

Comparison of Attitudes of Wisconsin Health Care Providers and Pharmacists Toward Vaccine Administration and Perceived Barriers

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ABSTRACT

Objective: To measure the attitudes of pharmacists and other health care providers towards vaccine administration, overall acceptance of pharmacists as immunization providers, and perceived immunization barriers in Wisconsin.

Methods: The authors conducted a cross-sectional study utilizing an online survey to assess the attitudes of pharmacists and other health care providers toward their role as immunization providers and perceived barriers to providing immunizations. The survey was distributed between November 2018 and February 2019.

Results: Two hundred thirty-six pharmacists and 51 other health care providers completed the survey. Of the pharmacists who responded, 203 (86%) provided immunizations. Most respondents (97.9% of pharmacists and 90.2% of other health care providers) see vaccinations as a shared professional responsibility. Both pharmacists (82.6%) and other health care providers (79.6%) believe pharmacists have adequate training to administer vaccines to patients. Immunizing pharmacists identified 2 primary barriers to providing immunizations: patients refusing vaccines for financial reasons (55%) and patients not having insurance coverage for vaccines received in a pharmacy (55%). In contrast, the primary barrier identified by non-immunizing pharmacists is other responsibilities taking precedence over vaccinating (75%). Other health care providers identified determining whether their patients' insurance will reimburse for a vaccine (52%) as their primary barrier toward providing immunizations.

Conclusion: These surveys provide a baseline measure of the attitudes of Wisconsin pharmacists and other health care providers toward immunization provision and offer opportunities for comparison. Our findings highlight barriers, such as insurance coverage for immunizations, that may prevent pharmacists from increasing vaccination rates in Wisconsin.

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BACKGROUND

Vaccines are one of the most cost-effective preventable clinical services available to most Americans.^{1,2} Since their introduction, morbidity and mortality from vaccine-preventable diseases such as smallpox, diphtheria, measles, mumps, and rubella have either been eradicated or significantly reduced in the United States.³ Despite these accomplishments, 42,000 adults and 300 children die from a vaccine-preventable disease annually in the US.⁴

The US Department of Health and Human Services Office of Disease Prevention and Health Promotion creates a framework for communities to support people living long, healthy lives.⁵ This framework—Healthy People 2020—calls for the reduction, elimination, or maintenance of the elimination of cases of vaccine-preventable diseases and increasing the percentage of children, adolescents, and adults who are vaccinated with vaccines recommended by the Advisory Committee on Immunization Practices (ACIP). Per the

Wisconsin Immunization Registry (WIR), the adult vaccination rates for Tdap, PPSV23, PCV13, HPV, and Zoster have increased slightly in the last 4 years.⁶⁻⁷ Yet many adolescents remain unvaccinated. In 2016, four in 10 females and 2.5 in 10 males age 13 to 17 years received all 3 doses of an HPV vaccine.⁸ Annually, 540 people in Wisconsin are diagnosed with a cancer likely caused by human papillomavirus infection that could have been prevented with the HPV vaccine.⁸ In 2015, over 15,000 hospitalizations and over 1,000 deaths were attributed to influenza and pneumonia

Table 1. Baseline Characteristics From the Pharmacist Survey

	All (N = 236)	Non-immunizing Pharmacists (N = 33)
Years in practice		
Mean (SD)	15.69 (11.64)	15.02 (10.19)
Median	13.00	12.00
Type of pharmacy – n (%)		
Health system community	68 (28.9)	5 (15.2)
Chain community	64 (27.3)	2 (6.1)
Independent community	61 (26.0)	4 (12.1)
Ambulatory community	25 (10.6)	10 (30.3)
Inpatient	14 (7.2)	12 (36.4)
Freq missing – n	1	0

in Wisconsin.⁹ Immunization rates for both pneumococcal and influenza vaccines fall below the Healthy People 2020 targets.⁴

