California Pharmacists’ and Pharmacy Technicians’ Opinions on Administration of Immunizations in Community Pharmacies by Pharmacy Technicians

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Abstract

Introduction/Purpose/Background
Pharmacy technicians are prohibited from administering immunizations in California. This study sought to determine the opinions of California pharmacists and pharmacy technicians on the administration of immunizations in community pharmacies by pharmacy technicians.

Methods
A 26-item web-based survey using Qualtrics® was electronically administered to a sample of practicing pharmacists and pharmacy technicians in California. E-mails with a link to the survey were sent to the respondents, mostly through district managers for chain pharmacies (e.g., CVS, Rite Aid) and other means between June 2018 and September 2018.

Results
A total of 185 complete responses were received, composed mostly of pharmacists (n=123, 66.5%) and females (n=113, 61.1%) residing in Southern California (n=102, 55.1%). Most respondents believed that pharmacy technicians should be allowed to administer immunizations if they were provided adequate training (n=118, 63.8%), and that the administration of vaccinations by pharmacy technicians would benefit the pharmacy’s workflow (n=111, 60.0%). A majority agreed or strongly agreed that California should change the law to allow trained pharmacy technicians to administer immunizations to patients (n=101, 55.2%) but also noted that adding this responsibility would increase the pharmacists’ (n=131, 71.1%) and pharmacy technicians’ liability (n=140, 76.1%). Pharmacy technicians’ opinions were significantly different to those of pharmacists on seven of the 13 items investigated (p<0.05).

Conclusion
Both pharmacists and pharmacy technicians supported the authorization of pharmacy technicians to administer immunizations. Both believed that pharmacy technicians’ assistance in administering immunizations would be beneficial.

Key Words
Pharmacy Technicians; Immunizations; Pharmacy Practice; California

Background
Many infectious diseases cause significant mortality and morbidity worldwide. Each year, millions of Americans succumb to many vaccine-preventable diseases such as influenza, viral hepatitis and tuberculosis.(1) For instance, the Centers for Disease Control and Prevention (CDC) estimates that since 2010, between 9.2 and 60.8 million illnesses, between 140,000 and 710,000 hospitalizations, and between 12,000 and 56,000 deaths annually are attributed to influenza.(1) However, the impact of these and other vaccine-preventable diseases can be prevented through immunization.(4,5) People who are not vaccinated are at a higher risk of having vaccine-preventable diseases (e.g., a flu) than those who are vaccinated.(5) Vaccines are cost-effective clinical preventive services if they are utilized; however, many people neglect to use vaccination programs.(6) According to the CDC, during the 2017-2018 season, only two out of three people received the influenza vaccination by November 2017.(6) Therefore, expanding immunization rates is an important national public health goal aimed at preventing and controlling infectious diseases.(5,6)

Traditionally, immunizations have been administered by physicians, nurses, midwives, and physician assistants at clinics, health service centers and physician offices. The increasing participation of other healthcare professionals (i.e., non traditional immunizers) such as community pharmacists has increased immunization rates while boosting revenues for pharmacies.(5,9-10) Many pharmacists are safely and cost-effectively administering various vaccines, primarily the influenza and pneumococcal vaccines, to the public.(11) For example, in the early 2017-18 flu season, 28.2% of adults were vaccinated at a pharmacy/store (second highest after doctor’s office=34.7%).(12) Community pharmacies are convenient to the public given their many locations, accessibility, and extended hours of business.(12)

Furthermore, pharmacists are widely respected and trusted by the public.(10) However, there are some challenges associated with pharmacists administering immunizations, such as lack of reimbursement, time, and the increased demand for pharmacists.(11) These and other challenges are opportunities for pharmacy ancillary staff such as pharmacy technicians to expand their roles and clinical functions. One such area is the administration of immunizations as implemented in Idaho in 2017 when the Idaho Board of Pharmacy became the first state to authorize certified technicians to administer immunizations.(13) In Idaho, a pharmacy technician can be certified after completing a four-hour Accreditation Council for Pharmacy
Education (ACPE) accredited training program. Currently, an Idaho pharmacist may delegate the physical task of immunizing a patient to a certified and trained pharmacy technician as long as the pharmacist is present in the pharmacy when the patient is vaccinated. Data from December 2016 to May 2017 show that trained pharmacy technicians administered 953 immunizations, with zero adverse events reported over this period. These results suggest that pharmacy technicians can safely administer immunizations under the supervision of a pharmacist if they are authorized and adequately trained.

