

"MORTAR & PENCIL" CONCORDIA UNIVERSITY WISCONSIN PHARMACY STUDENT WRITING CLUB:

Impact of COVID-19 Pandemic on Overall Vaccination Rates and Ways to Improve Public Education

by Erika R. Buchel, B.S., 2022 PharmD Candidate, Magdelene A. Kissel, B.S., 2022 PharmD Candidate, Kayla I Pearsall, 2022 PharmD Candidate

The COVID-19 pandemic has brought to light many systemic healthcare issues; one of the most important is the decline in vaccination rates in Wisconsin. The Wisconsin Department of Health Services reported a staggering decrease in vaccination rates in all age groups compared to the 2015-2019 average data (Figure 1).¹ Maintaining high vaccination rates among children and adults is critical to keeping vaccine-preventable diseases, such as measles, hepatitis, and tetanus, at low prevalence rates. The global COVID-19 pandemic is quickly becoming a global immunization pandemic, as Blue Cross Blue Shield member survey data reported that 40% of parents said their children missed vaccinations due to the pandemic.² These national trends give some idea of what to expect at the state level if appropriate actions are not taken to combat the vaccination rate decline.

Several factors have provoked the decline in vaccination rates in Wisconsin since the pandemic began. One of these factors is the state's Safer At Home order, which went into effect on March 25, 2020.³ The order's prohibition of nonessential travel might have decreased the public's ability to acquire vaccinations they otherwise would have. The order forced healthcare facilities to implement new protocols to combat COVID-19, and to cancel elective appointments, which in turn eliminated or delayed routine vaccinations that patients otherwise would have obtained. Another major factor in the decline in vaccination rates is patients' need to weigh the importance of vaccinations against the coronavirus. Many individuals might have been more concerned with

Abstract

Since the beginning of the COVID-19 pandemic, overall vaccination rates in Wisconsin have drastically declined. High vaccination rates are essential for maintaining herd immunity for preventable diseases. The decline in vaccination rates might be partially attributed to the state's "Safer At Home" order, which required people to stay home except for essential functions. This order, and new discussions about the COVID-19 vaccine itself, might have changed some public perception of vaccinations. Common misconceptions about vaccinations in general are also a reason for declining rates. Some people believe that vaccinations cause autism, or that the ingredients of vaccinations are harmful to people. Some people also have religious, ethical, or political beliefs that might prevent them from obtaining vaccinations. Due to decreasing vaccination rates, it is essential that healthcare professionals take the initiative to improve these rates. This can be done via education, both professionally in the healthcare facilities where they work, and personally in the communities where they live. Motivational interviewing and social media are also essential tools for raising awareness of the importance of vaccinations. In order to accomplish these goals, it is essential that pharmacists and all healthcare professionals work together to increase vaccination rates to promote building a healthier future for all, as outlined by Healthy People 2030 goals.

staying home to avoid getting COVID-19 than going out to obtain their routine vaccinations.³ As more people avoid going out in public unless deemed necessary, and more office visits are virtual, getting routine vaccinations has become less convenient for the public.

While COVID-19 has continued to prevail as the year has progressed, the public fear of contracting the virus has contributed to the overall decline in vaccination rates when compared to rates before the pandemic. Pharmacists must take initiative to help maintain vaccination rates by addressing patients'

fears and barriers to obtaining routine vaccinations. Pharmacists and pharmacies are well-positioned to assist in helping to close the vaccination gap as patients continue to visit pharmacies to pick up essential medications. The objective of this article is to educate pharmacists regarding the decline in overall immunization rates since the COVID-19 pandemic began, discuss the misconceptions surrounding vaccinations, and discuss ways pharmacists can increase education surrounding vaccinations.