Previous studies have shown that a lack of accessibility to primary care providers hinders the ability to receive immunizations.^{10,11} A Kaiser Family Foundation national poll found that 26% of 1,200 randomly selected adults reported not having a primary care provider.¹² The majority of individuals without an established primary care provider were young adults age 18 to 29 years (45%), followed by adults age 30 to 49 years (28%).¹² Similar results were reported in a survey by the Employee Benefit Research Institute.¹³ Overall, 33% of millennials (individuals born in 1981-1996) did not have a regular health care provider, compared to 15% of those age 50 to 64 years old.¹² Lastly, a 2017 assessment of new patient visit waiting times reported that the average wait time in 15 metropolitan areas is 24 days, an increase from 18.5 days reported in 2014.¹³ As a result, adults are choosing more convenient alternatives, such as retail clinics within pharmacies, to receive their care.¹¹ Pharmacists are one of the most accessible health care providers, presenting the opportunity to increase vaccination rates by offering convenient services without an appointment. An analysis of pharmacy-provided immunizations revealed that over 30% of vaccines administered at a national chain pharmacy were during “off-clinic hours” (ie, nights, weekends, holidays).¹⁴

The Centers for Disease Control and Prevention (CDC) calls for approaches to increase vaccination rates through a variety of efforts, including expanded access. Perhaps one of the most effective methods for increasing immunization access has been the expansion of the pharmacist role as an immunization provider.^{10,15,16} Over the last 2 decades, the use of pharmacists as immunizers and public health advocates has increased immunization rates in the US.^{10,15,16} Patients face obstacles to vaccine administration via standard methods, such as a restricted physician’s office hours and locations, which may hinder immunization rates.^{1,17} Pharmacies provide a venue for increased immunization access by providing multiple locations with convenient hours.

In Wisconsin, a pharmacist or intern must successfully com-

plete 12 hours of study and training approved by the Accreditation Council for Pharmacy Education or Pharmacy Examining Board. The pharmacist also must have in-effect liability insurance.¹⁸ At the time of this study, Wisconsin pharmacists and pharmacy interns were able to immunize patients age 6 years and older.¹⁹ It is commonly accepted in academic pharmacy and professional pharmacy associations today that the public health needs of society can be addressed, in part, by pharmacists providing immunizations.

A variety of options are available that meet the Wisconsin training requirements for pharmacist and student pharmacists. The American Pharmacists Association Pharmacy-Based Immunization Delivery certificate training program consists of 20 hours of training—12 hours of home study and 8 hours of live programming.²⁰ Similarly, the Pharmacy Society of Wisconsin’s (PSW) Immunization Delivery for Pharmacists training program provides 10 hours of home study and 6 hours of live programming. Over 1,100 Wisconsin pharmacists have completed the PSW training program.

Previous studies have assessed barriers preventing pharmacists from vaccine administration and have identified education, reimbursement, and negative interactions with other providers as obstacles.²¹⁻²³ Based on these data, we designed a study to measure the attitudes and perceptions of pharmacists and other health care providers towards vaccine administration and pharmacists as immunization providers, as well as perceived barriers to immunization administration, in order to further understand how collectively immunization expansion can be targeted in Wisconsin.

