Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
Coronavirus Disease 2019 Vaccine Barriers: Educating Patients to Alleviate Fear of Receiving the Vaccine

Kristin Alexander

**Abstract**

Vaccination is an important step to avoid coronavirus disease 2019 infection and alleviate the disruption caused by the pandemic. Health care providers can improve outcomes by educating themselves and subsequently encouraging patients to vaccinate against the virus. This can be accomplished by understanding how the coronavirus disease 2019 vaccine works and what causes barriers and fear of vaccination.

© 2021 Elsevier Inc. All rights reserved.

Healthcare providers armed with informed decisions about the coronavirus disease 2109 (COVID-19) vaccine can carry a unified message to overcome mistrust and decrease loss of life to this virus. As providers, we benefit from vaccine protection and can encourage others to follow our example and become vaccinated. As COVID-19 mutations evolve, it has become increasingly evident that we need to vaccinate as many people as possible in a short time. Nurse practitioners can improve vaccination efforts and compliance by building trust with patients, being sensitive to different beliefs surrounding vaccination fears, and ultimately decreasing severe illness from COVID-19. This can be accomplished by “meeting people where they are” in their knowledge and providing information that is credible and specific to their fears.

Operation Warp Speed and COVID-19 Response Vaccine Development

The United States invested over 10 billion dollars to fast-track the COVID-19 vaccine. Eleven pharmaceutical companies reached the final stage of Federal Drug Administration (FDA) testing, with 3 approved to distribute the vaccine by March 2021. Skepticism due to the rapid development of the new technology has affected public confidence in the vaccine. Under the new administration, President Biden changed the name from Operation Warp Speed to COVID Response in an effort to focus on dispensing the vaccine and curb fears of shortcuts in development. The Centers for Disease Control and Prevention (CDC) and the FDA worked together to demonstrate efficacy and safety in the phase 3 trials, as well as beginning a safety monitoring system to report adverse effects postvaccination.

Vaccine Efficacy and Ongoing Study

The vaccines are approved for individuals 18 years and older. Studies with Moderna and Pfizer in this age group show 93% to 94% efficacy and initial reports of a strong immune response in adolescents 12 to 15 years old. The Johnson & Johnson (J&J) Janssen vaccine was found to be 85% effective against severe disease after 28 days and 65% effective against symptomatic moderate to severe infection. The World Health Organization has been monitoring variants and mutations since the outbreak of COVID-19. The current data suggest that the vaccines give protection against most variants that are spreading in the United States. The J&J vaccine was paused because of a rare risk of blood clot with low platelets in women younger than 50 years old. Approval resumed as of April 23, 2021. The Pfizer and Moderna vaccines have been recommended for people ages 12 and older. Although there have been reports of myocarditis and pericarditis in adolescents and young adults, it is still felt that the benefits outweigh the risk. The research continues to develop, and currently Pfizer has Emergency Use Authorization for individuals 12 years old and up.

Barriers to Vaccine Compliance

Despite the incredible achievement of the COVID-19 vaccine development, studies initially showed only 46% may consider vaccination once others have begun. Recently, the Pew Research Center found that 69% of Americans were likely to receive the vaccine (up from 60% in December), with lower-income people less inclined to get vaccinated. Personal fear, distrust in vaccines, and partisanship all play a part in overall public health immunity. Unfortunately, the greatest fears are noted in high-risk populations. Barriers can be overcome by understanding why patients are declining vaccination and who is likely to decline. Hesitant
populations include childbearing years, ethnicity, age, education as well as social media sources and politicized misinformation. Similarly, hesitancy occurs because of misconceptions in how the vaccine works in the body. Many younger people plan to wait and see how the vaccines affect others before considering.

Strategies to Improve Compliance

Providers can listen to patient concerns and find common ground, such as increased freedom or economic improvement. Other strategies are targeting specific fears with information; suggesting that all of us want to return to normal and open businesses, houses of worship, and restaurants; and informing patients as to how the vaccine works. Information in handouts and CDC educational pamphlets, providing vaccination locations, and informing the public that there is no cost are also helpful strategies.

