

Promoting Wisconsin Influenza Vaccine Equity Through Pharmacy Engagement

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ABSTRACT

Introduction: Wisconsin's influenza immunization rates are below public health goals, with only 38% of residents vaccinated during the 2022-2023 season. Rates vary by race, sex, ethnicity, and geography. The COVID-19 pandemic demonstrated that pharmacists are well-positioned to address vaccine rates and disparities. Similar efforts are needed to address influenza, another respiratory disease associated with substantial morbidity and mortality.

Methods: Influenza vaccination data for the 2022-2023 season were obtained from the Wisconsin Immunization Registry and analyzed by demographic and geographic subgroups to determine the proportion of immunizations administered at pharmacies. Three focus groups assessed factors affecting pharmacies' role in promoting influenza vaccine equity. Qualitative data were analyzed using thematic content analysis.

Results: Of the 38% of Wisconsin residents vaccinated, 30.6% received their immunization at a pharmacy. Vaccination rates were higher among females than males (44% v 34%), with similar proportions vaccinated at a pharmacy (29.5% females v 29.4% males). Residents aged 18 to 49 years and 50 to 64 years had lower vaccination rates than those aged >65 (26.7%, 39.6%, and 81.1%, respectively) and lower proportions vaccinated at a pharmacy (7.1%, 13.2%, and 35.8%, respectively). Differences in vaccination rates and pharmacy use were observed across racial and ethnic groups, with most groups showing lower rates compared to White residents. Qualitative results identified barriers such as vaccine burnout, billing and insurance issues, red tape and staffing shortages; promoters included trusted messengers and improved access/outreach.

Conclusions: Discrepancies in influenza vaccination rates by sex, age, and race/ethnicity persist in Wisconsin. Identifying barriers and promoters at the patient and immunizer levels can inform actionable recommendations to improve vaccine rates and promote equity.

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INTRODUCTION

Wisconsin's influenza vaccination rates are suboptimal; only 44% of residents were vaccinated in 2020-2021 season¹ and 38% during the 2022-2023 season. The Healthy People goal for annual influenza vaccination is 70%,^{2,3} a target Wisconsin continues to miss despite the recommendation for annual influenza vaccination for all individuals aged 6 months and older. The COVID-19 pandemic highlighted that vaccine access and uptake are distributed unevenly throughout Wisconsin.⁴⁻⁶ Focused efforts were made to address vaccine equity for COVID-19, and similar efforts are needed to address influenza—another respiratory disease associated with substantial morbidity and mortality.⁷⁻¹⁰

Pharmacists are well-positioned to improve Wisconsin's influenza vaccination rates. Barriers to all recommended vaccinations include limited accessibility and transportation to vaccination sites, scheduling challenges, and lack of patient or caregiver knowledge of vaccination benefits.¹¹

Pharmacies offer increased access, including evening and weekend appointments, and are located within a 10-minute drive for 89.3% and a 30-minute drive for 99.7% of Wisconsin residents.¹² A prior survey of Wisconsin pharmacists found that approximately 84% of pharmacies offer influenza vaccines.¹³ Pharmacists are trusted¹⁴ and can address vaccine hesitancy through direct patient engagement. Evidence shows that hesitant patients were more likely to receive a COVID-19 vaccine following a recommendation from a health care professional.¹⁵ Wisconsin pharmacies have personnel

with the training and capacity to administer vaccine.

At the time of this research, regulatory changes before and during the COVID-19 pandemic expanded the scope of trained pharmacy personnel to immunize individuals of all ages. Specifically, the Public Readiness and Emergency Preparedness (PREP) Act Amendments, now extended through 2029, require a prescription written within the previous 29 days only for patients aged 0 to 2 years to receive an influenza vaccine from a pharmacist. For children aged 3 to 5 years, a qualified pharmacist, student pharmacist, or pharmacy technician can administer the vaccine without a standing order, protocol, or prescription under the same act.¹⁶ In Wisconsin, qualified pharmacists, student pharmacists, or pharmacy technicians can administer a vaccine to individuals 6 years and older.¹⁷

The objectives of this project were to provide updated data from the 2022-2023 influenza vaccination season to assess the proportion of influenza vaccinations administered at pharmacy locations across Wisconsin, by demographic group and by counties with the highest and lowest vaccination rates. We also sought to gather input from key stakeholders on factors influencing influenza vaccination at pharmacies and strategies to improve vaccine uptake and equity. Together, these findings will inform future statewide interventions to improve equitable access to influenza vaccines for all Wisconsinites—across urban and rural areas and among people of all races, ethnicities, and abilities aged 6 months and older—in partnership with Wisconsin pharmacies.