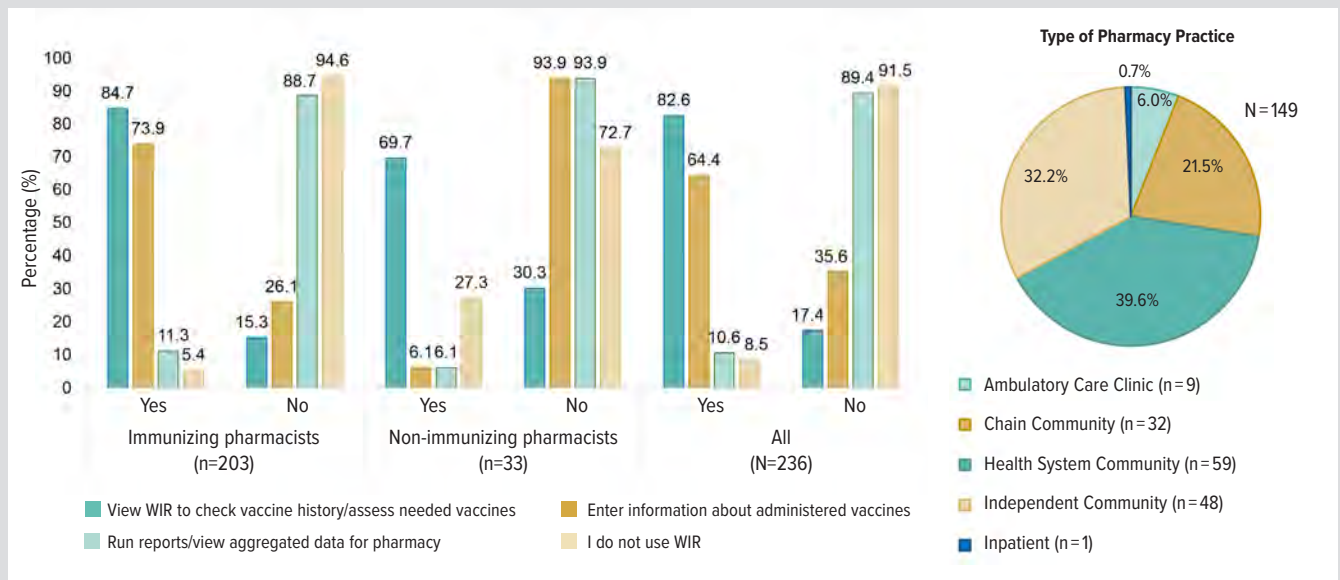
METHODS

We developed 2 web-based surveys, one for pharmacists and one for other health care providers. Questions from both surveys were adapted from “US Physicians’ Perspective of Adult Vaccine Delivery” by Hurley et al.²⁴ Each survey was estimated to take 10 minutes to complete and was distributed electronically. Data collection occurred from November 2018 to February 2019.

The pharmacist survey was distributed as a convenience sample by PSW via its electronic newsletter to 4,100 PSW members, which includes about 2,000 pharmacists. It included individual email identification for the purpose of future follow-up survey linkage and was sent a total of 4 times.

The provider survey was distributed to several Wisconsin health professional associations and immunization coalitions to include in their member communications. These included the Wisconsin Council on Medical Education and Workforce, Wisconsin Dental Association, Wisconsin Hospital Association, Wisconsin Nurses Association, Wisconsin Medical Society, and the Rural Wisconsin Health Cooperative. Providers targeted were physicians (MD, DO), nurses, dentists, and advanced practice providers. Providers were informed of the opportunity to complete the anonymous survey through their electronic newsletters; the survey was distributed 4 times.

Figure 1. Wisconsin Immunization Registry (WIR) Usage Reported by Pharmacist Survey Respondents (N=236) and Type of Pharmacy Practice Reported by Pharmacists Who Utilize WIR (n=149)



To gather baseline information regarding vaccine administration sites in Wisconsin, both groups were asked demographic information. Pharmacists were asked to provide information regarding their current immunization practices and attitudes towards immunization. Barriers were assessed in the context of financial, insurance, time or priority, patient- and staff-related, and logistics.

The surveys utilized choices based on a 4-point Likert scale (see Appendices). Responses to both surveys were analyzed and compared using the Wilcoxon rank sum test. At the time of the survey, Wisconsin law allowed pharmacists to immunize patients age 6 years and older.

Pharmacist and other health care provider characteristics were analyzed using summary statistics. Comparisons between groups were conducted using Wilcoxon rank-sum testing. This study was approved by the Medical College of Wisconsin Institutional Review Board.

