


Barriers to COVID-19 Vaccines and Strategies to Improve Acceptability and Uptake

Journal of Pharmacy Practice
2022, Vol. 0(0) 1–5
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DOI: 10.1177/08971900221081621
journals.sagepub.com/home/jpp


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Abstract

The COVID-19 pandemic has had a significant impact on communities across the United States (US). Three vaccines have now been granted Emergency Use Authorization by the Food and Drug Administration (FDA) and the Centers for Disease Control and Prevention (CDC) for use in the US. However, barriers to vaccination exist, some of which are well documented in the literature, including lack of knowledge, fear, accessibility, mistrust in the healthcare system, and systemic and operational obstacles. Vaccine hesitancy in the US could potentially hinder all the efforts and resources being used to beat COVID-19, which has resulted in more than 594 000 deaths in the US per the CDC as of early June 2021. In order to overcome this pandemic, vaccine distribution and uptake is crucial. Pharmacists play a crucial role as healthcare providers as they can dismantle vaccine hesitancy and make an outstanding impact on the efforts to overcome this pandemic.

Keywords

COVID-19, vaccine, barriers, uptake

A groundbreaking milestone was achieved on December 11th 2020, with the issuance of the first emergency use authorization (EUA) by the FDA for the first mRNA COVID-19 vaccine manufactured by Pfizer-BioNTech (now approved for ages 5 and older), followed by another mRNA vaccine by Moderna (December 18, 2020), and Johnson & Johnson (J&J)'s viral-vector single-dose vaccine for use in adults aged 18+ in the USA (February 27, 2021).¹ The USA has faced, and is still facing, significant challenges with ramping up vaccine distribution and uptake, especially to rural, disproportionately marginalized, and minority communities. Though the exact percentage is still unknown at this time, Dr Anthony Fauci, the nation's top infectious disease expert, estimated that at least 75% of the USA population needs to get vaccinated for herd immunity to be achieved.² This has been challenging, especially with the vast uncertainty and hesitation among the public surrounding the COVID-19 vaccines, in addition to the fact that protection weans off with time after vaccination, which results in the need for booster shots. Now, the CDC has expanded their recommendations for additional doses of the COVID-19 vaccine for all fully vaccinated adults.

While the Omicron variant news may be motivating some vaccinated adults to get a booster, it does not appear to have the same effect in adults who remain unvaccinated, per KFF's COVID-19 Vaccine Monitor Early Omicron Update survey

conducted on December 15-20, 2021.³ According to the results of that survey, 87% of the unvaccinated adults responded that they are not more likely to get a COVID-19 vaccine following the news about the new omicron variant of the coronavirus. Amongst unvaccinated adults that were surveyed, 48% responded that there is nothing that would convince them to get vaccinated for COVID-19, while 12% indicated they needed more research/transparency, 6% would do it if it became mandatory, 5% in exchange for money, 3% if a doctor recommended it, and 3% if it prevented 100% of infections.³

President Biden announced a national goal to administer at least one COVID-19 vaccine to 70% of the US adult population by July 4th, 2021, but unfortunately fell short on that goal as only 67% US adults were reported by the CDC to have

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received at least one dose by that day.⁴ This delay in the achievement of this goal can be attributed to many reasons, with vaccine hesitancy being on top of that list. In fact, this hesitancy continues to hamper the benefits of a vaccine-preventable disease until this very day. As of December 30, 2021, the CDC reported that 73.3% of the total population in the US having received at least one dose, and 62% being fully vaccinated.⁵ In an effort to get this pandemic under control, COVID-19 vaccine hesitancy needs to be further addressed and vaccine accessibility/uptake must be our primary focus. The aim of this review article is to address this vaccine hesitancy and propose strategies to guide healthcare professionals, especially pharmacists, to improve its uptake in our communities.

There is substantial hesitancy surrounding the production and manufacturing of COVID-19 vaccines. One commonly quoted reason of COVID-19 vaccine hesitancy is related to how fast the vaccines were introduced to the market, as vaccine development took decades in the past. This led to concerns regarding their safety and whether corners were cut by pharmaceutical companies to facilitate emergency approvals in less than 12 months. As pharmacists, it is important to explain that although the vaccines were developed in a non-traditional timespan, safe standard operating procedures were followed and adequately carried out.⁶ Scientists were able to build on years of existing data to develop an mRNA vaccine.⁶ Traditionally, manufacturing a vaccine on an industrial level did not begin until after the product was licensed by the FDA to avoid an overburdening financial risk of manufacturing prior to licensure.⁷ Due to the rippling effects of the pandemic globally, Operation Warp Speed (OWS), a partnership between federal agencies and private firms, allowed for a layered model where industrial manufacturing of the vaccine was initiated even before the vaccine completed phase III trials.⁸ This carried a financial risk but did not jeopardize product safety, since the vaccines being produced would not get distributed until deemed safe, effective, and FDA-approved. Overwhelming financial support from the government including \$6.05 billion to the Department of Health and Human Services incentivized companies to begin production while awaiting trial results.⁹ Pharmacists and other healthcare providers can explain this process to patients to reassure them of the safety of the vaccines despite being developed at record speed.