METHODS

Quantitative Analysis of Wisconsin Influenza Vaccination

Aggregate data on all influenza doses were requested from the Wisconsin Immunization Registry (WIR), the state’s immunization information system, from August 1, 2022, through April 30, 2023. Data were obtained by age group (0-2 years, 3-5 years, 6-17 years, 18-49 years, 50-64 years, ≥65), race, ethnicity, sex, and vaccination location (pharmacy vs nonpharmacy). Pharmacy vaccination location was defined using either the “pharmacy” selection in the organization type field in WIR or the presence of the word “pharmacy” in the provider site name (eg, Value Pharmacy).

Population data—including statewide and county-level population size by county, sex, age, race, and ethnicity—were obtained from the Wisconsin Interactive Statistics on Health (WISH).

Table 1. Influenza Vaccination Rates and Proportion Administered at Pharmacies by Demographic Characteristics

	Total Population Vaccinated	Total % of Wisconsin Population Vaccinated	Vaccines Administered at a Pharmacy (% of Vaccinated)
Overall	2 254 665	38.33	30.6
	Total No. Vaccinated, Any Setting	% Vaccinated by Group, in Wisconsin Approximate	Vaccines Administered in Wisconsin (% of vaccinated)
Race (of vaccinated)			
American Indian or Alaska Native	19 043	24.1	14.9
Asian	69 193	35.1	22.5
Black	107 610	24.6	15.7
Native Hawaiian or Pacific Islander	3 240	43.4	23.1
Other	103 547		36.4
Unknown	38 091		25.0
White	1 913 941	37.4	31.7
Total	2 254 665		30.6
Ethnicity			
Hispanic	123 599	28.9	17.4
Not Hispanic	2 090 922	38.7	31.4
Unknown	40 144		29.7
Sex			
Female	1 280 448	43.7	30.3
Male	972 409	33.5	31.1
Age group			
0–17 years (0–2, 3–5, 6–17)	431 124	29.79	11.1
18–49 years	627 408	26.7	26.4
50–64 years	474 126	39.6	33.3
≥ 65 years	722 007	81.1	44.2

Population size for Native Hawaiian or Other Pacific Islander individuals, which was not available from WISH, was retrieved from US Census 2020 data. Descriptive statistics were used to summarize influenza vaccination rates by demographic group and vaccination location.

Qualitative Analysis of Promotors and Barriers to Influenza Vaccination

To better understand the factors affecting influenza vaccination by pharmacists and to gather perspectives on improving influenza vaccine equity through pharmacy-based vaccination, 3 stakeholder focus groups were conducted. Participants were recruited from three distinct groups to reflect diverse pharmacy practices and roles: local retail pharmacists (corporate and independent), Federally Qualified Health Center (FQHC) pharmacies, and immunization coalition members. Participants were recruited through the Pharmacy Society of Wisconsin, the state pharmacy professional association, and Immunize Wisconsin.

Nineteen participants expressed interest in response to a recruitment email, and 16 participated: 4 local retail pharmacists, 7 FQHC pharmacists, and 5 immunization coalition members. The 2 pharmacist focus groups included individuals with varied settings, patient populations, and daily responsibilities.

ties. The immunization coalition group, composed of vaccination advocates and providers from across Wisconsin, offered a broader population health perspective and insights into immunization practices across sectors, including but not limited to pharmacies.

Focus groups were conducted virtually, each lasting an average of 1 hour and generating approximately 25 pages of transcribed data. Zoom recordings were transcribed using Otter.ai software and reviewed for errors by a study coordinator.