RESULTS

A total of 241 responses were received from the pharmacist survey, with 236 completed surveys (response rate: 29.0% of those who opened the electronic newsletter and 12.0% of all those who were sent the electronic newsletter). Responses were received from 42 of 72 Wisconsin counties (58.3%). Most respondents were from the most populated counties, including Milwaukee (n=59; 25.0%), Dane (n=20; 8.5%), Brown, and Waukesha (each with n=13; 5.5%).

Of the 236 surveys analyzed, 203 (86.0%) reported that their pharmacies provided immunizations. The mean number of years in practice for those whose pharmacies provided immunizations was 15.69 years (SD 11.64), with a median of 13 years. Their

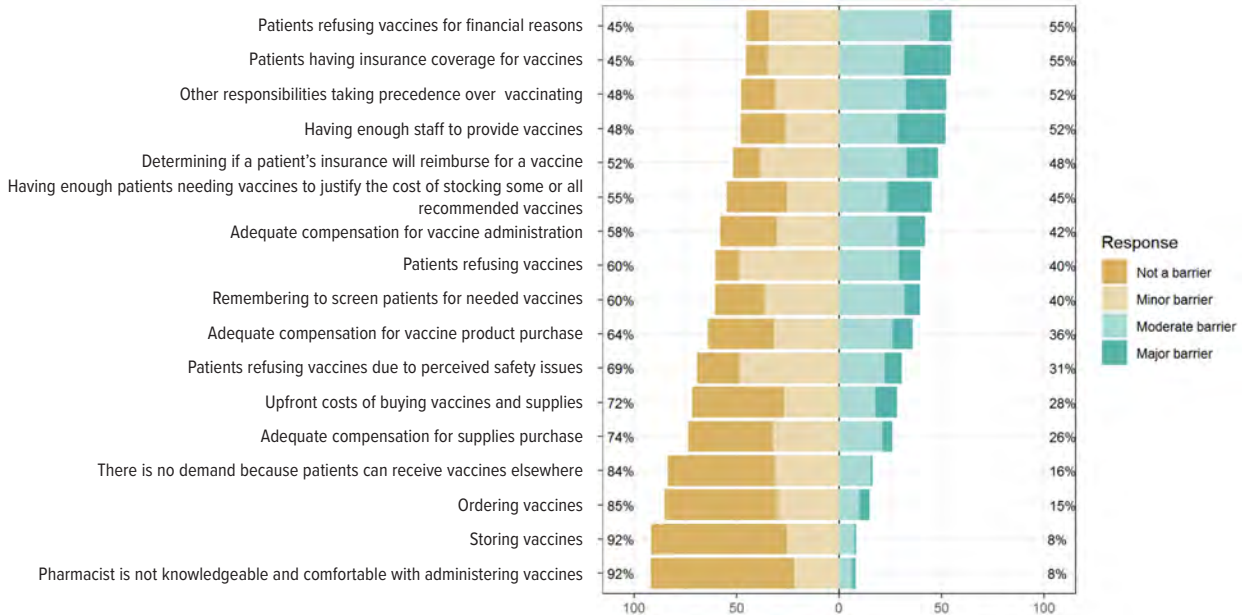
principal sites of practice were as follows: health system community (n=68; 33.5%), chain community (n=64; 31.5%), independent community (n=61; 30.0%), ambulatory care clinic (n=25; 12.3%), and inpatient (n=17; 8.4%). Respondents who reported not providing immunizations in their pharmacies (n=33; 14.0%) were primarily located in Milwaukee County (n=11; 33.3%), with the majority practicing in the inpatient (n=12; 36.4%) and ambulatory care clinic (n=10; 30.3%) settings. Other non-immunizing pharmacists' sites included health system community (n=5; 15.2%), independent community (n=4; 12.1%), and chain community (n=2; 6.1%). Their mean number of years in practice was 15.02 years (SD 10.19), with a median of 12 years.