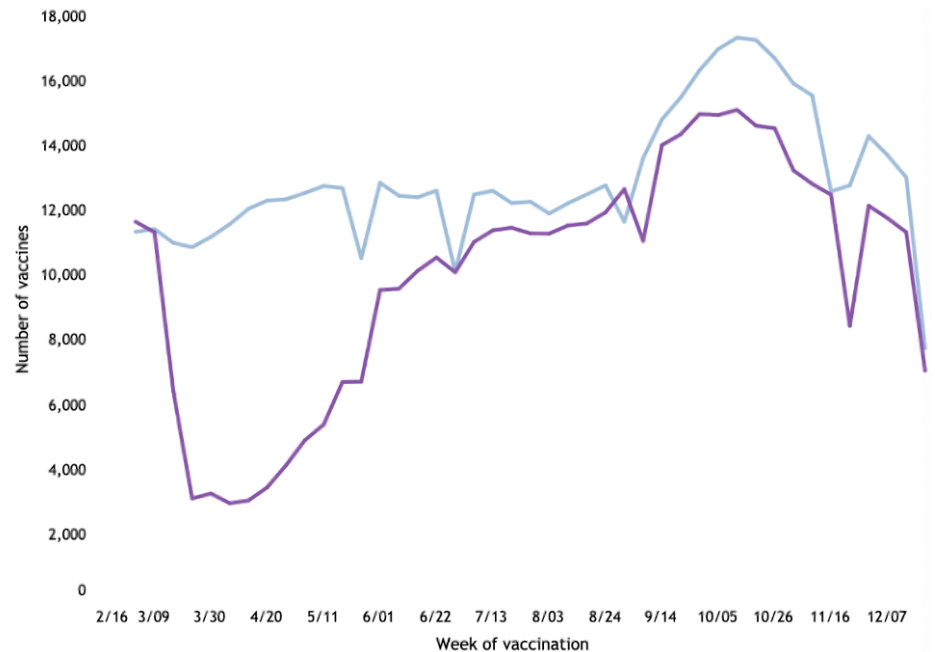
Vaccine Misconceptions

Prior to the COVID-19 pandemic, vaccination rates were already declining due to the increasing hesitancy around vaccines. A major cause of vaccine hesitancy is the many misconceptions regarding them.⁴ It is easy to find false information, as there are web pages and social media groups dedicated to spreading misconceptions or unproven beliefs about vaccinations. Some misconceptions have existed since the beginning of vaccination use and might be related to people's religious or ethical beliefs, fear of adverse side effects, the contents of vaccines, and even distrust of the government.

While many religious groups either encourage or do not have strict rules regarding childhood vaccinations, some strongly influence their members on whether or not to vaccinate. The Church of Christ, Scientist is a faith-healing group that believes that prayer will heal their ailments rather than medicine, and therefore strongly opposes vaccinations. The Roman Catholic Church, however, does recognize the importance of vaccinations and their impact on protecting the public against preventable diseases.⁵ However, there have been some religious groups that have started to protest vaccines because of the long-held belief that vaccines are made from aborted human fetuses. Three vaccines did use cell lines that were derived from fetal tissue: the MMR-II, Varivax[®] (varicella), and Havrix[®] (hepatitis A). The tissue was harvested from fetuses that were electively aborted during the 1960s, and while their efficacy since then has been evident, some people focus on the fact that they were derived from aborted fetuses.⁶

Another common misconception regarding vaccinations is that they cause autism. This belief is related to the rising number of autism diagnoses, which most commonly occur when a child is between the ages of 15 months and 18 months old.⁷ This timeframe coincides with childhood vaccination schedules, so many individuals have begun to associate the rise in autism diagnoses with receiving childhood vaccinations. The accusations grew astronomically after a well-known article was published in *The Lancet* in 1998 that made the statement that the

FIGURE 1. Routinely Administered Vaccinations in Persons Aged 19 years and older in 2020 versus the 2015-2019 average.



Courtesy of Wisconsin Department of Health Services.

Measles-Mumps-Rubella (MMR) vaccine caused autism.⁸ This fueled the perception of the link between autism and childhood vaccinations for many years, until the article was retracted because the author failed to disclose the source of funding for his research and shared false data. This myth has been disproved, but a lot of the people involved in the anti-vaccination movement still associate autism with vaccines.