Another reason for vaccine hesitancy is related to the lack of understanding regarding the mechanism of mRNA and viral-vector vaccines and what they actually contain. Pharmacists play a critical role in educating patients and remaining up-to-date on the newest vaccine guidelines to be able to reinforce the recommendations that are in place. Pharmacists can explain to patients that every ingredient in the COVID-19 vaccines is known and is in fact not dangerous, nearly all of which can be found in many foods (like fats, sugars, and salts). Moreover, explaining that the authorized COVID-19 vaccines do not contain microchips, do not change or interact with

DNA in any way, and cannot cause COVID-19 disease because they do not contain the live virus is of prime importance. Additionally, getting a COVID-19 vaccination is a safer and more dependable way to build immunity against COVID-19 vs getting sick with it and relying on natural immunity that comes from it, since COVID-19 disease is associated with severe illness and death. In regard to those who have already contracted COVID-19 and recovered, it is recommended that those individuals still be vaccinated, as this strategy incurs additional benefits and decreases the risk of reinfection. A study by Cavanaugh AM et al. (2021) showed that people who already had COVID-19 and do not get vaccinated after their recovery are more than 2 times as likely to get COVID-19 again vs those who get fully vaccinated after their recovery.¹⁰

From a different perspective, the politicization of vaccines has contributed to a sense of mistrust in the government, which led to less vaccine uptake among the public. Numerous polls revealed that a large number of Republicans were not likely to get the vaccine and that white Evangelical Christians, a core part of the Republican base, are among the most vaccine-averse populations.¹¹ The mistrust in the government by some individuals and the vast spread of misinformation can contribute to further questioning of vaccine safety. Reports about the J&J vaccine causing rare but serious cases of blood clots, which led to its temporary 11-day halt, also raised concerns regarding vaccine safety.¹²

Fear stems from a lack of knowledge. Therefore, transparency with patients is important in all aspects of care. Transparency regarding the vaccine's safety, efficacy, and clinical trial protocols is available for public view, but can be challenging to understand without the help or guidance of a healthcare professional.^{13,14} Some patients do seek advice from credible sources to better educate themselves but others rely on information they hear or read off in a post on social media, which is a major source of information for the public. Since posts on social media are largely based on subjective information and opinions (many of whom come from non-medically trained people), credibility is questioned. Despite attempts from these outlets to decrease the spread of misinformation, by flagging inaccurate posts, misleading, or conflicting information, the propaganda and conspiracy theories raised by those posts instill fear and can ultimately result in hesitancy to vaccination. With a lack of proper understanding of the vaccine and the many misconceptions circulating, misinformation will continue to spread. This is why healthcare providers, being reputable sources of medical information, play a pivotal role as vaccine influencers in helping the public understand the importance of receiving this vaccine and dispelling the myths that have been associated with it. In order to help diminish the hesitancy seen within the public, pharmacists must provide a sense of trust within their patients and acknowledge any (and all) concerns they may have about this vaccine. To do this, they must provide the most up-to-date information; any patient hesitancy must be addressed with complete transparency and adequate counseling. Education on

Table 1. Barriers to Vaccination and Proposed Strategies to Combat Them.

Barriers to vaccination	Strategies to combat barriers
Lack of knowledge	Counseling and education by trusted healthcare professionals (including pharmacists) to help in explaining how vaccines work and in dispelling inaccurate or misleading information/propaganda
Fear	Counseling and reassurance by trusted healthcare professionals (including pharmacists) to help in providing up-to-date information and address concerns with complete transparency
Lack of trust in vaccines	Acknowledge the deeply ingrained mistrust in the healthcare system, especially among Black/African Americans, due to racial exploitation in the past, and explain that the clinical trials for the approved COVID-19 vaccines were appropriately inclusive of minority groups, and deemed safe and effective
Low adherence rates	Choose the vaccine that requires less follow up shots overall. Example: J&J is currently approved for 1 dose (though this may change in the near future)
Vaccine accessibility	Provide awareness to programs and resources that are in place to help underserved communities, and direct people to community pharmacies close to where they live to receive the vaccine free of charge
Systemic and operational obstacles	Allocate appropriate space to administer and properly store vaccines that align with their requirements

the expected adverse effects post-vaccination is also important for pharmacists to address. This includes pain at the injection site, as well as headache, fever, and general discomfort. Recipients can talk with their primary care provider about over-the-counter medications for any pain or discomfort that may arise, such as acetaminophen and increased fluid intake. Applying a cool, wet, washcloth over the area as well as exercise may also reduce discomfort at the injection site and are key counseling points for our patients.¹⁵ To assist with remaining current on information, the FDA held open sessions, available to anyone at no cost, to discuss the data that led to the EUA of all three vaccines in the US. The CDC has also provided multiple COVID-19 resources and vaccination training modules to enhance the understanding of this virus and the attributes of these vaccines.¹⁶