Baseline characteristics obtained from all 236 pharmacist survey respondents are listed in Table 1.

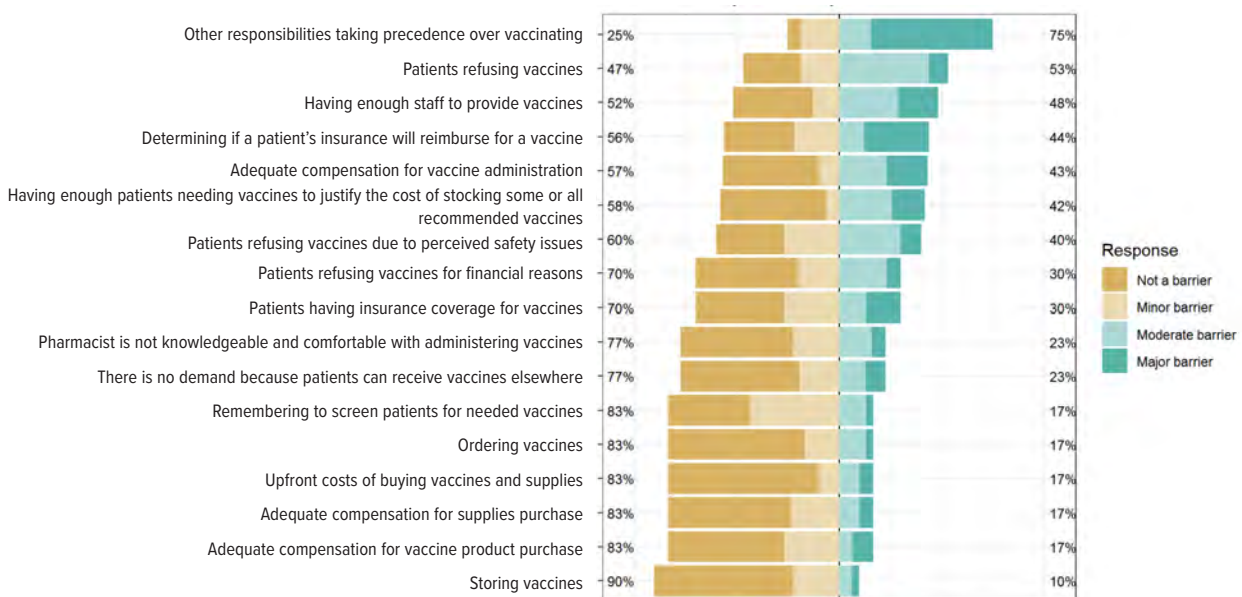
A comparison between both pharmacist groups of WIR usage found that 192 (94.6%) immunizing pharmacists and 24 (72.7%) non-immunizing pharmacists reported using the tracking database (Figure 1). Most pharmacists in immunizing pharmacies who utilize the WIR described using it to review their patients' immunization history to assess for needed vaccines (84.7%) and to enter information on administered vaccines (73.9%). Among non-immunizing pharmacists, 69.7% reported using the WIR to review for immunization history and/or vaccines needed, and 6.1% reported entering information about administered vaccines. Pharmacists who reported entering vaccine administration information into the WIR were located primarily in community pharmacies. Of the 149 pharmacists reporting WIR usage, 139 (93.3%) were practicing in community pharmacies represented as originating from the following types of pharmacies: health sys-

Figures 2. Barriers to Vaccine Administration Reported by Pharmacists in Immunizing (N=203) and Non-immunizing Pharmacies (N=33) in Wisconsin

A. Immunizing Pharmacies (N = 203)



B. Non-immunizing Pharmacies (N = 33)



tem community (39.6%), independent community (32.2%), and chain community (21.5%) (Figure 1).