How the Vaccine Works

The messenger RNA (mRNA) in the Moderna and Pfizer vaccine is carried into the cell by fatty lipids. This lipid protective coating must be kept at low temperatures to keep it from dissolving. Potassium chloride and sodium chloride in the vaccine keep the acidity similar in the body. Sucrose stops the nanoparticles from adhering together when frozen. Once in the cell, the mRNA vaccine uses cell ribosomes to make coronavirus spike proteins, and T-helper cells release cytokines, which, in turn, stimulate lymphocytes to make antibodies that recognize COVID-19. These vaccines do not enter the nucleus and do not alter DNA or cause genetic changes. The J&J vaccine is based on a recombinant adenovirus vector that does not replicate after administration and clears from tissues after injection. The vaccine is not a live or attenuated vaccine.

Specific Populations With Barriers

Racial and Ethnic Populations

Communities of color have been disproportionately affected by the pandemic. The CDC states COVID-19 affects nearly 3 times as many Black, Hispanic, and Native Americans compared with White populations. These communities are more likely to suffer severe illness because of economic disparities, systemic racism, and inequities in the health care system. The American Medical Association’s video series “Prioritizing Equity” found that although 60% of Americans will take the vaccine, only 42% of Black Americans are willing to get vaccinated. Distrust stems from harmful research done in the past. For example, the Tuskegee Study from 1932 to 1972 allowed Black men free health care, who, in turn, were used to study untreated syphilis without consent.

Marcell Nunez Smith, MD, MHS, the current chair of President Biden’s COVID-19 Advisory Board, suggests reminding communities that there is another history of Black pioneers in the field of public health. She emphasizes the “important role of health care providers as trusted messengers” in overcoming vaccine hesitancy and the disproportionate loss of life. She suggests that White communities need to strategize to increase commonalities between providers administering the vaccine and the patient. Recent studies show significant improvements in the Black communities, whereas Hispanic and Indigenous populations still fall behind despite eagerness to obtain the immunization. Many in these communities are concerned about missing work, the cost, and immigration status.

Similarly, the history of genocide and sterilization of women without consent in the 1960s to 1970s has traumatized Indigenous communities, causing fear of vaccination.

“To earn trust in the new vaccines, public health leaders will need to seek out ‘sources of authority’ within those communities,” stated Zackary Berger, a bioethicist and associate professor of medicine at Johns Hopkins School of Medicine. “You can’t say it’s time for the vaccine now; believe in us.”

Childbearing Years

The American College of Gynecology recommends that COVID-19 vaccines should not be withheld from pregnant individuals. Although the safety data on use are not complete, there are no data to indicate the vaccine is contraindicated.

The Elderly

Access can be improved by having a vaccine dose waiting for the elderly population at scheduled appointments. A 2010 study at Rutgers University showed that informing people that a dose of flu vaccine was waiting for them at a specified time and place boosted their vaccination rate by 36%.

Social Media Misinformation

There is a significant amount of discussion on social media. Much of the information feeds into fears of government control, conspiracies, and distrust of vaccination. Unfortunately, the majority of people on these sites have dispersed misinformation that leads to the refusal of vaccination. Suggestions by the CDC may be useful in online information. Research by Rupali Limaye, a health communication scientist at Johns Hopkins Bloomberg School of Public Health, reveals resistance from people ambivalent or weary. “One thing that we’ve learned very clearly is not to correct misperceptions because people feel as though we are being dismissive.” It seems advisable to direct the conversation to mask wearing because the discussion of vaccination is met with such resistance. Many people may decide to vaccinate once they feel reassured, and concerns (such as long-term side effects) are not dismissed.