Another common misconception about vaccinations is that their ingredients are harmful. One of the ingredients that concerns the public is thimerosal. Thimerosal is a mercury-containing compound that is often used as a preservative in vaccines to prevent the growth of bacteria. There is no scientific evidence against the use of thimerosal in vaccines due to exposure to thimerosal or adverse effects caused by exposure to thimerosal.⁷ Regardless of the lack of evidence of the dangers of using thimerosal as a vaccine preservative, it has been recommended by the Food and Drug Administration (FDA) that thimerosal should not be used as a preservative in any of the childhood vaccines.⁹ The FDA still suggests getting the annual influenza vaccine, even if it contains thimerosal, because the benefits of getting the annual

influenza vaccine will generally outweigh the risk of getting it.⁹

Many individuals in the anti-vaccination movement also believe the government mandating vaccines, especially for children, is reason enough to oppose them.¹⁰ The Centers for Disease Control and Prevention (CDC) spends a lot of time, money, and resources promoting childhood vaccination schedules and the annual influenza vaccine. Some believe the government infringes on their rights by mandating vaccination schedules; many public schools also require vaccines for their students.¹⁰ Others believe the government connection with "Big Pharma" encourages vaccinations and is another reason to distrust government recommendations. Overall, people who lack trust in the government are less likely to vaccinate themselves and their children.¹⁰

Strategies to Overcome Vaccine Hesitancy

Vaccination rates have decreased due to misconceptions and the mandated Safer at Home order; therefore, it is important for pharmacists to use effective methods when educating patients. A few examples of ways to implement education are motivational interviewing and social media. Table 1

TABLE 1. Additional Resources for Overcoming Vaccination Hesitancy

<i>Organization</i>	<i>Summary of information</i>	<i>Link for more information</i>
CDC: Make Shots Less Stressful	Information for pharmacists to provide to patients to make vaccinations less scary for children.	https://www.cdc.gov/vaccines/parents/visit/less-stressful.html
Questionnaire for Healthcare Provider Use	Resource that pharmacists might use to help determine which vaccines are appropriate for patients.	https://www.cdc.gov/vaccines/hcp/adults/downloads/patient-intake-form.pdf
Vaccine Finder	Resource pharmacists might give to their patients to inform patients about the vaccinations they need and where they can go to obtain them.	https://vaccinefinder.org/find-vaccine
Tips for Motivational Interviewing	Comparing traditional and motivational interviewing tips.	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7145430/table/t3/
Vaccine Communication Tips	Suggested words and phrasing pharmacists might use to improve vaccine acceptance among patients.	https://debeaumont.org/covid-vaccine-poll/

provides a summary of helpful resources for educating yourself and your patients regarding vaccination.

Education

Educating patients about vaccinations is crucial, because patients should be well educated about a topic before making a decision. Pharmacists are essential when it comes to educating the public about vaccinations, because people interact with pharmacists more frequently than with other healthcare providers. Most patients see their doctor several times a year at most; however, many people have frequent access to a pharmacy, whether it be a privately owned pharmacy in their hometown, or a retail pharmacy located in a grocery store. One study has shown that individuals with a higher education are more willing to participate in current vaccine recommendations, indicating that education is essential.¹¹ However, patients also have access to a wide variety of information via the internet and social media, which might lead to common misconceptions regarding vaccinations. It is essential to take these misconceptions into account, as data shows that 76%-88% of anti-vaccination websites have manipulated the public's emotions and 20%-50% of those have underestimated the risk and severity of vaccine-preventable diseases.^{12,13} When patients firmly believe these misconceptions, it becomes difficult for them to participate in preventative health measures.¹⁴ While pharmacists are essential in educating patients regarding vaccinations, community members who are parents might also advocate in their communities. They often already have

trustworthy relationships built with other parents and community members.¹⁵ These relationships within communities are of utmost importance during the pandemic, as there is a collective desire to return to normalcy.¹⁶