Currently, pharmacy technicians are prohibited from administering immunizations in California and many other states. The expansion of certified pharmacy technicians’ role to include administering immunizations in California and other states can potentially decrease the time burden on pharmacists, improve the workflow of the pharmacy, and ultimately increase immunization rates. However, little is known about the opinions of pharmacists and pharmacy technicians on this expansion of pharmacy technicians’ role.

Objectives of the Study

The purpose of this study is to investigate the opinions of California pharmacists and pharmacy technicians on the administration of immunizations in community pharmacies by pharmacy technicians. The specific objectives of the study are to determine the respondents’:

1. Perceived benefits and disadvantages of authorizing pharmacy technicians to administer immunizations.
2. Perceived challenges associated with authorizing pharmacy technicians to immunize patients.
3. Views regarding the required advanced training and current competence of pharmacy technicians pertaining to administering immunizations.
4. Support for changing legislation in order to authorize pharmacy technicians to administer immunizations.

Methods

The study was approved by the Loma Linda University Health Institutional Review Board (IRB) and was coordinated by the Loma Linda University School of Pharmacy California Pharmacist Student Leadership (CAPSLEAD) team, 2018-2019. The study population were all practicing pharmacists and pharmacy technicians throughout California.

The data were collected through an online survey administered via Qualtrics® between June and September 2018. An e-mail that explained the purpose of the study and included a link to the online survey was sent to pharmacists and technicians through various means. First, we asked district managers of all major pharmacy chain stores in California, such as Walgreens, Walmart, CVS, and Rite Aid, to forward the e-mail to pharmacists and pharmacy technicians working in the company. Second, we sent an e-mail to managers at independently owned community pharmacies across California. Third, we asked CAPSLEAD students from 11 other pharmacy schools to distribute the survey link to pharmacists and pharmacy technicians at their workplace and rotation sites. Fourth, we also requested pharmacy students at Loma Linda University School of Pharmacy to distribute the survey link to pharmacists and pharmacy technicians at their work and rotation sites. Finally, we posted the details about the study and the link to the survey on the Pharmacy Times, Pharmacy Today, Pharmacy Week, and Pharmacy Technician Certification Board (PTCB) Facebook pages, as well as the California Pharmacists Association (CPhA) website.

A reminder e-mail was sent to all potential respondents after two weeks. The estimated time required to complete the survey was approximately five minutes. Surveys were collected over a three-month period.

Survey Instrument

The study used a 26-item (15-question) survey instrument designed specifically for this study. We developed the items mostly based on the existing literature. The survey items measured the respondents’ level of support for pharmacy technicians to administer immunizations, opinions and attitudes toward pharmacy technicians administering immunizations, required training, and challenges associated with pharmacy technicians administering immunizations, and demographic and practice characteristics. Thirteen survey items measured the respondents’ opinions and attitudes toward pharmacy technicians administering immunizations and other functions related to that responsibility using a five-point bipolar Likert scale ranging from strongly disagree (1) to strongly agree (5). Three dichotomous items (yes/no) measured the respondents’ support for pharmacy technicians’ administration of immunizations and the amount of required APhA immunization training. Two open-ended questions measured the respondents’ views on the length of immunization training and challenges associated with allowing pharmacy technicians to administer immunizations in the community setting.

A total of seven items measured the respondents’ demographic and practice characteristics including profession (pharmacist vs. pharmacy technician), gender (male, female, other), California region where they practice (Northern, Central, Southern), years of experience, age (year born), number of prescriptions filled per day at their pharmacy and practice setting (retail, community and specialty). Finally, one open-ended question asked the respondents to give any comments or express any concerns they had about authorizing pharmacy technicians to administer immunizations in California community pharmacies.

