacists should receive a "credential" following completion of all vaccination training required through participation in the pilot, and that completing the training program would be one part of the credentialing requirements. The Pharmaceutical Society of Australia (Queensland Branch) facilitated the development and implementation of the pharmacist training program. Because of the short timeline available, Canadian programs training pharmacists to administer

injections and vaccinations were consulted. The Administering Injections and Immunizations Course of the Alberta Pharmacists' Association¹² was used as the basis for developing the QPIP Credentialing Course for Administering Injections and Immunisations (i.e., the "QPIP credential training" for Australian pharmacists). The Alberta course was selected because it provided the relevant and specific competencies required by currently practising pharmacists in Australia, and it had a proven track record for retrofitting the pharmacist profession to deliver a vaccination service.

The Alberta Administering Injections and Immunizations Course consisted of 2 parts. Part 1 comprised downloadable course material containing one module on diseases and vaccines and another on practical considerations. Part 2 consisted of a face-to-face workshop on administering vaccines. This Canadian training program was reviewed and adapted to suit the Australian context, including alignment with the most up-to-date version of the *Australian Immunisation Handbook*.¹³

A registered pharmacist (M.D.) and a credentialed nurse immunizer independently reviewed the QPIP credential training to ensure that it adequately addressed the pharmacist competency gaps. The content to address competency gaps was reinforced at least twice in either the online or the face-to-face component of the training program. The training program was then remapped to ensure that all the necessary competencies were adequately covered.

Following the success of the first year of QPIP, the pilot was extended (as QPIP2) to include measles, mumps, and rubella (MMR) and pertussis, diphtheria, and tetanus (dTpa/DTPa).¹⁰ As such, the QPIP credential training was amended to specifically reinforce information about administering these additional vaccines.

Delivering and Evaluating the Training Program

Upon completion of the face-to-face workshop, participants were asked to complete an anonymous and voluntary evaluation questionnaire, covering all aspects of the QPIP credential training (Figure 1). Return of a completed survey was taken to imply consent. The pharmacist participants were also asked about their satisfaction with the training, the relevance of the training to their practice, and the extent to which the training developed their confidence to administer injections to patients. A 5-point Likert scale, with anchors "poor" to "excellent" or "not at all" to "entirely", was used. Through free-text, open-ended questions, participants were also invited to provide comments about the training and how the training could be improved. The survey was piloted with a group of pharmacists for readability and understanding.

Descriptive statistics were used to summarize and describe the evaluations. The Cronbach α coefficient was used to evaluate the internal consistency of the questions using the 5-point Likert scales. The α coefficient for the evaluations was calculated using SPSS 23.0 software (IBM, Armonk, New York). The responses

to the free-text, open-ended questions were coded on the basis of emergent themes and thematically analyzed manually.

RESULTS

Identifying Competency Gaps

The pharmacist competency standards overlapped with the nurse immunizer competencies in all domains.¹¹ More broadly, registered pharmacists were already demonstrating competency in domains such as managing medications (including vaccines), managing the deteriorating patient, and cold chain considerations. Administration of injections was the key pharmacist competency gap that the QPIP credential training was required to address.¹¹ Examples of other competency gaps were more specifically related to developing and managing a pharmacy-based vaccination service; assessing patients' vaccination needs and providing appropriate evidence-based advice about vaccinations; and identifying, managing, and reporting clinical incidents and adverse reactions to vaccines.

