

COVID-19 State of Vaccine Confidence Insights Report

Report 26 | June 10, 2022 | Date Range: March 14 – April 4, 2022



SPECIAL UPDATE: CDC partners can now report COVID-19 rumors directly to CDC. To report a rumor, go to: www.cdc.gov/report-rumors and start the subject line with: "Rumors:" In the question box, give as much information about the rumor as you can, including a description of the rumor, where you heard it, and how many times you have heard it.

Summary

Major themes identified by consumers that may impact vaccine confidence:

- The impact of future and current variants on case counts, hospitalizations and deaths and the potential for this to occur with the emergence of the Omicron BA.2 variant.
- The safety and effectiveness of booster doses especially after the authorization of a 2nd booster dose.
- Consumer concerns about and opposition to COVID-19 vaccines for children.
- **The new and emerging theme that may impact vaccine confidence:**
 - Consumers continue to discuss the safety of COVID-19 vaccines, and the rare reports of tinnitus and hearing loss following vaccination.
- **The continuing and evolving theme that may impact vaccine confidence:**
 - Consumers and news outlets continue to discuss the effectiveness and availability of COVID-19 treatments.

Ways to take action.

Federal, state, and local partners should continue to work together to explain the rationale for updated guidance on booster doses, respond to gaps in information identified in the Content Gaps and Information Voids sections of each theme in this report, and confront misinformation with evidence-based messaging. The goal of these efforts is to increase consumer confidence in COVID-19 vaccines and expand vaccine uptake more broadly. Messages about community-level risk and the need to follow COVID-19 mitigation measures should be disseminated when needed. Primary care physicians, public health experts, and community leaders should be encouraged to explain why the 2nd booster dose is necessary and its role in preventing severe illness from COVID-19. Trusted messengers should disseminate tailored messages related to the themes presented in this report.

Resources: The following link contains social media resources such as graphics, language, and social media calendars that our partners can use to address the issues raised in this report: <https://centersfordiseasecontrol.sharefile.com/d-sd376a1d-783fe40048353b0255cfbb163>

Contents

- | | | | |
|---|--|----|--|
| 2 | Aims and Methods | 8 | Consumers continue to discuss the safety of the COVID-19 vaccines, especially related to reports of tinnitus and hearing loss following vaccination. |
| 3 | Discussions of the impact of current and future variants increased with the emergence of the Omicron BA.2 variant | 10 | Continuing and evolving theme that may impact vaccine confidence |
| 5 | Consumers discussed the safety and effectiveness of booster doses especially after the authorization of a 2nd booster dose | 10 | Consumers and news outlets discussed the effectiveness and availability of COVID-19 treatments |
| 7 | Consumers express concerns and opposition to COVID-19 vaccines for children. | 11 | Appendix 1: Inputs and Sources |
| 8 | New and emerging theme that may impact vaccine confidence | 12 | Appendix 2: Interim Clinical Considerations |





Centers for Disease Control & Prevention, COVID-19 Response, Vaccine Task Force
Vaccine Confidence & Demand Team, Insights Unit




The findings and conclusions in this report are those of the author(s) and do not necessarily represent the official position of the Centers for Disease Control and Prevention (CDC).

Aims and Methods

The COVID-19 State of Vaccine Confidence Insights Report (Insights Report) is based on a rapid review and analysis of numerous sources and inputs (see [Appendix](#)), and emphasizes major themes influencing COVID-19 vaccine hesitancy and uptake. The themes are characterized by the level and type of threat to vaccine confidence, degree of spread, and directionality. In addition, by examining how consumers think and feel, social processes, and the practical issues around vaccination, the Insights Report seeks to identify emerging issues of misinformation, disinformation, and places where intervention efforts can improve vaccine confidence across the United States.

The information in this report is only a snapshot, and certain populations may be underrepresented. Images and quotes are illustrative examples and are not meant to comprehensively cover all content related to the highlighted themes.