The draft survey was circulated to three pharmacy faculty members and practitioners to assess its face and content validity prior to its finalization and distribution. We made minor changes to the phrasing of some of the items based on their feedback. At the end of the survey, the respondents had an option to provide their e-mail address to be entered into a raffle drawing to win one of eight Amazon gift cards worth $25.00 each. The winners were randomly selected and contacted via e-mail after the survey ended.

Data Analysis

All the data were downloaded to PASW (SPSS Inc., Chicago) version 22 for analysis. Descriptive statistics (e.g., means, standard deviations, frequencies) were computed for all study variables. When analyzing the data, “strongly disagree” and “disagree” were collapsed into one category, and “agree” and “strongly agree” were also collapsed into one category. The independent t-test and analysis of variance (ANOVA) were computed to compare mean opinions by gender, profession, practice setting, average number of prescriptions filled per day, etc. A p-value of $\alpha \leq 0.05$ was considered statistically significant.
Results

A total of 238 responses were received during the study but 186 were deemed complete and usable. The average age of the respondents was 38.8 (SD=12.9) years. Most of the respondents were pharmacists (n=123, 66.5%), female (n=113, 61.1%), practiced in Southern California (n=102, 55.1%) and worked in chain pharmacies (n=128, 69.2%) (Table 1).

A majority of respondents agreed or strongly agreed that California should change the law to allow trained pharmacy technicians to administer immunizations to patients (n=101, 55.2%) and that a pharmacist should be allowed to delegate the administration of an immunization to qualified and trained pharmacy technicians (n=122, 66.7%) (Table 2).

However, respondents were divided on whether properly licensed and trained pharmacy technicians should be allowed to only administer flu shots or not, with 66 (36.3%) disagreeing and 75 (41.2%) agreeing. The respondents believed that, on average, 31.8 (SD=29.9) hours of immunization training should be required for pharmacy technicians. Respondents also believed that allowing pharmacy technicians to administer immunizations would increase the pharmacy technicians’ liability (n=140, 76.1%) and pharmacists’ liability (n=131, 71.2%) (Table 2).

The respondents also provided numerous comments (free responses) about authorizing pharmacy technicians to administer immunizations in community pharmacies. In general, most respondents were supportive of authorizing pharmacy technicians to administer immunizations in community pharmacies. Below are selected representative comments made by the respondents:

“I fully agree that technicians can be trained to administer immunizations; however, the screening process should still be signed off [on] by a pharmacist each time.”

“Allowing technicians to give shots would be something that put our extremely high volume pharmacy in a better position to provide patient immunizations in a timely and efficient manner. At times, we only have one pharmacist working, so if, during flu season, a family of five comes in to get their shots all at once, then the pharmacist is gone for an extended period of time. That leaves the customers at [the] register waiting for a consultation block, in turn holding up the line for long periods of time. In any pharmacy setting, there [are] always going to be more technicians on duty than pharmacists, so letting techs administer immunizations is almost needed.”

“I support the idea of allowing them to administer basic (non-scheduled) immunizations. Techs do most of the work at the pharmacy anyway; why not give them the opportunity to branch out and do more? It just depends [on] whether pharmacies/pharmacists want to add to the list of things that fall under strict liability.”

“I think pharmacy technicians will need extensive training before they can administer immunizations, as they have very limited knowledge for different aspects related to screening, administration and post-administration risks.”

“I think that having pharmacy technicians administering immunizations is a bad idea because they will eventually replace the licensed pharmacist.”

“I think there is a lot [more] that goes into providing vaccines than just the act of giving the injection itself. It requires a lot of background education to screen patients and to answer questions, [create a] sterile environment and [watch] for adverse reaction, etc., that shouldn’t be put upon technicians. I understand the time constraints that chain pharmacists have, but I think there is a lot more liability and risk involved when we allow technicians to give vaccines.”

