

## Assessing Pharmacists' Attitudes and Barriers Involved with Immunizations

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### Abstract

Pharmacists are considered the most accessible health care professional. Immunizations create an opportunity for the profession to grow and develop toward direct patient care. Between 1995 and 2004 programs involving immunizations led to a national initiative to train pharmacists that became a significant leap toward pharmacist's involvement in direct patient care. Although immunizations can be considered a catalyst to change the pharmacist's role, little was known about pharmacist's attitudes and the barriers involved with immunizing. Few studies have assessed barriers, attitudes, and practice issues experienced by immunizing pharmacists. The objective of this study was to determine pharmacists' attitudes toward immunizations and more specifically to assess possible barriers involved with this practice. Five hundred pharmacists were randomly selected for inclusion in the study from the State of Ohio Board of Pharmacy Database, of which 137 (27.4%) completed the survey. A 37-item questionnaire was administered via an e-mail invitation to take an online survey using Qualtrics software with a Likert-type scale, where 1 = strongly disagree and 7 = strongly agree. Several topics were assessed regarding immunizations including time constraints, workflow constraints, adequacy of training, technician support, worksite conditions and space, immunization processes, reimbursement issues, safety issues, documentation issues, and the future direction of immunizations. Demographics included gender, age, degree, number of years practicing, practice site, and number of years immunizing. Seventy-three percent of pharmacists believed that immunizing could lead to prescription filling errors (mean=4.45, SD=1.79). Pharmacists strongly agreed that having more technicians on staff would make providing immunizations easier (mean=5.80, SD=1.39) and that they play a vital role in keeping the process running smoothly (mean=6.08, SD=1.16). Also, pharmacists strongly agreed that they would feel more comfortable providing immunizations with another pharmacist on duty (mean=5.77, SD=1.39). Currently, less than ten percent of patients complete the immunization paperwork in advance; pharmacists strongly agreed that having patients complete the paperwork ahead of time would make the process more efficient (mean=5.76, SD=1.20). Pharmacists agreed that they feel adequately trained on their pharmacy's emergency protocol if patients were to have an adverse reaction to an immunization (mean=5.17, SD=1.60) although, seventy-three percent are only comfortable immunizing patients sixteen years and older. Most pharmacists agreed that they felt comfortable allowing interns to give immunizations under supervision (mean=5.23, SD=1.79). Pharmacists agreed that they should be able to provide the measles (mean=5.04, SD=2.07) and Tdap (mean=5.31, SD=2.00) vaccinations. Finally, most pharmacists agreed that the best way to compensate immunizing pharmacists was through a performance-based bonus. Pharmacist's attitudes toward immunizations are generally positive, however, more technician help and overlap of pharmacists would greatly benefit the immunization process.

### Background

Over 50,000 Americans die of vaccine-preventable diseases each year, which is more than car accidents, breast cancer, or HIV/AIDS.<sup>1</sup> The Centers for Disease Control and Prevention (CDC) recommends several vaccinations throughout a patient's life. However, most adults are not vaccinated according to the CDC guidelines and are therefore vulnerable to preventable diseases.<sup>1</sup> These vaccine-preventable diseases cost over 10 billion dollars per year in direct medical costs and indirect societal costs; increasing already high healthcare costs.<sup>1</sup> Vaccines are a cost-effective, preventative clinical service and deliver a high return on investment. Every child vaccinated with the routine immunization schedule saves

33,000 lives, prevents 14 million cases of disease, decreases healthcare costs by 9.9 billion dollars and saves over 33 billion in indirect societal costs.<sup>2</sup> Even with these eye-opening statistics, there is a lack of enthusiasm from patients to become vaccinated, leading to high numbers of non-vaccinated adults. These factors ultimately led to the inclusion of immunizations as a health indicator for Healthy People 2010.<sup>3</sup> Healthy People 2020 also included immunizations as an area for improvement; the goal being to "increase immunization rates and reduce preventable infectious diseases."<sup>2</sup>