Data Collection

The focus group facilitator—a trained anthropologist and qualitative researcher with over a decade of experience in health services research—developed a semistructured interview guide. The guide was revised by the primary investigator, a practicing family physician in academic medicine, and further refined by pharmacist research team members. The final guide focused on 3 main topics: (1) provider perceptions of patient hesitancy, (2) challenges for providers post-COVID, and (3) recommendations to improve vaccine equity.

Analysis

This project employed a combination of Rapid Qualitative Analysis (RQA)¹⁸ and thematic analysis.¹⁹ RQA supports health equity by enabling timely responses to emerging health care issue. It uses a matrix to systematically summarize key data points and to identify pertinent themes.²⁰ RQA was used initially by the focus group facilitator (KH) and later to triangulate themes developed through analysis by the primary investigator (RB).

Over 75 pages of data were inductively and deductively coded following Braun and Clarke's framework for thematic analysis,¹⁹ widely used in health services research and development. The primary investigator conducted the following steps: (1) familiarization with data (reading transcriptions); (2) generating initial codes and coding transcripts; (3) applying a second iteration of coding and generating initial themes; (4) reviewing and refining themes (collapsing and eliminating); (5) naming themes; (6) summarizing themes.

A comparative analysis across groups was conducted to identify differences in challenges and perspectives. Results were triangulated through comparison with the rapid analysis and member checking,²¹ which involved sharing summaries and asking clarify-

ing questions to confirm understanding to enhance the trustworthiness of findings. Member checking serves as a form of respondent validation, allowing participants to engage with and refine the interpreted data.

Because much is already known about factors influencing influenza vaccination and findings indicating ongoing immunization burnout post-pandemic, the themes were organized into “expected” findings, “unexpected” findings, and strategies to improve vaccine equity. Categorization was based on comparison with existing literature and the practical experience of pharmacist and physician researchers, with the goal of making findings as accessible as possible to “burned out” immunizers.

RESULTS

From August 1, 2022, through April 30, 2023, 38.33% of Wisconsin residents received an influenza vaccine. Of those vaccinated, 30.6% received at least one dose at a pharmacy location. Table 1 presents overall vaccination rates and pharmacy-administered doses by demographic group, as recorded in WIR.

By sex, 34% of males and 44% of females in Wisconsin

Table 2. Summary of Focus Group Findings

Patient-level influenza vaccine barriers • Co-occurrence of many barriers • Disinformation and misinformation • Insurance-related barriers • Lack of access to/use of primary care • Limited-English proficiency • Low health literacy • Philosophical • Politicization of vaccines • Procrastination and passivity • Undocumented • Uninsured • Vaccine burnout/fatigue^a	Patient-level influenza vaccine promoters • Avoiding illness due to health risks • Avoiding illness due to responsibilities • Awareness • Culture • Protecting others • Social influence/social network • Trust/right messenger^a
Immunizer-level influenza vaccine barriers • Billing and insurance related issues^a • Health care/medical disengagement • Inadequate time • Patient dissatisfaction • Red tape^a • Staffing shortages^a • Staying up to date with change • Stocking/ordering vaccines • Vaccine burnout/fatigue^a • Wisconsin Immunization Registry barriers	Immunizer-level influenza vaccine promoters • Adequate/adapted staffing • Opt-out strategies and messaging • Providing increased access/outreach^a • Providing repeat messaging • Removing barriers for patients
Strategies to increase equity • Decreased complexity for immunizers • Drive through immunization • Immunization incentives • Inform patients of vaccines due • Provider training • Workforce diversity	
• Defray costs (uninsured or copays) • Focus on specific populations • Immunization outreach • Interpreter services • Trustworthy patient education	

^aMost frequent/common themes.

received the influenza vaccine. Among those vaccinated, 29.4% of males and 29.5% of females received their vaccine at a pharmacy.

By age group, 26.7% of individuals aged 18 to 49 years received 1 dose, compared to the national rate of 35.2%; 26.4% of those vaccinated in this group received it at a pharmacy. For those aged 50 to 64 years, 39.6% were vaccinated, compared to the national rate of 50.1%; 33.3% of those vaccinated received it at a pharmacy. For those aged ≥65 years, 81.1% were vaccinated, compared to the national rate of 69.7%; 44.2% of those vaccinated received it at a pharmacy (Appendix Figure 1).