Attitudes by Demographic and Practice Characteristics

There was a statistically significant mean difference in the respondents’ opinions on the administration of immunizations by pharmacy technicians by profession on seven of the 13 items (p<0.05, see Table 3). On all seven items, pharmacy technicians had higher means than pharmacists. For example, more pharmacy technicians than pharmacists strongly agreed that “California should change the law to allow adequately trained pharmacy technicians to administer immunizations to patients” (4.0±1.2 vs. 3.0±1.5; p<0.001) and “A pharmacist should be allowed to delegate the administration of an immunization to qualified and trained pharmacy technicians” (4.1±1.1 vs. 3.4±1.4; p=0.001). (Table 3)

However, there was no statistically significant mean difference in opinions on the administration of immunizations by pharmacy technicians on 12 of the 13 Likert-type items between those respondents practicing in chain and those practicing in retail stores (p>0.05). Respondents working in independent pharmacies agreed that properly licensed and trained pharmacy technicians should be allowed to only administer influenza vaccination (mean=3.5±1.3), whereas those practicing in chain pharmacies were neutral (mean =3.0±1.4; t=2.078; df=166; p=0.039).

There was also no statistically significant mean attitude difference between the respondents’ opinions on all 13 items by the average number of prescriptions filled per day at their practice site (p>0.05).

There were no significant mean differences in the respondents’ opinions on the administration of immunizations by pharmacy technicians on all the 13 Likert-type items investigated by number of years of practice (p>0.05).

Discussion

The study results showed that pharmacist and pharmacy technician respondents supported changing the law to allow adequately trained pharmacy technicians to administer immunizations to patients in community pharmacies. Similar findings were reported in Idaho. Some states like Idaho Utah, and Rhode Island currently allow pharmacy technicians to administer vaccines and several states are considering changing their laws to allow pharmacy technicians to administer immunizations. It has been recommended that states allow trained pharmacy technicians to administer immunizations by removing their regulatory restrictions.

Similar to Idaho pharmacists, respondents believed that a pharmacist should be allowed to delegate the administration of an immunization to qualified and trained pharmacy technicians. The support of pharmacists and pharmacy technicians indicates their confidence in the abilities of pharmacy technicians to...
Table 1. Demographic Characteristics of Respondents

| Item (n=185)                        | Pharmacists, n (%) | Technicians, n (%) | All respondents (%) |
|-------------------------------------|--------------------|--------------------|---------------------|
| **Profession**                      | 123 (66.5)         | 54 (29.2)          | 185*                |
| Gender                              |                    |                    |                     |
| Male                                | 52 (42.3)          | 13 (24.1)          | 65 (35.1)           |
| Female                              | 70 (56.9)          | 41 (75.9)          | 113 (61.1)          |
| Other                               | 1 (0.8)            | -                  | 1 (0.5)             |
| Missing                             | -                  | -                  | 6 (3.2)             |
| **Region of California Currently Employed In** |                    |                    |                     |
| Northern                            | 38 (30.9)          | 11 (20.4)          | 49 (26.5)           |
| Central                             | 11 (8.9)           | 7 (13.0)           | 19 (10.3)           |
| Southern                            | 70 (56.9)          | 32 (59.3)          | 102 (55.1)          |
| Missing                             | 4 (3.3)            | 4 (7.4)            | 15 (8.1)            |
| **Years of Practice**               |                    |                    |                     |
| 0-5 years                           | 43 (35.0)          | 24 (44.4)          | 67 (36.2)           |
| 6-15 years                          | 37 (30.0)          | 21 (38.9)          | 58 (31.4)           |
| Over 15 years                       | 42 (34.1)          | 9 (16.7)           | 51 (27.6)           |
| Missing                             | 1 (0.8)            | -                  | 9 (4.9)             |
| **Average Number of Prescriptions Filled Per Day at Pharmacy** |                    |                    |                     |
| 0-200 prescriptions                 | 34 (27.6)          | 18 (33.3)          | 52 (28.1)           |
| 201-400 prescriptions               | 61 (49.6)          | 23 (42.6)          | 84 (45.4)           |
| Over 400 prescriptions              | 23 (18.7)          | 10 (18.5)          | 34 (18.4)           |
| Missing                             | 5 (4.1)            | 3 (5.6)            | 15 (8.1)            |
| **Practice Setting**                |                    |                    |                     |
| Independent                         | 26 (21.1)          | 17 (31.5)          | 43 (23.2)           |
| Chain                               | 93 (75.6)          | 34 (63.0)          | 128 (69.2)          |
| Missing                             | 4 (3.3)            | 3 (5.6)            | 14 (7.6)            |
| **Should pharmacy technicians be allowed to administer immunizations if they are provided adequate training?** |                    |                    |                     |
| Yes                                 | 65 (51.2)          | 47 (87.0)          | 118 (63.8)          |
| No                                  | 58 (47.2)          | 7 (13.0)           | 67 (36.2)           |
| **Would you be willing to receive an influenza vaccination administered by a trained pharmacy technician?** |                    |                    |                     |
| Yes                                 | 63 (51.2)          | 45 (83.3)          | 114 (61.6)          |
| No                                  | 47 (38.2)          | 3 (5.6)            | 52 (28.1)           |
| Unsure                              | 13 (10.6)          | 6 (11.1)           | 19 (10.3)           |
| **Currently, pharmacists and pharmacy interns require 20 hours of APhA immunization training. Is this sufficient for pharmacy technicians as well?** |                    |                    |                     |
| Yes                                 | 48 (39.0)          | 39 (72.2)          | 90 (48.6)           |
| No                                  | 47 (38.2)          | 5 (9.3)            | 56 (30.3)           |
| Unsure                              | 18 (14.6)          | 8 (14.8)           | 27 (14.6)           |
| Missing                             | 10 (8.1)           | 2 (3.7)            | 12 (6.5)            |