Politization

An unusual aspect of the COVID-19 vaccine hesitancy stems from political alliances, which does not occur with other vaccines, such as influenza or shingles. Studies show that 84% of Democrats see the outbreak as a public threat compared with 43% of Republicans. Rural Republican men are currently the most resistant population to vaccination. It is recommended that providers listen but do not try to engage in a political conversation with patients who are adamantly against vaccination. While education in how the vaccine works is helpful, the important message to discuss is mask wearing for safety of self and others in this situation.

Summary

Vaccination can reduce the incidence of COVID-19 infection in the population. The benefit outweighs the risk, and encouraging patients to take the vaccine will achieve an immunity for the majority of the population and decrease the risk of variants. Unfortunately, there are still many people who fear the vaccine. Reaching “herd immunity” of 80% of the population is a goal, and currently the United States is at 30% vaccination. Health care practitioners are in a position to strongly recommend vaccination against COVID-19. Understanding fears and having empathy for patients’ point of view will allow practitioners to educate in a
manner that breaks down barriers and encourages confidence in the vaccine.22

References

1. Rubin R. Covid-19 vaccines vs variants-determining how much immunity is enough. JAMA. 2021;325(13):1241-1243. https://doi.org/10.1001/jama.2021.3370.
2. Berkeley Media Studies Group. Communicating about the Covid-19 vaccines: guidance and sample messages for health care practitioners. http://www.bmsg.org/resources/publications/communicating-covid-19-vaccines-guidance-and-sample-messages-for-public-health-practitioners/.  
3. Fact sheet: explaining Operation Warp Speed. September 22, 2020. US Department of Health and Human Services.
4. Centers for Disease Control and Prevention. Johnson Janssen COVID-19 vaccine overview and safety. June 1, 2021. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/janssen.html.
5. WoodS, Schulman K. Beyond politics — promoting Covid-19 vaccination in the United States. N Engl J Med. 2021;384(7):e23. https://doi.org/10.1056/NEJMc2103379.
6. O'Reilly K. Biden's first moves will aid pandemic fight, boost global health. AMA Public Health. January 21, 2021. https://www.ama-assn.org/delivering-care/public-health/bidens-first-moves-will-aid-pandemic-fight-boost-global-health.
7. American Medical Association Webinar. Covid-19 vaccine safety and delivery. February 1, 2021. https://www.youtube.com/watch?v=O2sdqJHf124.
8. Funk C, Tyson A. Intent to get a COVID-19 vaccine rises to 60% as confidence in research and development process increases. Pew Research Center. March 5, 2021. https://www.pewresearch.org/science/2021/03/05/growing-share-of-americans-say-they-plan-to-get-a-covid-19-vaccine-or-already-have/.
9. Chapman GB, Li M, Colby H, Yoon H. Opting in vs opting out of influenza vaccination. JAMA. 2010;304(1):43-44.
10. COCONEL Group. A future vaccination campaign against COVID-19 at risk of vaccine hesitancy and politicisation. Lancet Infect Dis. 2020;20(7):769-770. https://www.thelancet.com/journals/laninf/article/PIIS1473-3099(20)30426-6/fulltext.
11. Khubchandani J, Sharma S, Price JH, Wiblishauser MJ, Sharma M, Webb FJ. COVID-19 vaccine hesitancy in the United States: a rapid national assessment. J Community Health. 2021;46(2):270-277.
12. Razai MS, Osata T, McKechnie DG, Majeed A. Covid-19 vaccine hesitancy among ethnic minority groups. BMJ. 2021;372:n513.
13. Webb Hooper M, Napoléon AM, Pérez-Stable EJ. No populations left behind: vaccine hesitancy and equitable distribution of effective COVID-19 vaccines. J Gen Intern Med. Published online March 22, 2021. https://doi.org/10.1007/s11606-021-06398-5.
14. American Medical Association. Prioritizing equity trustworthiness and vaccine [video]. December 10, 2020. https://www.youtube.com/watch?v=shvXBE91U1E.
15. Wallis C. The best evidence for how to overcome Covid vaccine fears. Scientific American. January 7, 2021. https://www.scientificamerican.com/article/the-best-evidence-for-how-to-overcome-covid-vaccine-fears/.
16. Sterilization abuse: a proposed regulatory scheme. DePaul Law Rev. 1979;28(3):731-768.
17. Regalado A. What are the ingredients of Pfizer's covid-19 vaccine. MIT Technology Review. https://www.technologyreview.com/2020/12/09/1013538/what-are-the-ingredients-of-pfizers-covid-19-vaccine/.
18. Tuskegee University. About the USPHS syphilis study. https://www.tuskegee.edu/about-us/centers-of-excellence/bioethics-center/about-the-usphs-syphilis-study.
19. American College of Obstetricians and Gynecologists’ Immunization, Infectious Disease, and Public Health Preparedness Expert Working Group, Riley L, Beigi R, et al. Covid-19 vaccine considerations for obstetric-gynecological care. December 2020; Updated June 9, 2021. https://www.acog.org/c clinical-guidance/practice-advisory/articles/2020/12/covid-19-vaccination-considerations-for-obstetric-gynecologic-care.
20. Wilson SL, WiseSonge C. Social media and vaccine hesitancy. BMJ Glob Health. 2020;5(10), e004206.
21. Centers for Disease Control and Prevention. Benefits of getting a COVID-19 vaccine. https://www.cdc.gov/coronavirus/2019-ncov/vaccines/vaccine-benefits.html.
22. Albert HT. COVID-19 vaccine hesitancy: 10 tips for talking with patients. AMA. February 1, 2021. https://www.ama-assn.org/delivering-care/public-health/covid-19-vaccine-hesitancy-10-tips-talking-patients.
23. Rosenbaum L. Escaping catch 22 – overcoming covid vaccine hesitancy. N Engl J Med. 2021;384(14):1367-1371. https://doi.org/10.1056/NEJMc2101220.
24. Pew.Trusts.org. Republican men are vaccine-hesitant, but there's little focus on them. April 23, 2021. https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2021/04/23/republican-men-are-vaccine-hesitant-but-theres-little-focus-on-them.
25. Centers for Disease Control and Prevention. COVID-19 vaccine communication toolkit. December 21, 2020. https://www.cdc.gov/vaccines/covid-19/health-systems-communication-toolkit.html.