Pharmacists are readily accessible and capable to deliver high quality immunization services to help decrease these healthcare costs and increase the amount of patients vaccinated. ASHP endorsed the pharmacist's role in immunization and provided guidelines for the practice.<sup>4</sup> The CDC advisory committee recommends that pharmacies

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develop standing-order programs with physicians to increase vaccination rates. These can be set up through partnerships with state pharmacy associations, boards of pharmacy, and health departments. Pharmacists must also demonstrate competency in immunizations before they are allowed to administer vaccines. ASHP states that a comprehensive training program should include epidemiology; public health goals; vaccine safety; contraindication and precaution screening; vaccine stability, transportation and storage requirements; vaccine dosing; proper preparation and administration technique; signs of adverse reactions including basic and advanced cardiac life support (BCLS and ACLS) emergency procedures; documentation; reporting to primary care provider; and billing. Reimbursement for immunizations has proven to be cost-effective. However, many insurance programs do not provide coverage for recommended vaccines.<sup>4</sup>

Patient education is the key to increasing awareness and reaching the goals of Healthy People 2020. Pharmacists play a pivotal role in immunization advocacy. Pharmacists facilitate education directives on disease prevention strategies, participate in local outreach initiatives, and distribute marketing materials about preventable infections to help increase the amount of patients vaccinated. These guidelines provided by ASHP are a baseline to be implemented by each state's board of pharmacy and state legislature.<sup>4</sup>

This study surveyed Ohio pharmacists. In order to fully understand the position of Ohio pharmacists in this survey, it is important to know the current state laws regarding immunizations. In Ohio, pharmacists with Immunization Certification are allowed to administer immunizations for influenza to patients older than 14 years old and immunizations for diphtheria, hepatitis A, hepatitis B, pertussis, pneumonia, zoster and tetanus to adults. To become certified, pharmacists must complete an Ohio State Board of Pharmacy approved course in drug administration, receive and maintain basic life-support (BLS) certification from the American Red Cross or American Heart Association, and practice within the treatment guidelines specified by physicians and approved by the Ohio State Board of Pharmacy.<sup>5</sup>

### Purpose

The purpose of this study was to assess pharmacists' attitudes and the barriers pharmacists encounter while providing immunizations. This study assessed pharmacists' attitudes toward their responsibility and the barriers they have encountered while providing this service.

### Methods

One thousand pharmacists were randomly selected for inclusion in the study from the Ohio State Board of Pharmacy database. The Board of Pharmacy does not keep records of which pharmacists are immunization certified or how many are immunization certified. Of the 1,000 pharmacists invited to participate, 202 (20.2%) participated in the study. Of these participants, 59 individuals indicated on the first question that they were not currently providing immunizations. If the respondent indicated they were not providing immunizations, the survey ended and the respondent was thanked for their participation. One hundred and forty three participants indicated they were currently immunizing patients and continued on with the rest of the survey. Of these 143 respondents, 137 useable responses were provided.

A 37- item questionnaire was developed based on interviews with immunizing pharmacists regarding their barriers, challenges, and practice-based issues regarding immunizations. The questionnaire was revised four times by the researchers. After the fourth revision, the questionnaire was pilot tested on a small sample of ten pharmacists who were asked to comment on face and content validity of the questionnaire. Minor modifications were made based on these comments. The questionnaire was administered via an e-mail invitation to take an online survey using Qualtrics software with a Likert-type scale, where 1 = strongly disagree and 7 = strongly agree. Several topics areas were assessed regarding immunizations including time constraints, workflow constraints, adequacy of training, technician support, worksite conditions and space, immunization processes, reimbursement issues, safety issues, documentation issues, and the future direction of immunizations. Demographics included gender, age, degree, number of years practicing, practice site, and number of years immunizing. Pharmacists were given two weeks to complete the survey. A reminder email was sent to participants one week after the original invitation to participate was sent. Data was analyzed using SPSS 16.0. The following statistic techniques were used: descriptive statistics, one-way analysis of variance and student's t-test.