* There were eight missing responses on this item.
Table 2. Opinions Toward Administration of Immunizations by Pharmacy Technicians

| Mean (SD)a | Disagreed Strongly/Disagreed, n (%) | Neutral, n (%) | Agreed/Agreed Strongly, n (%) |
|------------|-------------------------------------|----------------|-----------------------------|
| a. The daily workflow would benefit from pharmacy technicians being allowed to administer immunizations. (n=185) | 3.6 (1.4) | 44 (23.8) | 30 (16.2) | 111 (60.0) |
| b. Pharmacy technicians who administer immunizations should receive an increase in pay. (n=183) | 3.9 (1.2) | 22 (12.0) | 18 (9.8) | 143 (78.1) |
| c. A pharmacist should be allowed to delegate the administration of an immunization to qualified and trained pharmacy technicians. (n=183) | 3.6 (1.4) | 44 (24.0) | 17 (9.3) | 122 (67.7) |
| d. Properly trained pharmacy technicians should be allowed to provide immunization patient screening to determine whether a patient is eligible to be vaccinated. (n=184) | 3.2 (1.4) | 67 (36.4) | 20 (10.9) | 97 (52.7) |
| e. Properly licensed and trained pharmacy technicians should be allowed to only administer flu shots. (n=182) | 3.1 (1.4) | 66 (36.3) | 41 (22.5) | 75 (41.2) |
| f. Adequately trained pharmacy technicians should be allowed to administer all immunizations. (n=183) | 3.0 (1.4) | 75 (41.0) | 34 (18.6) | 74 (40.4) |
| g. California should change the law to allow adequately trained pharmacy technicians to administer immunizations to patients. (n=183) | 3.3 (1.5) | 63 (34.4) | 19 (10.4) | 101 (55.2) |
| h. APhA training/additional training for pharmacy technicians on immunizations should be provided by employers. (n=184) | 3.6 (1.4) | 41 (22.3) | 28 (15.2) | 115 (62.5) |
| i. Immunization training should be part of the technician licensing and certification process. (n=184) | 3.3 (1.4) | 58 (31.5) | 31 (16.8) | 95 (51.6) |
| j. Allowing pharmacy technicians to administer immunizations will increase the work efficiency in a pharmacy. (n=184) | 3.7 (1.4) | 39 (21.2) | 24 (13.0) | 121 (65.8) |
| k. Allowing pharmacy technicians to administer immunizations will increase the pharmacy technicians’ liability. (n=184) | 4.0 (1.2) | 21 (11.4) | 23 (12.5) | 140 (76.1) |
| l. Allowing pharmacy technicians to administer immunization will increase the pharmacists’ liability. (n=184) | 3.9 (1.2) | 30 (16.3) | 23 (12.5) | 131 (71.2) |
| m. Allowing pharmacy technicians to administer immunizations will decrease the cost of care. (n=181) | 3.0 (1.2) | 60 (33.1) | 57 (31.5) | 64 (35.4) |