Developing the Training Program

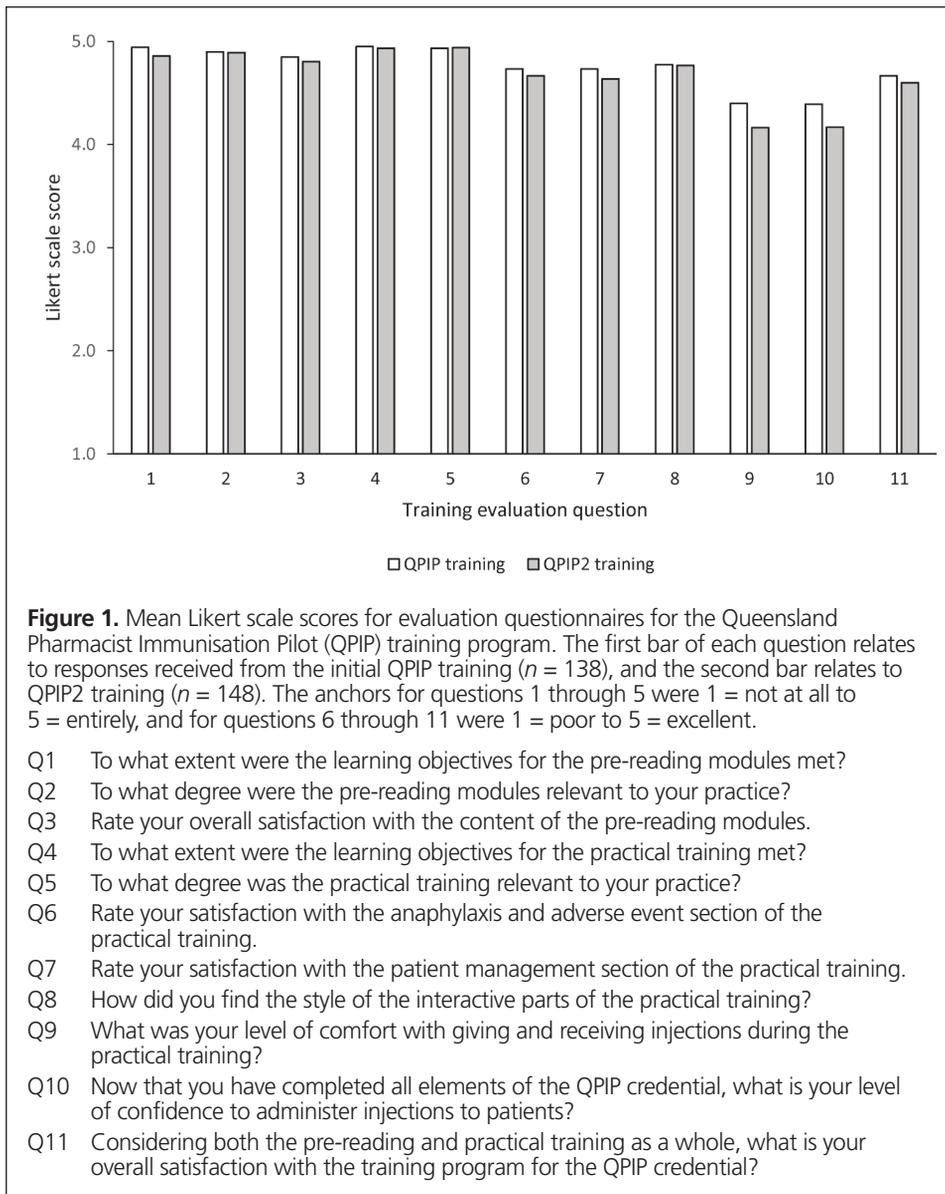
Pharmacists had to demonstrate that they met the following requirements before they received the credential to administer vaccinations under QPIP:

- be a registered pharmacist with the Pharmacy Board of Australia
- hold a current certificate in Provide First Aid (Australian Government Certificate Qualification code HLTAID003) or Apply First Aid (HLTFA311A)
- hold a current certificate in Provide Cardiopulmonary Resuscitation (CPR) (HLTAID001) or Perform CPR (HLTCPR211A)
- hold a current certificate in the Australasian Society of Clinical Immunology and Allergy (ASCIA) anaphylaxis e-training for pharmacists or health professionals
- complete the QPIP credential training

The QPIP credential training addressed the competency gaps identified when the pharmacist competencies were mapped against those for credentialed nurse immunizers, especially administration of injections. The QPIP credential training consisted of 2 sections.

Section 1: Online Pre-reading for QPIP

Two modules consisting of reading material and training video clips were delivered online. These modules covered a knowledge update on diseases and vaccines, as well as the practical considerations of implementing an immunization service in a community pharmacy. Participants had to achieve at least 80% on a multiple-choice quiz related to the study material before they were deemed to have successfully completed Section 1 of the QPIP credential training.