How do you classify this theme/information?			
High risk	Moderate risk	Low risk	Positive sentiment
 <ul style="list-style-type: none"> May lead to vaccine refusals and decreased uptake Wide reach, pervasive 	 <ul style="list-style-type: none"> Potential to trigger hesitancy to vaccination Moderate reach, modest dissemination 	 <ul style="list-style-type: none"> Concerning, but low risk to vaccine confidence Limited reach, limited dissemination 	 <ul style="list-style-type: none"> Could increase vaccine confidence, intent, or motivation Variable reach and dissemination

How has this theme/idea changed over time (since last report or over the course of multiple reports)?		
 <p>Increasing Information spreading rapidly</p>	 <p>Stable Information remaining constant at prior level</p>	 <p>Decreasing Information is not gaining further traction and there has been no indication of additional activity</p>

Major themes identified that may impact vaccine confidence^a



Discussions of the impact of current and future variants increased with the emergence of the Omicron BA.2 variant

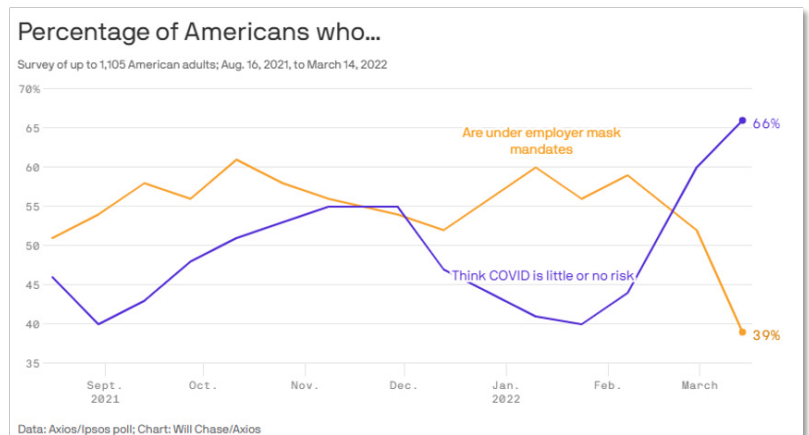
Consumers discussed or expressed interest in the new subvariants of the SARS-CoV-2 Omicron strain, such as AY.4/BA.1 recombinant (deltacron),¹ Omicron BA.2², and XE.³ As of May 7, 2022, Omicron BA.2 is currently the dominant variant circulating in the US.⁴ Officially declared a variant of concern by the World Health Organization on February 22, 2022,⁵ and termed the “stealth variant” by some, Omicron BA.2 led to increased COVID-19 cases in more than six states⁶ and a 444% increase in media reports related to the variant’s potential surge.⁷

Experts continued to discuss Omicron BA.2 in terms of its anticipated severity,⁸ necessary responses,⁹ and new challenges.¹⁰ “Omicron Variant” and “BA2” were breakout search terms for the reporting period¹¹ and #COVIDIsNotOver was a dominant rising hashtag.¹²

Perceptions, Concerns, Threats to Vaccine Confidence

Asymptomatic transmission among fully vaccinated persons indicates to some consumers that COVID-19 vaccines are not effective.^{13,14,15}