### Results

Experience with providing immunizations has allowed pharmacists to identify barriers involved in the process. To assess these issues involved in providing immunizations, we evaluated the time, assistance, certification and safety barriers involved in the process. We also evaluated the attitudes of pharmacists towards this added responsibility. We found that seventy-three percent of pharmacists had some level of agreement that immunizing could lead to prescription filling errors. This slightly negative attitude was

continually supported as we evaluated the other barriers including time and assistance. Pharmacists slightly agreed that there is not enough time in a normal day to immunize patients in addition to their other duties (mean:  $4.47 \pm 1.93$ ). Pharmacists moderately agreed that they would feel more comfortable providing immunizations if there was another pharmacist on duty with them (mean:  $5.77 \pm 1.57$ ). They also slightly agreed that they felt overworked (mean:  $5.02 \pm 1.61$ ) and stressed (mean:  $5.18 \pm 1.57$ ) when they have to immunize patients while filling prescriptions. Pharmacists neither agreed nor disagreed that the immunization process at their pharmacy needs to be streamlined (mean:  $4.28 \pm 1.70$ ). Pharmacists moderately disagreed that patients waiting on immunizations should take priority over patients waiting for prescriptions (mean:  $2.40 \pm 1.50$ ). However they slightly agreed that it is helpful if patients schedule an appointment for their immunization in advance (mean:  $4.97 \pm 1.70$ ). Pharmacists moderately agreed that having more technicians on staff makes it easier to provide immunizations (mean:  $5.80 \pm 1.39$ ), however ninety-three percent of pharmacists agreed at some level that having more technicians would make this process easier. They also moderately agreed that technicians play a vital role in making the immunization process run smoothly (mean:  $6.08 \pm 1.35$ ). Pharmacists slightly agreed that they would feel comfortable allowing interns to give immunizations under their supervision (mean:  $5.23 \pm 1.79$ ). The paperwork associated with immunizations was not a large barrier for giving immunizations considering pharmacists only slightly disagreed it was too time consuming (mean:  $3.92 \pm 1.70$ ). Pharmacists slightly to moderately agreed that technicians should be responsible for dealing with immunization paperwork (mean:  $5.37 \pm 1.33$ ). Pharmacists moderately agreed that the immunization process would be more efficient if patients were able to complete the paperwork ahead of time (mean:  $5.76 \pm 1.20$ ), however it was not measured if this would be less convenient for the patients.

Safety and worksite barriers to providing immunizations were also studied including space and training issues. Pharmacists only slightly agreed that there is sufficient room at their pharmacy to immunize patients (mean:  $4.57 \pm 2.21$ ) and that they need a more private area to provide immunizations (mean:  $4.48 \pm 2.27$ ). They also slightly agreed that their pharmacy has an efficient process for immunizing patients (mean:  $4.86 \pm 1.62$ ), however we did not evaluate the specific process they followed. Along with these worksite barriers, we looked into the barriers and issues involving patient and pharmacist safety when giving immunizations. Pharmacists were unsure when asked if they were concerned about potential safety issues such as needle sticks (mean:  $4.18 \pm 1.72$ ) and they moderately agreed that they felt adequately

trained in prevention of safety issues including needle sticks (mean:  $6.02 \pm 1.08$ ). They also strongly agreed that their pharmacy has a protocol for what to do if you stick yourself with a needle (mean:  $6.45 \pm 1.03$ ). Pharmacists overwhelmingly agreed that their pharmacy should pay for any medical expenses associated with safety issues from giving immunizations (mean:  $6.52 \pm 0.91$ ). Surprisingly, pharmacists slightly agreed that they feel adequately trained on their pharmacy's emergency protocol if patients have an adverse reaction to an immunization (mean:  $5.17 \pm 1.16$ ). Pharmacists neither agreed or disagreed that they feel comfortable dealing with a patient that has an adverse reaction to an immunization (mean:  $4.40 \pm 1.82$ ) and only very slightly agreed that they only feel comfortable giving immunizations to patients who appear to be in good health (mean:  $4.45 \pm 1.79$ ).