Section 1: Online Pre-reading for QPIP2

The training module was later amended to reflect expansion of the pilot. For new pharmacists recruited for QPIP2, an additional (third) module reinforcing the content relevant to the MMR and dTpa/DTPa vaccines was added to the online pre-reading material. For pharmacists who were already participating in QPIP, this new module was provided as a continuing professional development activity, along with refresher videos on how to administer injections and how to perform hand-washing. The original QPIP pharmacists had to complete this module before they could continue participating in QPIP2.

Section 2: Face-to-Face Workshop

Before participating in the face-to-face workshop, pharmacists had to successfully complete the online pre-reading modules

(Section 1) and hold a current certificate in the ASCIA anaphylaxis e-training for pharmacists or health professionals. The workshop was delivered by a credentialed nurse immunizer, who covered the new practical skills required for administering injections. The presentation included an overview of the theory, discussion, demonstration, guided practice, and assessment in relation to administering injections. Active role-plays simulating a community pharmacy setting were used to review the management of a deteriorating patient. Participants were deemed to have successfully completed Section 2 of the QPIP credential training only after they had completed the following activities:

- correctly demonstrated the preparation of a medication from a vial and an ampoule
- worked in pairs to correctly administer one subcutaneous injection (locating the site and injecting into each other)

- and record the administration
- worked in pairs to correctly administer one intramuscular injection into the deltoid muscle (locating the site and injecting into each other) and record the administration

Delivering and Evaluating the Training Program

The Pharmaceutical Society of Australia (Queensland Branch) delivered the QPIP credential training to pharmacists enrolled in QPIP. Section 1 of the training was released to individual pharmacists when their participation in QPIP was confirmed. The Section 2 workshop was 4.5 hours in duration and was delivered as 11 QPIP training sessions and 15 QPIP2 training sessions across Queensland. Participants registered to attend a face-to-face session that would be convenient for them. A Certificate of Completion and continuing professional development credits were issued once Sections 1 and 2 of the QPIP credential training were completed.

A total of 157 pharmacists across 80 pharmacies completed the initial QPIP credential training. An additional 182 pharmacists and 133 pharmacies completed the QPIP2 credential training, for an overall total of 339 participants in 213 pharmacies. A total of 138/157 (88%) and 148/182 (81%) training evaluations were received from the initial QPIP and QPIP2 pharmacist participants, respectively.

The evaluation questionnaire was reliable in measuring participant satisfaction across all aspects of the QPIP credential training (Cronbach $\alpha = 0.808$). Pharmacists commented that the pre-reading and face-to-face workshop met their expectations for the learning outcomes and were relevant to their practice (Figure 1, questions 1–8). Overall, the participants were satisfied with the training, as indicated by consistently high ratings: mean 4.7 and 4.6 for question 11 of the initial QPIP and QPIP2 training evaluations, respectively (Figure 1) (overall mean 4.65/5).

Just under half of the 286 respondents (129 [45%]) reported that half of the pre-reading material was new to them, with a combined total of one-third indicating that the pre-reading contained little (89 [31%]) to almost no (9 [3%]) new material. In contrast, smaller proportions considered the pre-reading to be mostly new (43 [15%]) or almost all new material (14 [5%]). Nevertheless, participants identified the pre-reading to be relevant to their practice and reported that it met their expectations (Figure 1, questions 1–3):

[Pre-reading content was] relevant and not overly time consuming.

[Pre-reading content] read really well. Excellent information, well presented.

However, several participants indicated that the pre-reading assignments contained a lot of material. Some commented that it was difficult to allocate sufficient time to complete the pre-reading before the face-to-face workshop, whereas others wanted more feedback on the multiple-choice quiz.

The face-to-face workshops were also well received, and participants found the practical training to be relevant to their practice. The practice training also played an important part in building participants' confidence in administering injections (Figure 1, questions 4–8):

Great practical workshop! I feel very confident in giving injections! Can't wait to start!

Interactive and hands on is very helpful, good time for questions.

In terms of the activities in the face-to-face workshop, participants initially appeared a little apprehensive about giving and receiving injections during the training, and gave mean ratings of 4.4 and 4.2 on question 9 in the QPIP and QPIP2 evaluations, respectively (Figure 1). However, they recognized this practical training as a critical component of the workshop and indicated that they would like to have more practice under controlled conditions in the course:

So glad we were able to give injections—made me feel much more confident.