Figures 2A and 2B compare barriers to providing immunizations reported by pharmacists in both groups. Moderate to major barriers were considered significant in our analysis. The primary patient-related barrier reported by immunizing pharmacies was patient refusal due to financial reasons (55%). In comparison, 30% of non-immunizing pharmacies reported this as a barrier ($P=0.001$). In terms of staff-related barriers, 8% of pharmacists in immunizing pharmacies reported a lack of

knowledge and comfort in administering vaccinations as their least significant barrier to providing immunizations, while 23% of pharmacists in non-immunizing pharmacies reported this as a barrier. Having patients refuse vaccines for other reasons or having enough patient demand for vaccine administration were not significant barriers for either group. Financial barriers, including adequate compensation for vaccine administration and product purchase, were less often identified as a barrier for pharmacists in non-immunizing pharmacies. The findings were similar for insurance and logistical barriers, which pharmacists in immu-

nizing pharmacies identified as significant. Immunizing and non-immunizing pharmacists reported significant differences in time or priority barriers. Other responsibilities taking precedence over vaccination was reported largely by pharmacists in non-immunizing pharmacies (75%), and pharmacists in immunizing pharmacies reported screening patients for needed vaccines as a time or priority barrier (40%).

Differences Between Pharmacists and Other Health Care Providers

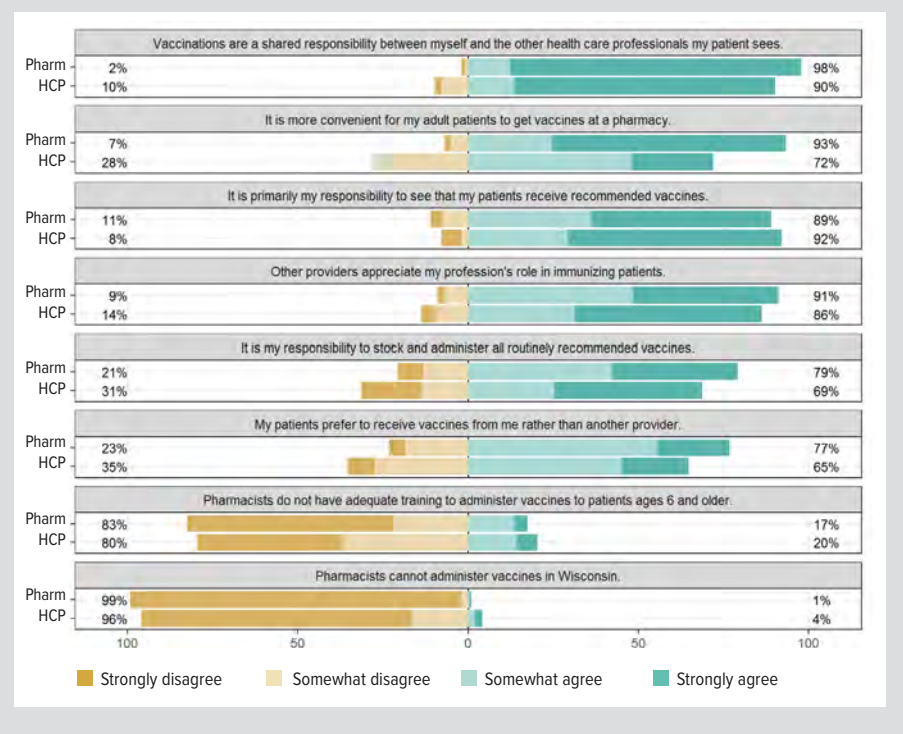
To evaluate the differences in perceived barriers for immunization between pharmacists and other health care providers (HCP), providers in various specialties were surveyed with identical questions. A total of 77 responses were received, with 74 completed and used for analysis. Due to the nature of contacting providers through Wisconsin health professional associations and immunization coalitions, the overall response rate could not be determined.

In the preliminary analysis of responses by provider type, dentists were excluded due to having negligible levels of vaccination experience. Therefore, the final analysis compared responses from the 236 pharmacists to the remaining 51 HCPs—30 physicians, 11 nurses, 5 advanced practice providers, and 5 “other” provider types.