In the pediatric population (ages 0-17 years), a total of 431 124 doses were administered, with 11.1% of vaccinated individuals in this age group receiving their vaccine at a pharmacy. Specifically, 247 doses were administered at a pharmacy for those aged 0 to 2 years, and 4746 doses were administered at a pharmacy for those aged 3 to 5 years (Appendix Figure 2).

By race in Wisconsin, 24.1% of the American Indian or Alaska Native population were vaccinated; 14.9% of those vaccinated received their dose at a pharmacy. Among Asian residents, 35.1% were vaccinated; 22.5% of those vaccinated received it at a pharmacy. Among Black residents, 24.6% were vaccinated; 15.7% of those vaccinated received it at a pharmacy. Among the Native Hawaiian or Pacific Islander population, 43.4% were vaccinated; 21.3% of those vaccinated received it at a pharmacy. Among the White population, 37.4% were vaccinated; 31.7% of those vaccinated received it at a pharmacy (Appendix Figure 3).

By ethnicity, 28.9% of the Wisconsin Hispanic population received an influenza vaccine; 17.4% of those vaccinated received it at a pharmacy. In the non-Hispanic population, 38.7% were vaccinated; 31.4% of those vaccinated received it at a pharmacy (Appendix Figure 3).

By county, influenza vaccination rates ranged from 20% to 54%. The 10 counties with more than 40% of their population vaccinated were Ashland, Bayfield, Brown, Dane, Door, Iowa, La Crosse, Ozaukee, Trempealeau, and Waukesha counties. The 10 counties with less than 30% vaccination coverage were Clark,

Table 3. Barriers by Perspective
Patient-level influenza vaccine barriers
Confirmation of expected findings Example 1: "In particular, the trust factor is low, the buy-in is low, the fatigue is high, the literacy is low, a lot of it contributes to them saying thanks, but no thanks." Example 2: "So the older population we're fine with, but our younger population is very hesitant...for all vaccines, but particularly flu and I think it was just compounded by COVID. ...Any preexisting hesitancy was exaggerated."
Identification of unexpected findings Example: "I think the other side that we see too, is ...the ubiquity of the availability of the flu vaccine is...a unique barrier. Because there are so many opportunities... you can go to community pharmacy, you can go to a flu clinic and...they give them at school, they give them at work, you can go to your clinic and do it, I think it is very easy for a person to say, just to delay or postpone... I'm offering to you in...October or November, I'm coming back in December, or we've got the work clinic at the end of December, I'll just go to my local pharmacy in January.' So I think it's one of those things...because it is so available, I feel like people do kick the can down the road a little bit on it, too."
Specific and actionable recommendations <i>See promoters</i>
Immunizer-level influenza vaccine barriers
Confirmation of expected findings Example 1: "...we're supposed to have right around 90 medical assistants fully staffed at our clinic and we're down to about 70 right now. So, ...20% of our MA workforce is...waiting to be filled." Example 2: "There's not like a pinpoint,...split the specific red tapes, right. But...all of them combined...are hard. Our hard thing is just staffing, because...in order to get your WIR in,...do prescreening, get WIR in and figure out insurance...that all does take a lot of time. ...I won't pinpoint...any specific thing, but all of them together, make these very, you have to have a lot of staff to do it, if you're going to do it correctly."
Identification of unexpected findings Example 1: "So then we went to the manual inputting [in WIR], because...we had this reactionary issue of WIR trying to make sure everything was correct, which is great on their job, no doubt. But...we couldn't have that many errors happen [with the WIR data bridge]. So we had to go to manual input."
Specific and actionable recommendations Example: "...in the pharmacy, we're able to just basically bill for the vaccine, right? We're not to the point yet where we're billing for a specific amount of pharmacist time or any...of that background, so you can submit something with that like an administration fee. But it's not really fully accounting for all the time you have to spend. And of course, you can be flying along giving a vaccine every 2 minutes. And then someone will have...a question that you actually have to...pull them aside and have a 10-minute conversation with them. ...So if we were able to actually bill for both the vaccine and the time, it would be amazing."
Abbreviations: WIR, Wisconsin Immunization Registry; MA, medical assistant.

Dunn, Florence, Grant, Kenosha, Menominee, Rusk, Shawano, Taylor, and Waushara counties (Appendix Figure 4).