- Given domestic decreases in case counts and news stories about maintaining congressional pandemic-related funds in the future,^{16,17,18} some feel that the worst of the pandemic has passed.^{19,20,21,22} The aforementioned conditions, when coupled with a belief that there are high levels of immunity from vaccination, boosting, and prior infection in the general population,²³ may provide justification for unvaccinated consumers to forego vaccination.
- WHO Early Artificial Intelligence-supported Response with Social Listening (EARS) found that during this reporting period, #COVIDIsNotOver²⁴ maintained prominence as a top overall and top rising hashtag. “COVID-19 Variants” was a top category of conversation in WHO EARS. Additionally, Omicron BA.2 and XE were both top and rising key terms for COVID-19 variants.²⁵
- Some research suggests there is an inadequate supply of vaccines to boost eligible populations.²⁶ However, the development and purchase of additional vaccines may be met with some resistance given pandemic fatigue, a popular desire to be rid of preventive measures,²⁷ and decreases to both funding²⁸ and public concerns about variants.²⁹
- A recent poll reported that 76% of unvaccinated individuals said they have no intention to vaccinate.^b This percentage has remained stable for several reporting periods. In this same poll, 29% of vaccinated adults who have not received a booster dose said they will never get a booster dose while 45% said they would wait to get a booster dose. Of those that said they would wait to get a booster dose, 66% said they do not know how long they will wait.
- Popular support for the repeal of federal, state, and local governments lifting all COVID-19 restrictions has increased to 64%, an increase of 20 percent since early February.³⁰



Content Gaps and Information Voids^c

- As the number of COVID-19 cases decline, is it still beneficial to receive a primary series of COVID-19 vaccine or a booster dose?
- Yes, COVID-19 vaccines are effective at protecting you from severe outcomes and death from COVID-19, even if you have had COVID-19 in the past. Vaccination is an important tool to help us get back to normal.³¹
- As state and local governments update their COVID-19 community mitigation recommendations, should masks still be worn in indoor public places?

^aCitations in this report are illustrative examples and are not the total number of instances of the corresponding themes.

^bHHS CET Wave 56

^cThese questions come from online data sources such as social media, news stories, Google Trends, and CDC-INFO

- When making decisions about community prevention strategies and individual preventive behaviors, health officials and members of the public should consider the COVID-19 community level in their county. You can find more information about your county's COVID-19 community level by going to CDC's [COVID-19 Community Levels website](#).
- Layered prevention strategies — like being fully vaccinated with primary doses and getting booster doses when eligible, screening testing, ventilation, and wearing masks — can help limit severe disease and reduce the potential for strain on the healthcare system.³²
- COVID-19 community levels do not apply in healthcare settings, such as hospitals and nursing homes.
- Do current vaccines provide protection against the Omicron BA.2 variant?
 - Current vaccines are expected to protect against severe illness, hospitalizations, and deaths due to infection with the [Omicron variant](#).³³ Viruses are constantly changing and new types of the virus, called [variants](#), occur. New variants of the virus that causes COVID-19 are spreading in the United States and in other parts of the world. COVID-19 vaccines are effective against the Delta variant and other variants with widespread circulation in the United States. We don't yet know how effective the vaccines will be against new variants that might arise. CDC will continue to monitor vaccine effectiveness to see if variants have any impact on how well COVID-19 vaccines work under real-world conditions.³⁴
- Can wastewater monitoring compensate for decreased rates of COVID-19 testing when new variants emerge or if cases start increasing again?
 - CDC states that the National Wastewater Surveillance System (NWSS) data is important for the early detection of SARS-CoV-2.³⁵ Two advantages offered by NWSS are that is not dependent upon consumer access to healthcare or the availability of COVID-19 testing.³⁶ Wastewater testing over time can provide trend data that can complement other surveillance data to inform public health decision making. Data from wastewater testing are meant to complement existing COVID-19 surveillance systems. However, at this time, it is not possible to predict the number of infected individuals reliably and accurately in a community based on wastewater testing.

Identified misinformation themes that may impact vaccine confidence:

- Asymptomatic transmission is a false narrative^{37,38} and mass testing is pointless.³⁹
- Infection-induced immunity, also referred to as “natural immunity,” negates the need to vaccinate despite SARS-CoV-2 variants.^{40,41,42}
- Messages concerning new variants are to create fear or to maintain and reclaim power.^{43,44}
- COVID-19 vaccines cause variants.⁴⁵

Ways public health and partners can take action to improve vaccine confidence:

- Develop and amplify messages explaining why vaccines are still important to the COVID-19 prevention response.
- Disseminate messages about community-level risk and the need to follow COVID-19 mitigation measures when needed.