Kristin Alexander, ANP-BC, Middleway Media in Woods Hole, MA, and can be contacted at Kristin@middlewaymedia.com.

In compliance with standard ethical guidelines, the author reports no relationships with business or industry that would pose a conflict of interest.

Patient Information: How the Vaccine Works

The vaccine teaches your immune system to recognize and fight the COVID-19 virus once it enters your body. By exposing the body to a protein that appears similar to COVID-19, the immune system produces antibodies that will recognize and kill the virus before it can multiply and cause illness. The vaccine trains our immune system to be ready for the invasion of the real virus. The mixture does not contain preservatives (such as thimerosal seen in some flu vaccines).13

1. The Moderna and Pfizer vaccines are not “live” vaccines; they will not cause infection. The vaccine does not interact with DNA. There may be some redness/soreness at the site of injection. Some people experience body aches and headache; this is the immune response.
2. The vaccine has been tested for safety. mRNA vaccine is new yet has been studied by the CDC for over a decade with other pathogens such as the Zika virus and rabies. No vaccine will be given to the public before there is confidence in its safety; it is not in anyone’s interest to do so. The FDA’s development of the vaccine meets rigorous scientific standards. The mRNA does not enter the nucleus or change the genetic makeup of cells.
3. The vaccine is about 95% effective after receiving the second dose. You still can spread infection and must continue to wear a mask and social distance.3
4. You must take the same vaccine for both injections. There is no cost for the vaccine.
5. If pregnant or immunocompromised, you can take the vaccine.19
6. If you have had COVID-19, you should get vaccine; however, the CDC recommends you wait 90 days before vaccination because you likely have antibodies for that time.3
7. Vaccination and masks will help end the pandemic.
8. CDC fact sheet handouts can provide further information.21,25