Qualitative Analysis

The focus groups identified several themes related to patient- and immunizer-level barriers and promoters to influenza vaccination (Table 2). Twelve themes emerged for patient-level barriers, with vaccine burnout/fatigue being the most prominent. Ten immunizer-level barriers were identified, with the most prominent being billing and insurance-related issues, staffing shortages, vaccine burnout/fatigue, and “red tape,” referring to the cumulative administrative burdens that demand sufficient staffing to ensure accuracy.

Seven patient-level influenza vaccine promoters were identified, with trust/right messenger being most prominent. Five

themes emerged for immunizer-level vaccine promoters, with providing increased access/outreach being most prominent. Analysis also identified 11 themes related to strategies to increase vaccine equity, with vaccination outreach being most prominent.

Expected patient-level barriers included low trust, low perceived benefit, and low health literacy (Table 3). Younger populations showed greater hesitancy than older populations, a trend exacerbated by the COVID-19 pandemic. An unexpected discussion persisted regarding the ubiquity of the influenza vaccine, which led some individuals to delay vaccination due to its perceived convenience and availability.

Expected immunizer-level barriers included staffing shortages and red tape. The discussion about red tape emphasized that the vaccination process involves many steps and staff, requiring careful execution. An unexpected barrier involved the WIR, where data exchange errors required manual data input.

An expected patient-level facilitator included the perception that influenza symptoms and sickness disrupts daily life, thus patients are inclined to receive the vaccine (Table 4). Additionally, in tribal communities, longstanding trusted relationship, even with clinicians from outside the tribe, enhanced the impact of vaccination recommendations.

Expected immunizer-level promoters included increased access during the COVID-19 pandemic, such as expanded appointment times, mobile vaccine clinics for those who cannot travel to a pharmacy location, and pharmacy technician certification. An unexpected finding was that the cross-training of clinic staff, allowing flexibility in who can administer vaccines.

Several specific and actionable recommendations to help increase influenza vaccine coverage in Wisconsin were discussed by the focus groups in response to vaccination barriers and promoters at both levels (Table 5). These included increasing grant funding for translation services, vaccinating those who live multigenerational homes, promoting patient access to WIR, increasing awareness of pharmacy-administered vaccines, and training vaccinators to presume vaccine acceptance and address patient questions.

Other recommendations included distribution of informa-

Table 4. Promoters by Perspective

Patient-level influenza vaccine promoters

Confirmation of expected findings:

Example 1: "So in some cases, it's not about them not getting the flu, but it's about how disruptive influenza can be to their life or to other people within their life. And so sometimes caregivers will be more inclined to protect their children because of that, or they're more inclined to get it to protect elderly or sick family members. And so kind of taking that angle that worked a lot with COVID. I think the same principles hold with influenza too."

Example 2: "I know, I've heard trust cited by a lot of tribal members. You know, if they see Caucasian staff members coming in, and they're pushing really hard to do this or that, you know, they have this pressure, and they're like, 'Why should I trust you; you're not part of my community?' And so, you know, working really hard over time, just to try to build that relationship with them."

Identification of unexpected findings

None identified

Specific and actionable recommendations

Example: "And I think the biggest thing is provider recommendation; strong recommendation is important because you are their safe zone, they may not be listening. But I know from family members and friends and I do a lot of community service, you are their safe zone."

Immunizer-level influenza vaccine promoters

Confirmation of expected findings

Example 1: "COVID had a positive impact on access, because it became the norm that we have weekend and evening vaccine clinics and things where that wasn't necessarily the norm, 3 years ago, so although it's way scaled back...compared to what it was at one point, ...we use that same...work-flow and philosophy for flu season and stuff now, too. So hopefully, it's providing more access for people who are busy during the day and work full time."

Example 2: "We bought a van that allowed us to vaccinate someone in the van. And so we set up the van in low vaccine areas and allowed them so that people could walk up that maybe didn't have a car or something like that. And then we also provide vaccines in people's homes...if that person can't drive or whatnot."

Example 3: "One thing that came out of COVID was the ability for pharmacy technician to do vaccines. And so that was one thing we took advantage of...our higher level technician got certified in... January of last year. And so she was able to be recruited by our nursing staff when needed. And so it didn't take one of our pharmacists from the workflow. That was...really nice."