Not only is education important, but the way in which pharmacists communicate this information to their patients is also important. This is especially true for vaccinations. The language used with patients about vaccines can help patients make informed decisions about their health. A recent poll conducted by the de Beaumont Foundation (in partnership with the American Public Health Association, the National Collaborative for Health Equity, and Resolved to Save Lives) surveyed a diverse group of 1,400 registered voters on their preferred phrasing related to vaccinations.¹⁷ Based on its findings, the group published a tip sheet highlighting words and phrases that work best to educate the public and overcome vaccine hesitancy. For example, focusing the conversation on the benefits of vaccination rather than the consequences of not receiving a vaccine was preferred by survey respondents. Also, words that evoke personal safety and the health of the family performed better compared with phrasing that evokes benefits to the community or society at large. Finally, it is important that pharmacists have the proper tools to guide vaccine education. One helpful tool is SHARE, an acronym used by the CDC, which allows pharmacists to make strong recommendations regarding any vaccination.¹⁸ This approach sheds light on the importance of sharing (S) why the potential vaccine is appropriate for the

patient; highlighting (H) positive personal stories relating to this vaccine; addressing (A) any patient concerns that arise during the encounter; reminding (R) that the vaccine helps protect the patient or their loved ones; and explaining (E) the potential costs that can come with not getting vaccinated, such as the risks associated with the illness or time spent away from work due to the illness.¹⁸

Motivational Interviewing

Education is one piece that helps a patient in their decision about vaccinations; however, it is not the only thing that guides a decision. Therefore, another important tool pharmacists might use is motivational interviewing. Motivational interviewing uses patient beliefs to guide decisions and enhance motivation to make a change. The goal of motivational interviewing is to provide the patient with accurate information while relying on their own knowledge. It is essential to remain respectful and keep in mind the patient's personal beliefs while interviewing them. It is essential that pharmacists actively listen to patient concerns while adapting the conversation to attend to any negative emotions of fear and anxiety, while also working to activate positive emotions regarding vaccinations, such as good for the community and themselves.¹⁴ When motivational interviewing is successful, it can lead to partnerships, acceptance, evocation, and altruism for the whole community.¹⁹

Social Media

Finally, social media can be a great way to overcome vaccine hesitancy because it

can reach the greatest number of people and is the method of choice since the emergence of COVID-19. There are several ways pharmacists might use social media to educate the public about the importance of vaccines; however, it is essential to know what patients rely on regarding information obtained from social media. One study found that it is more important to focus on personal stories from individuals rather than using compelling data from thousands of individuals, due to the stories' ability to trigger emotional connections.¹⁹ This particular study looked at men who have sex with men (MSM) because they tend to rely on social media and mobile apps to obtain health information and seek sexual partners. The study concluded that the applications they were using might be important in HPV vaccine promotion, demonstrating how applications can influence patient perceptions.²⁰ Not only are applications persuasive in this case, but some individuals might feel less embarrassed or more independent if they can refer to an app rather than a healthcare provider for information.

Conclusion

Vaccination rates have drastically decreased during the pandemic; therefore, it is important that, as pharmacists who are a part of an interprofessional team, we work together to increase these vaccination rates. In order to do this, it is crucial that pharmacists understand common misconceptions regarding vaccinations and consider patients' personal beliefs. Once we understand the patients' concerns, we might use our knowledge regarding vaccinations and immunity to educate the public and trend the vaccination rates back upward as they once were.

Erika Buchel, Magdelene Kissel, and Kayla Pearsall are 3rd Year Doctor of Pharmacy Candidates at Concordia University Wisconsin School of Pharmacy in Mequon, WI.