It is also important to acknowledge the deeply ingrained mistrust of vaccines among African Americans (AAs) in our healthcare system. African Americans (AA) account for 13% of the USA population and 21% of deaths from COVID-19, but constitute only 3% of vaccine trials enrollees prior to this pandemic.¹⁷ This lack of trust is deeply rooted to racial exploitation which can be attributed to the Tuskegee Study of 1932, where AA men with latent syphilis were told they would be treated for “bad blood.”¹⁸ However, the researchers gave them placebos and convinced other practitioners not to treat them so that they could track the full progression of the disease. These AA men, deprived of treatment, began to go blind, insane, and many of them died as a result.¹⁸ While acknowledging this unfortunate history, it is imperative to shed light on inclusivity of minority groups in the COVID-19 vaccine trials to allow for generalizability of results to those who are disproportionately affected by this pandemic and was highly effective among all participants.¹⁹ In an attempt to maximize vaccine uptake among different racial groups, public figures, pastors, and leaders within these communities need to be role models and advertise their support and willingness to receive the vaccine. This was enacted through former Vice President Mike Pence, President Joe Biden, and

Vice-President Kamala Harris, receiving their vaccines live on camera to promote public confidence in the vaccines’ safety. Additionally, former US presidents Jimmy Carter, Bill Clinton, George W. Bush, and Barack Obama along with the first ladies, united together to urge Americans to get vaccinated in an advertised campaign.²⁰

Other obstacles for vaccination include lower adherence rates due to the two-time dosing nature of some COVID-19 vaccines to be considered “fully vaccinated.”¹³ This barrier was initially alleviated with Johnson & Johnson’s COVID-19 vaccine as it has been studied and approved as a single dose,²¹ but then the CDC recommended a booster for all adults 18 years and older, including those who had initially received the J&J vaccine, to be administered in their case 2 months after the first J&J dose, with a preference in most situations to the mRNA vaccines as the booster. Therefore, implementation of a system that can combine the efforts of contact tracing, COVID-19 testing, and immunization records can help increase vaccine uptake and completion. Immunization records would assist medical staff in identifying those who have not received the vaccine or are due for the second dose (or a booster).²² Implementation of identification programs would also help prioritize vaccines to patients at higher risk. Programs that utilize these strategies should remind and encourage people to get vaccinated, provide locations and times to get vaccinated, and evidence-based answers to common questions or concerns to help increase vaccination uptake.²³

Large quantities of vaccines are needed to meet herd immunity to overcome the pandemic and strategies need to be developed for equitable distribution. Since people of color have higher rates of acquisition and death due to the virus, vaccine distribution needs to be prioritized to these communities. People of color also have higher rates of being uninsured and as a result, become less likely to get vaccinated, so ensuring the vaccine is free of charge is critical for uptake.²⁴ In addition, there is a lack of awareness of programs and resources to help these underserved populations. This

information should be shared with these communities via social media and other media outlets. It may also deem beneficial to have healthcare workers that are administering vaccines in these communities be of the same race, as this may lead to an increase in trust and willingness to receiving the vaccine.²⁴ In an attempt to increase access to COVID-19 vaccination across the USA, the Federal Resource Pharmacy Program was established to provide 90% of Americans with vaccine access through a community pharmacy within 5 miles of their residence, “including in some of the nation’s hardest-hit and highest-risk communities.”²⁵

Barriers to vaccination (Table 1) exist, including lack of knowledge, fear, accessibility, and systemic and operational obstacles. Healthcare professionals, including pharmacists, play a key role in obliterating these barriers in an effort to overcome this pandemic. A lot of challenges remain ahead of us as we continue to live in a world that is heavily affected by COVID-19. We, as pharmacists, need to be cognizant of all the possible barriers to vaccination so we can work collectively to address them in the most effective manner and finally put an end to this vaccine-preventable disease.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Author’s Note

If this current issue is accepted to JPP, the authors are willing to update the statistics on the number of persons who received the COVID-19 vaccine to ensure that it is current with date of publication.

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