Identification of unexpected findings

Example 1: "So it's the staffing. I definitely agree to CHWs we have nurses, we have medical assistants, I cross train;...everybody in my clinic can do all the things. We cross train everyone for that reason, so that we can have the ability to have that flexibility."

Specific and actionable recommendations:

Train immunizers on 2 evidence-based strategies:

1. Presumptive offering (wording) for vaccines
2. Ask "what exactly are you concerned with?" to clarify patient questions.

Abbreviation: CHW, community health worker.

tional videos targeting male populations, advocating for Federal Communications Commission requirements for vaccine education in media, bringing vaccines to social service locations and senior living communities, encouraging policy makers to codify the PREP Act allowances for pediatric immunization by pharmacy personnel, billing for pharmacist time, and emphasizing strong provider recommendations for the vaccine.

DISCUSSION

Statewide registry data show that while overall influenza vaccination rates in Wisconsin have remained relatively stable, the proportion of vaccines administered at pharmacy locations has increased, rising from 19.6% in the 2017-2018 season.¹³ However, overall vaccination rates remain below the Healthy People 2030

goal. Furthermore, disparities in vaccination rates by sex, age, race/ethnicity, and county were identified, which is consistent with findings from previous research.^{2,22} Recognizing these disparities enables further action to increase influenza vaccination rates and protect vulnerable populations.

Regarding disparity among sexes, if males received influenza vaccines at the same rate as females in the following season, an additional 296 270 people would be vaccinated. By age group, individuals aged ≥65 years were more likely to receive their vaccine at a pharmacy, which may provide insight into the role pharmacists play in vaccine education and recommendations. Notably, specific and actionable strategies presented by focus groups included using videos to promote vaccinations—particularly among males—and offering onsite vaccinations at senior housing and targeting multigenerational households.

Prior to this analysis, statewide data on pediatric influenza vaccinations administered at pharmacies were limited. This study found pediatric populations were vaccinated in pharmacies at the lowest rates of all age groups, despite provisions from the PREP Act allowing trained pharmacy personnel to vaccinate children of all ages.¹⁶ This may be due to limited awareness among pharmacists or parents regarding current policies and regulations for administering vaccines to children under age 6.¹⁷ Understanding recent trends in pediatric pharmacy-based vaccination is helpful for future training and educational efforts. Notably, focus group participants recommended pursuing legislative action to codify the US PREP Act provisions.

Given the increasing trend of vaccination at pharmacies, pharmacists have a growing opportunity to engage with in community-based vaccine education to further improve vaccination rates statewide. However, an important consideration for expanding pharmacy-administered vaccination is the capacity of pharmacies to meet increased demand. Although this study did not evaluate maximum vaccination capacity, it is important to acknowledge that scaling up may place additional strain on pharmacy resources and staff, especially as vaccine burnout/fatigue was identified as a prominent immunizer-level barrier. Future research should explore