We also collected data on how pharmacists feel about the certifications needed for immunizing and which immunizations they should be allowed to provide. Pharmacists only slightly agreed that they believe all pharmacists should be certified to give immunizations (mean:  $4.77 \pm 1.92$ ). Pharmacists neither agreed nor disagreed that it is unfair to hire only pharmacists that are immunization certified (mean:  $4.35 \pm 2.21$ ). However, they slightly agreed that pharmacists who are immunization certified should get paid more than non-certified pharmacists (mean:  $5.19 \pm 1.58$ ). Pharmacists slightly disagreed that it is difficult to maintain their BLS (Basic Life Support) certification which is renewed every two years (mean:  $2.98 \pm 1.62$ ). Pharmacists slightly agreed they should be allowed to provide immunizations for travel related conditions such as yellow fever (mean:  $4.62 \pm 2.04$ ). They moderately agreed that they should be able to provide the Tdap vaccination to adults (mean:  $5.31 \pm 2.00$ ) but only slightly agreed that they should be able to provide Tdap for adolescents (mean:  $4.78 \pm 2.09$ ). Pharmacists strongly agreed that they should be able to provide the pneumonia vaccine (mean:  $6.17 \pm 1.42$ ). Pharmacists slightly agreed they should be able to provide the measles vaccine (mean:  $5.04 \pm 2.07$ ). Pharmacists strongly agreed that when new vaccines are added, pharmacists should receive additional CE before administering them (mean:  $6.52 \pm 0.96$ ). The percentage of pharmacists that felt comfortable giving immunizations to patients between the ages of 0-3 years was (2%), 4-6 (2%), 7-9 (7%), 10-12 (17%), 13-15 (41%), 16-18 (73%), and adults only (96%). Thus, pharmacists felt comfortable with patients older than sixteen years old.

Demographic data was also collected and analyzed based on age, degree, gender, years in practice, years immunizing, and area of practice. Some of the more significant demographic

differences showed that male pharmacists (mean: 6.17) felt more strongly than female pharmacists (mean: 5.45) about having another pharmacist on duty when providing immunizations to feel comfortable (p-value: 0.013). Pharmacists with a Bachelor's degree (mean: 5.66) felt more strongly about technicians being responsible for dealing with immunization paperwork than pharmacists with a PharmD (mean: 5.02) (p-value: 0.006). When asked what was needed in an appropriate immunizing area at their pharmacies, pharmacists responded with their ideal set up which included a private, separate room that was clean, had good lighting, and sufficient space. A table, chairs, refrigerator, telephone, trashcan, and all necessary items for giving immunizations should also be included. Most pharmacists agreed that a performance-based bonus was the best form of compensation for providing immunizations when asked which type of compensation they preferred.

#### Limitations

This study was exploratory in nature, therefore any conclusions are limited to the study group, immunization certified Ohio registered pharmacists. Any generalizations to other groups are only appropriate to the extent that the group is represented by the respondents. Also, attitudes of non-respondents may be different than pharmacists who completed the survey. Finally, as new laws change and pharmacists are allowed to give new immunizations, new barriers may be discovered.

#### Conclusions

Pharmacists' attitudes toward immunizations are generally positive; however, more technician help and overlapping of pharmacist shifts would greatly benefit the immunization process. Generally, pharmacists believed that immunizing should not take priority over filling prescriptions and seventy-three percent of pharmacists believe immunizing could lead to some degree of prescription filling errors. Most pharmacists felt adequately trained in safety protocols, were satisfied with the protocol of their employer, and felt comfortable allowing their interns to give immunizations, although a large number of pharmacists only felt comfortable giving immunizations to patients older than sixteen. Finally, pharmacists generally agreed that they should be able to administer the measles and Tdap vaccinations to adults, but that additional CE training is necessary when new vaccines are added.