[The practical training could be improved by having] more time to practise on a person.

Nevertheless, after completing the QPIP credential training, participants felt highly confident about injecting patients (mean ratings of 4.4 and 4.2 on question 10 in the QPIP and QPIP2 evaluations, respectively; Figure 1). The ability to practise on a colleague, before working with real patients, was seen as a positive aspect of the training, and many respondents indicated that they would continue practising on their own time before injecting patients, to become more confident:

Confidence will increase with practice.

Very happy this [giving and receiving injections during the practical training] was included—was unsure if we would be doing practice on humans but was pleased that we did.

I'll have to practise on my husband. Very confident in providing the service.

The trainers also noted that through injecting each other, the participants visibly gained self-confidence in their ability to perform the new skill. This was also reflected in participants' comments:

I was hesitant before attempting the real injection, but after [giving and receiving injections during the practical training] it's a lot better, [I have] a good understanding of how it feels.

DISCUSSION

The QPIP credential training course produced competent and confident pharmacist immunizers. Before QPIP, community

pharmacies across Australia provided influenza vaccination services via a “nurse immunizer” model, whereby credentialed nurse immunizers were contracted to administer vaccinations. As a result, pharmacies were limited to being able to provide this service on only one day or during variable short sessions across an entire influenza season. This restricted patients’ access to the vaccination service in the community and limited the options for spontaneous or opportunistic vaccination. The data collected during QPIP demonstrated the value of pharmacist-administered vaccinations in community pharmacy.¹⁰ The outcomes compared favourably with the traditional standard-of-care nurse immunizer model, and the QPIP data have paved the way for legislative changes to allow pharmacist-administered vaccinations across the whole of Australia.

The success of QPIP is a proven track record for the QPIP credential training in addressing competency gaps and retrofitting the Australian pharmacist profession to immunize and deliver a vaccination service. Following the Queensland pilots, the training program was delivered to the Western Australia branch of the Pharmaceutical Society of Australia, with the goal of facilitating pharmacist delivery of vaccinations in that jurisdiction.

As jurisdictions across Australia progressively allowed pharmacists to vaccinate, the Australian Pharmacy Council, the accrediting body for pharmacy programs in Australia, developed standards for pharmacist immunization programs. The *Standards for the Accreditation of Programs to Support Pharmacist Administration of Vaccines* were developed on the basis of the QPIP credential training program, linking its implementation across health jurisdictions. The purpose was to standardize future training programs for pharmacist immunization in Australia.¹⁴ As such, all subsequent training programs developed after the QPIP credential training must show that they address all of the performance criteria in the standard.

Many universities in Australia have already incorporated or are introducing immunization training into their pharmacy programs, as have some approved providers of Intern Training Programs. As of May 2016, the legislative framework across the whole of Australia supported pharmacists in administering vaccines. Although pharmacists are permitted to administer influenza vaccinations across Australia, only the Northern Territory has followed Queensland’s suit in allowing pharmacists to also administer both the MMR and dTpa/DTPa vaccines. However, the various health jurisdictions across Australia require that pharmacists comply with the legislation, immunization standards, protocols, codes, and guidelines that are specific to each state or territory. Similarly, different health jurisdictions mandate different credentialing, training, and continuing professional development requirements.¹⁵ Unfortunately, this also means that training in one state or territory may not be “recognized” in another, so pharmacists must be assertive and vigilant in ensuring that they meet the requirements of the jurisdiction in which they practise.

CONCLUSION

The QPIP credential training has demonstrated its effectiveness in equipping pharmacists with the knowledge, skills, and competencies to administer injections, and to establish and deliver a successful immunization service in community pharmacy. The value of pharmacists as immunizers is becoming more widely recognized in Australia, in terms of the larger role they can play in assisting to increase the uptake of other vaccines,^{2,10} so long as pharmacist delivery of vaccines is permitted and/or facilitated by legislation. The ability for the original QPIP credential training to be amended in the form of the expanded QPIP2 indicates that this training can be successfully adapted to meet the needs of pharmacist immunizers in the future.

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