Table 5. Strategies To Increase Influenza Vaccine Equity

Confirmation of expected findings
Example 1: “Even having representation, someone who looks like me, someone who’s in an environment that I live in, I think that’s real.”
Example 2: “So the clinics that were like in small towns are being closed. And they’re centralizing the services. So if you’re centralizing the services, you’re making a farmer drive 45 minutes, 2 hours, 1 hour to get 1 vaccine. He’s not going to go, he’s just too busy, fine. So if you have like a mobile clinic, then you know that you are close.”
Example 3: “Well, but we also can’t be worried about numbers either, right? No, you can’t, the volume thing is not when you’re doing this work. You can’t be worried about volume, you’ve got to be worried about access. And you have to have measurements that measure exactly, because everyone’s like, how many people? And I’m like, 500, but that was 500 that wouldn’t have gotten it. ...Oh, yeah, we gotta [sic] change our mindset around it.”
Identification of unexpected findings
Example 1: “Can you go to my where my mom lives, she tends to live in a senior apartment—and not necessarily a senior living center—and those senior apartments are just popping up everywhere. And they’re not being serviced appropriately, to me, because they’re...not assisted living or not a part of a system, so to speak. So then they’re just not getting what they need.”
Specific and actionable recommendations
Example 1: “I think any sort of translator service would be really good with like grant money. ...I will look into that first to get to that population that we’re just not confident on doing right now.”
Example 2: “Another population, for us in particular is multigenerational households. Households where you have grandparents, parents, children, and even grand, great grandchildren ...Those are highly densely populated homes. There’s risks that can be associated. I think there is an opportunity to market to an entire family and that particular setting up an interesting approach to look at.”
• Promote the location and use of the patient interface of WIR, which is currently underutilized. • Increase awareness of vaccines due by applying stickers to prescriptions picked up in pharmacies. • Train immunizers on 2 evidence-based strategies: (1) presumptive offering (wording) for vaccines and (2) ask “what exactly are you concerned with?” to clarify patient questions. • Use videos to communicate about immunizations, especially for males. • Advocate for Federal Communications Commission requirements for immunization education for media. • Co-locate multiple social services and bring immunizations there. • Target on-site immunizations for apartments where many seniors live which are not assisted living facilities or nursing homes. • Promote immunizations to multigenerational households and in settings where family members of all ages are present. • Recommendations for funders: immunization-promotion grants should allow/encourage money to be spent on food because this draws people together; more grants should incorporate funding for translators. • Recommendations for policymakers: Pursue legislative action to codify PREP act pediatric immunization by pharmacy personnel and/or commensurate payment for vaccine + administration + clinical assessment/ conversation.

Abbreviation: PREP, Public Readiness and Emergency Preparedness

pharmacy workflow and staffing models to assess the feasibility of increasing vaccination rates while maintaining service quality and staff well-being. Understanding these capacity constraints is essential for strategic planning and effective implementation of vaccination initiatives.

Limitations

There are notable limitations to the data collected from WIR. One limitation is that the race and ethnicity fields are missing more frequently than other data fields, which may hinder the ability to measure the impact of future interventions. Exploring alternative data sources could prove valuable. Additionally, while documentation of vaccinations in WIR is mandated for pharmacies and under the Vaccines for Children program, it is not required for

all providers,²³ which may inflate the proportion of doses attributed to pharmacies in our analysis. However, prior evaluation found that 97% of immunizations documented in patient medical records were also reflected in WIR.²⁴

Focus group limitations included lack of representation from primary care and medical clinics, as well as chain community pharmacies. Another limitation was that discussions often included the COVID-19 vaccine or general immunization topics, rather than focusing solely on the influenza vaccine. Nevertheless, learnings from the COVID-19 pandemic informed group recommendations and offered an entry point for discussing influenza vaccination. While expanding the project to incorporate patient-focused stakeholder groups specific to post-COVID influenza immunization at pharmacies would add valuable perspective, this was beyond the scope of this project and is recommended for future research.

A final limitation was the inability to integrate quantitative data into the qualitative analysis. At the time of focus groups data collection, the corresponding quantitative data in WIR were not yet available, preventing the presentation of these findings to participants. Despite this, the quantitative and qualitative findings offer valuable insights and can serve as a foundation for further dialogue and exploration.

CONCLUSIONS

These findings demonstrate that continued efforts are needed to improve influenza vaccine rates and promote equity across Wisconsin, as notable disparities persist by sex, race/ethnicity, and among pediatric populations. The growth in influenza vaccine administration at pharmacy locations each respiratory season presents a unique opportunity for pharmacists to provide education, expand access, and address vaccine hesitancy.

Further evaluation of successful outreach strategies used with Wisconsin's ≥65-year population presents an opportunity to apply proven outreach methods to the remainder of the population whose vaccination rates fall below national averages. Focus group analysis of barriers and promoters at both the patient and immunizer levels provides insight into targeted areas for improvement, supporting the development of actionable recommendations that pharmacists and other Wisconsin stakeholders can utilize to increase statewide influenza vaccination rates. Specifically, recommendations include additional training for WIR users, improved interoperability between pharmacy systems and WIR, and increased reporting of optional demographic data fields. These enhancements will support future analysis, monitoring, and intervention efforts aimed at achieving more equitable and comprehensive influenza vaccine coverage across Wisconsin.

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Appendix: Available at www.wmjonline.org

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