Both pharmacists and other HCPs noted a shared professional responsibility for ensuring their patients are immunized and appreciation of the role other health care professionals have in this process (Figure 3). A significantly larger number of pharmacists (93%) agreed that it is more convenient for adult patients to receive their vaccines at a pharmacy ($P < 0.001$), while 72% of other HCPs agreed with the convenience statement. Furthermore, 96% of other HCPs agreed that it is helpful to have pharmacists share the role of vaccinating patients within the legal age limits.

For both other HCPs and pharmacists, insurance posed the primary barrier for immunizations, as demonstrated in Figure 4. Determining if a patient’s insurance will reimburse for a vaccine was reported as a barrier by both HCPs (54%) and pharmacists (48%). Similarly, determining if a patient has insurance to cover the vaccine was reported as a barrier by HCPs (47%) and pharmacists (52%), as well. In contrast to other HCPs, pharmacists reported greater barriers in adequate compensation for vaccine administration and vaccine product purchase ($P < 0.001$). Insurance and patient-related barriers were not significantly different between the groups.

Figure 3. A Comparison of Attitudes Towards Vaccine Administration by Pharmacists and Other Health Care Providers (HCP) in Wisconsin



DISCUSSION

Our results demonstrate support and recognition of pharmacists as a key member of the immunizing community in Wisconsin.

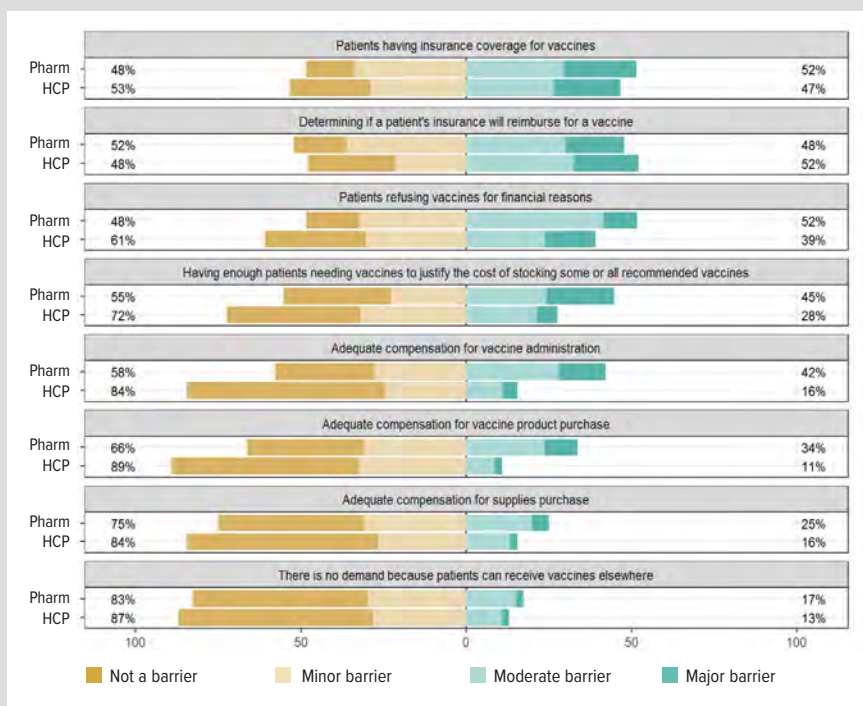
Based on survey responses, the majority of Wisconsin pharmacies already have an established role in public health (eg, disease prevention), as evidenced by the 86% of pharmacies that provide immunizations. Furthermore, although not required at the time of the survey, most immunizing pharmacists utilize the WIR to enter information regarding administered vaccines, which allows other HCPs to view a patient’s immunization records and prevent unnecessary duplicate administrations. The responses also suggest that even some non-immunizing pharmacists update their patient’s immunization history and/or refer patients to clinics or pharmacies that provide needed vaccines.