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References

1. Immunization Rates Dashboard . Prevention and healthy living. Wisconsin Department of Health Services. 2020 Accessed January 14, 2021. https://www.dhs.wisconsin.gov/immunization/rate-dashboard.htm?fbclid=IwAR1Bp56PEnb8mv9zKJ1oAKYtKc86nLHArQaAMAnnVpvz-3c36HqYPJBhn_w
2. Missing vaccinations during COVID-19 puts our children & communities at risk. Blue Cross Blue Shield. Accessed January 14, 2021. <https://www.bcbs.com/the-health-of-america/infographics/missing-vaccinations-during-covid-19-puts-our-children-and-communities-at-risk>
3. Evers T, Palm A. Emergency Order #12. State of Wisconsin Department of Health Services. 2020. Accessed January 14th, 2021. https://content.govdelivery.com/attachments/WIGOV/2020/03/24/file_attachments/1409408/Health%20Order%20%2312%20Safer%20At%20Home.pdf
4. Schaffner W, Talbot HKB, Dalton M. Data behind vaccine hesitancy and latest updates on vaccines in the pipeline – 2019 Annual Conference on Vaccinology Research, April 3-5, 2019. Emerging Infectious Diseases. 2020;26(1).
5. Vaccinate your family. Religious Views of Vaccination At-a-Glance. Accessed November 21, 2020. maineap.org
6. McKenna KC. Use of aborted fetal tissue in vaccines and medical research obscures the value of all human life. *Linacre Q.* 2018;84(1):13-17. doi: 10.1177/0024363918761715
7. Institute of Medicine of the National Academies. Immunization safety review: thimerosal-containing vaccines and neurodevelopmental disorders. October 2001. Accessed November 20, 2020. <https://www.nap.edu/catalog/10208/immunization-safety-review-thimerosal-containing-vaccines-and-neurodevelopmental-disorders#>
8. Wakefield AJ, Murch SH, Anthony A, et al. RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet.* 1998;351(9103):637-641. doi: 10.1016/s0140-6736(97)11096-0
9. Thimerosal and vaccines – FDA. Accessed November 20, 2020. <https://www.fda.gov/vaccines-blood-biologics/safety-availability-biologics/thimerosal-and-vaccines>.
10. Baumgaertner B, Carlisle JE, Justwan F. The influence of political ideology and trust on willingness to vaccinate. *PLoS One.* 2018;13(1):e0191728. doi: 10.1371/journal.pone.0191728
11. Quinn SC, Jamison AM, Freimuth VS. Measles outbreaks and public attitudes towards vaccine exemptions: some cautions and strategies for addressing vaccine hesitancy. *Hum Vaccin Immunother.* 2020;16(5):1050-1054. doi: 10.1080/21645515.2019.1646578
12. Bean SJ. Emerging and continuing trends in vaccine opposition website content. *Vaccine.* 2011;29(10), 1874-1880. doi: 10.1016/j.vaccine.2011.01.003
13. Kata A. A postmodern Pandora's box: anti-vaccination misinformation on the internet. *Vaccine.* 2010;28(7), 1709-1716. doi: 10.1016/j.vaccine.2009.12.022
14. Chou WS, Budenz A. Considering emotion in COVID-19 vaccine communication: addressing vaccine hesitancy and fostering vaccine confidence. *Health Commun.* 2020;35(14):1718-1722. doi: 10.1080/10410236.2020.1838096
15. Brunson EK. The impact of social networks on parents' vaccination decisions. *Pediatrics.* 2013;131(5):e1397-1404. doi: 10.1542/peds.2012-2452
16. Coronavirus disease (COVID-19) advice for the public. World Health Organization. Accessed December 15, 2020. <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
17. Poll: a new national conversation about COVID-19 is urgently needed to overcome partisan divide and save lives. Changing the COVID conversation. de Beaumont Foundation. Accessed January 7, 2021. <https://debeaumont.org/changing-the-covid-conversation>
18. Make a strong flu vaccine recommendation. Centers for Disease Control and Prevention. Accessed January 13, 2021. <https://www.cdc.gov/flu/professionals/vaccination/flu-vaccine-recommendation.htm>
19. Opel DJ, Diekema DS, Lee NR, Marcuse EK. Social marketing as a strategy to increase immunization rates. *Arch Pediatr Adolesc Med.* 2009;163(5):432-437. doi: 10.1001/archpediatrics.2009.42
20. Fontenot HB, White BP, Rosenberger JG, et al. Mobile app strategy to facilitate human papillomavirus vaccination among young men who have sex with men: pilot intervention study. *J Med Internet Res.* 2020;22(11):e22878. doi: 10.2196/22878.