a Based on a five-point Likert scale (1=strongly disagree and 5=strongly agree).
| Pharmacists, Mean (SD) | Technicians, Mean (SD) | p-Value |
|------------------------|------------------------|---------|
| a. The daily workflow would benefit from pharmacy technicians being allowed to administer immunizations. (n=185) | 3.4 (1.4) | 3.9 (1.4) | 0.051 |
| b. Pharmacy technicians who administer immunizations should receive an increase in pay. (n=183) | 3.8 (1.2) | 4.3 (1.0) | 0.005 |
| c. A pharmacist should be allowed to delegate the administration of an immunization to qualified and trained pharmacy technicians. (n=183) | 3.4 (1.4) | 4.1 (1.1) | 0.001 |
| d. Properly trained pharmacy technicians should be allowed to provide immunization patient screening to determine whether a patient is eligible to be vaccinated. (n=184) | 3.1 (1.5) | 3.6 (1.3) | 0.036 |
| e. Properly licensed and trained pharmacy technicians should be allowed to only administer flu shots. (n=182) | 3.0 (1.4) | 3.3 (1.3) | 0.189 |
| f. Adequately trained pharmacy technicians should be allowed to administer all immunizations. (n=183) | 2.6 (1.4) | 3.7 (1.2) | <0.001 |
| g. California should change the law to allow adequately trained pharmacy technicians to administer immunizations to patients. (n=183) | 3.0 (1.5) | 4.0 (1.2) | <0.001 |
| h. APhA training/additional training for pharmacy technicians on immunizations should be provided by employers. (n=184) | 3.4 (1.4) | 4.0 (1.2) | 0.005 |
| i. Immunization training should be part of the technician licensing and certification process. (n=184) | 3.1 (1.4) | 3.6 (1.2) | 0.056 |
| j. Allowing pharmacy technicians to administer immunizations will increase the work efficiency in a pharmacy. (n=184) | 3.4 (1.4) | 4.2 (1.2) | 0.001 |
| k. Allowing pharmacy technicians to administer immunizations will increase the pharmacy technicians’ liability. (n=184) | 4.0 (1.2) | 3.9 (1.1) | 0.551 |
| l. Allowing pharmacy technicians to administer immunization will increase the pharmacists’ liability. (n=184) | 3.9 (1.2) | 3.8 (1.0) | 0.591 |
| m. Allowing pharmacy technicians to administer immunizations will decrease the cost of care. (n=181) | 2.9 (1.2) | 3.2 (1.2) | 0.159 |
perform the technical task of immunization administration. Furthermore, many respondents indicated that they would be willing to receive an influenza vaccination administered by a trained pharmacy technician, further underlining their confidence in pharmacy technicians’ abilities. California should consider allowing adequately trained pharmacy technicians to administer immunizations to patients as is the case in other states including Idaho, Utah, and Rhode Island. The fact that California medical assistants, who complete a similar length of time in training (10–12 months) as pharmacy technicians, have the authority to give patients injections, including intramuscular vaccinations, makes this suggestion feasible and realistic. Medical assistants in California are allowed to take blood pressure, height and weight measurements, draw blood, screen vision and hearing, and administer intramuscular, subcutaneous, or intradermal injections, and influenza vaccinations.

Pharmacy technicians in our study felt more strongly than pharmacists that California should change the law to allow adequately trained pharmacy technicians to administer immunizations. Similar findings were reported in Idaho where pharmacy technicians were excited about new career opportunities and roles, and viewed administering immunizations as an opportunity to develop and grow. A previous study found that pharmacy technicians were confident in their ability to learn new tasks, excited about implementing a new service, and believed that performance of a new task would keep their work interesting. Pharmacy technicians are generally willing to take on new roles including administering immunizations, in community pharmacies.

The respondents acknowledged that allowing pharmacy technicians to administer immunizations could have several advantages, including improving the daily workflow of the pharmacy and increasing the work efficiency in the pharmacy. As commented by one respondent, “Allowing technicians to give shots would be something that put our extremely high volume pharmacy in a better position to provide patient immunizations in a timely and efficient manner. At times, we only have one pharmacist working, so if, during flu season, a family of five comes in to get their shots all at once, then the pharmacist is gone for an extended period of time. That leaves the customers at [the] register waiting for a consultation block, in turn holding up the line for long periods of time. In any pharmacy setting, there are always going to be more technicians on duty than pharmacists, so letting techs administer immunizations is almost needed.” These findings suggest that allowing pharmacy technicians to administer immunizations has tangible benefits for the pharmacy. Allowing pharmacy technicians to immunize patients will enable pharmacists to devote more time to their other clinical roles, as reported elsewhere.