With pharmacists playing an increasing role in public health and local pharmacies offering additional access to vaccinations, it is important to consider collaboration between pharmacists and other HCPs in meeting this public health need. A comparison of the attitudes of both groups demonstrates that they share similar beliefs when it comes to providing immunizations.

Importantly, other health care providers trust and recognize pharmacists as a convenient resource for their patients to receive their vaccinations. Both pharmacists and other HCPs overwhelmingly disagreed with statements regarding a pharmacist’s lack of competence and ability to immunize in Wisconsin.

Hurley et al found that a significant number of physicians identified vaccination administration as a shared responsibility

Figure 4. Comparison of Reported Barriers to Vaccine Administration by Pharmacists and Other Health Care Providers in Wisconsin.



ity with other providers.²⁴ The results were similar when physicians were asked if pharmacies or retail stores provided a more convenient location for their adult patients to receive immunizations.²⁴ Physician responses regarding patient preferences of where to receive their immunizations was noteworthy. Close to 90% reported that their patients preferred to receive vaccines during office visits.²⁴ In contrast, only 64.7% of other HCPs surveyed in our study agreed with this statement. Since 2014, pharmacies and pharmacists have expanded access to immunization services in almost all communities.

A small percentage of pharmacists and other HCPs—including physicians in the Hurley et al, study—believe pharmacists do not have adequate training to administer vaccines.²⁴ It is possible that these providers may not be aware of the additional training required for pharmacists and pharmacy interns to administer vaccinations. While the level of immunization education and training of other HCPs is beyond the scope of this paper, it would be interesting to obtain data from other health care educational programs on the didactic and live components of immunization training in their respective curricula.

Despite the expansion in recent decades of immunization access through pharmacist-provided immunizations, pharmacists face barriers that prevent robust implementation of immunization services.²⁵ Of the barriers reported by immunizing pharmacists, a patient's financial and insurance coverage were the 2 main hindrances for vaccine administration and may be related to factors such as health plan policies, contracting considerations with health

plans, ability of pharmacist to submit claims to health plans, or patient insurance status. Non-immunizing pharmacists, on the other hand, identified time or priority barriers as their primary obstacle. This may be due to the difference in practice setting, as >60% of non-immunizing pharmacists were practicing in inpatient and ambulatory care clinic settings where medical assistants, nurses, and physicians have a greater role in vaccine administration. And while significantly more non-immunizing pharmacists reported this barrier, over 50% of immunizing pharmacists reported having other responsibilities, including pharmacy-related workflow, that may take precedence over vaccinating.

Limitations to this study include distribution of the pharmacist survey exclusively to PSW members, which account for half of the practicing pharmacists in Wisconsin. Additionally, the small number of responses to the provider survey may restrict our ability to draw conclusions

from the results. As such, this data may not be representative of the Wisconsin provider population. Nonetheless, other studies have reported similar results,^{1,17,24} a contrast from the results published in 2005 by Welch et al in which physicians were less aware and supportive of pharmacists as immunizers.²² Lastly, due to the nature of this study, the reliance of self-reported data could have introduced recall bias and influenced the conclusions drawn from this analysis.

CONCLUSION

Pharmacies provide easily accessible immunization services and are viewed as a partner in providing this preventive care to patients. Our findings showcase positive attitudes toward immunization for pharmacists and other health care providers. They also highlight the systematic barriers that may prevent increasing vaccination rates by pharmacists.

Identification of similar barriers within both groups provides an opportunity for a collaborative approach to direct immunization expansion efforts towards insurers/payers to offer patients the opportunity to “go through any door to receive an immunization.” Other health care providers in Wisconsin support and welcome pharmacists as immunization providers. In this COVID-19 era, having more immunizers is essential for the public health of our communities.

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