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Table 1. Pharmacists' Support and Staffing Barriers	Mean ± SD
Technicians play a vital role in making the immunization process run smoothly.	6.08 ± 1.16
I think that having more technicians on staff makes it easier to provide immunizations.	5.80 ± 1.39
I would feel more comfortable providing immunizations if there is another pharmacist on duty with me.	5.77 ± 1.57
The immunization process would be more efficient if patients were able to complete the immunization paperwork ahead of time.	5.76 ± 1.20
Technicians should be responsible for dealing with immunization paperwork.	5.37 ± 1.33
I feel comfortable allowing interns to give immunizations under my supervision.	5.23 ± 1.79
I feel stressed when I have to immunize patients in addition to filling prescriptions.	5.18 ± 1.57
I feel overworked when I have to immunize patients while filling prescriptions.	5.02 ± 1.61
It is helpful if patients schedule an appointment for their immunization in advance.	4.97 ± 1.70
I feel that immunizing patients may lead to prescription filling errors.	4.45 ± 1.79
The paperwork associated with immunizations is too time consuming for pharmacists to handle.	3.92 ± 1.70
I believe that patients waiting on immunizations should take priority over patients waiting for prescriptions.	2.40 ± 1.50

Key: 1=Strongly Disagree, 2=Moderately Disagree, 3=Slightly Disagree, 4=Neither Disagree or Agree, 5=Slightly Agree, 6=Moderately Agree, 7=Strongly Agree

Table 2. Pharmacists' Workflow and Space Barriers	Mean ± SD
I think my pharmacy should pay for any medical expenses associated with safety issues from giving immunizations (i.e. needle sticks).	6.52 ± 0.91
My pharmacy has a protocol for what to do if you stick yourself with a used needle.	6.45 ± 1.03
I feel adequately trained in the prevention of safety issues such as needle sticks.	6.02 ± 1.08
I feel adequately trained on my pharmacy's emergency protocol if patients have an adverse reaction to an immunization.	5.17 ± 1.60
My pharmacy has an efficient process for immunizing patients.	4.86 ± 1.62
There is sufficient room at my pharmacy to immunize patients.	4.57 ± 2.21
My pharmacy needs a more private area to provide immunizations.	4.48 ± 2.27
I am concerned about potential safety issues such as needle sticks.	4.18 ± 1.72

Key: 1=Strongly Disagree, 2=Moderately Disagree, 3=Slightly Disagree, 4=Neither Disagree or Agree, 5=Slightly Agree, 6=Moderately Agree, 7=Strongly Agree

Table 3. Pharmacists' Training Barriers and Types of Immunizations	Mean ± SD
When vaccines are added, pharmacists should receive additional CE before administering them.	6.52 ± 0.96
Pharmacists should be able to provide the pneumonia vaccine.	6.17 ± 1.42
Pharmacists should be able to provide the Tdap (tetanus, diphtheria, and pertussis) vaccine for adults.	5.31 ± 2.00
Pharmacists who are immunization certified should get paid more than non-certified pharmacists.	5.19 ± 1.58
Pharmacists should be able to provide the measles vaccine.	5.04 ± 2.07
Pharmacists should be able to provide the Tdap (tetanus, diphtheria, and pertussis) vaccine for adolescents.	4.78 ± 2.09
I believe all pharmacists should be certified to give immunizations.	4.77 ± 1.92
Pharmacists should be able to provide immunizations for travel related conditions such as yellow fever.	4.62 ± 2.04
I only feel comfortable giving immunizations to patients who appear to be in good health.	4.45 ± 1.79
I feel comfortable dealing with a patient that has an adverse reaction to an immunization.	4.40 ± 1.82
It is unfair to hire only pharmacists that are immunization certified.	4.35 ± 2.21
I find it difficult to maintain my BLS (Basic Live Support) certification.	2.98 ± 1.62

Key: 1=Strongly Disagree, 2=Moderately Disagree, 3=Slightly Disagree, 4=Neither Disagree or Agree, 5=Slightly Agree, 6=Moderately Agree, 7=Strongly Agree