The respondents in our study noted the potential liability implications associated with allowing pharmacy technicians to administer immunizations, which is similar to what was reported in Idaho before their state laws were changed to allow technicians to administer immunizations. Respondents believed that the expansion of pharmacy technicians’ roles to include administration of immunizations would increase the technicians’ and pharmacists’ liability. Liability arising from technicians administering immunizations was a concern of both pharmacists and pharmacy technicians, although pharmacists perceived this risk more than pharmacy technicians. Pharmacists were probably concerned about liability issues because they are legally responsible for the outcomes of patients served by the pharmacy technicians under their supervision. In addition, the wide variability in the education and training of pharmacy technicians contributes to their concern. Notably, allowing pharmacy technicians to administer immunizations in Idaho did not increase liability insurance for pharmacists and pharmacies. The Idaho experience shows that pharmacy technicians can safely administer vaccines if delegated and trained to do so. Potential liability arising from pharmacists administering vaccines was also a concern of United States pharmacists prior to their involvement in 1998 but the involvement of pharmacists in administering immunizations has since become a public health success story. The issue of liability should be addressed when considering allowing pharmacy technicians to administer immunizations and measures should be put in place to increase pharmacists’ comfort level with delegating this role to pharmacy technicians. The concerns of some pharmacists may be eased if they are given full discretion in the delegation of responsibilities to pharmacy technicians according to their comfort levels. A systematic, formal training program for pharmacy technicians similar to the American Pharmacists Association Pharmacy Based Immunization Certificate Program would be a good first step towards helping pharmacist feel more comfortable delegating the task of immunization administration.

Most respondents agreed that 20 hours of certified APhA immunization training would be adequate for pharmacy technicians. However, there was a significant difference between pharmacists and pharmacy technicians regarding the hours needed for technicians to be adequately trained to administer immunizations (p<0.001). Most technicians agreed that 20 hours of training is sufficient, while pharmacists, on average, believed that technicians should require more than 20 hours, perhaps because pharmacists considered pharmacy technicians to have limited clinical training. These hours are more than the four-hour ACPE accredited training program in Idaho.

The study findings showed that respondents working in independent pharmacies agreed that properly licensed and trained pharmacy technicians should be allowed to only administer influenza vaccination. It is not clear why pharmacists working in independent pharmacies wanted to restrict the administration of vaccines to only influenza vaccinations. Future research is needed to investigate the association between respondents’ opinions and practice setting.

Future research studies using a larger and more representative sample of pharmacists and pharmacy technicians should be conducted. It is recommended that future studies use a theoretical framework to better understand the respondents’ attitudes and opinions about administering immunizations in community pharmacies. There is need to conduct an evaluation of the effect of allowing pharmacy technicians to administer immunizations on their pharmacy workload, time, and stress levels.

Limitations of the Study

The study has several limitations. First, our data may not represent the opinions of all California pharmacists and pharmacy technicians; not all potential respondents had an equal chance of being included in the study, especially the professionals from Northern and Central California. Second, no causality can be inferred from this study given the cross-sectional study design utilized. Third, there is a potential for selection bias in this study; it is possible that more respondents with a positive view of the topic chose to respond than those with a negative view of the topic.
Conclusion

Pharmacists and pharmacy technicians were both in favor of authorizing pharmacy technicians to administer immunizations to patients in community pharmacies. A majority of respondents agreed that allowing pharmacy technicians to administer immunizations is necessary and beneficial to the daily workflow, but also that it will increase liability for both technicians and pharmacists.

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**PBM Inequity:** The three largest PBMs cover more than 180 million lives. Roughly 78% of the market. With this market influence, employers, government entities, and other healthcare purchasers deserve transparency into PBM practices, many of which add hidden costs that lead to higher healthcare prices at the expense of patients.

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