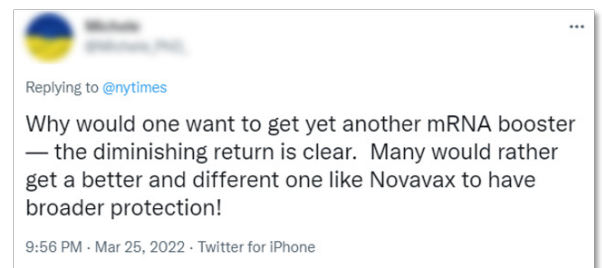


Consumers discussed the safety and effectiveness of booster doses especially after the authorization of a 2nd booster dose

On March 29, 2022, the Food and Drug Administration (FDA) authorized a second booster dose of either the Pfizer-BioNTech or Moderna COVID-19 vaccines for individuals 50 years of age or older and certain immunocompromised individuals. The second booster dose should be administered 4 months after the receipt of the first booster dose.⁴⁶ In response to the anticipated authorization and authorization itself, searches for “when will 2nd booster be available” increased by 700 percent.^d Additionally, the term “booster” was both a rising and top keyword for internet searches related to COVID-19 vaccines.^e Although some are relieved and comforted at the prospect of a 2nd booster dose,^{47,48,49} others cite lack of evidence,^{50,51,52} big pharma profits,^{53,54} and infection-induced immunity^{55,56,57} as reasons to avoid additional doses of a COVID-19 vaccine. Public health experts and government officials acknowledge the role of waning immunity in the authorization of additional boosters.^{58,59,60} However, experts are divided on the necessity of boosters and also warn that continuous booster doses will not be enough to decrease COVID-19 cases.^{61,62,63}

Perceptions, Concerns, and Threats to Vaccine Confidence

- In light of booster dose authorizations for both Moderna and Pfizer-BioNTech COVID-19 vaccines, individuals are seeking the most effective mix and match combination.^{64,65,66}
- Lack of funding for COVID-19 mitigation measures and vaccine doses may negatively impact vaccine booster dose uptake.^{67,68,69}
- Consumers are concerned that waning immunity from the initial booster dose indicates a consistent need for booster doses. Pandemic fatigue, coupled with already low booster uptake, may negatively impact rates of COVID-19 booster uptake.^{70,71,72}



Content Gaps and Information Voids

- Will individuals still be allowed to get the 2nd booster dose even if government funds no longer remain?^f
 - The White House has estimated that without funding, the United States will not have enough additional boosters or variant specific vaccines, if needed, for all Americans. Without funding, the federal government is unable to purchase additional life-saving monoclonal antibody treatments and will run out of supply to send to states as soon as late May. Additionally, without more funding, the federal government cannot purchase sufficient quantities of treatments for immunocompromised individuals, and the federal government will be unable to sustain the testing capacity we built over the last 14 months, as we head into the second half of the year.⁷³
- Is it okay to mix and match the 2nd booster dose? What is the difference in effectiveness between different combinations?^g
 - A National Institutes of Health (NIH)-supported study found that people produced antibody responses from all three booster vaccines, no matter which vaccine they had originally received. A booster of either Moderna or Pfizer-BioNTech caused similar or higher antibody responses than a booster of the same vaccine. During this study, no serious vaccine-related adverse events were reported although more than half of the participants reported headache, pain at the injection site, muscle aches and malaise.⁷⁴
 - Additionally, CDC advises people to remember that 2nd boosters can only be Moderna or Pfizer-BioNTech (and for people ages 12 to 17 years, only Pfizer-BioNTech).⁷⁵
- Who is eligible for a 2nd booster dose?^f
 - People ages 5 years and older who are moderately or severely immunocompromised should receive a total of 4 doses of mRNA COVID-19 vaccine to stay up to date. The 4 doses include a primary series of 3 doses of Pfizer-BioNTech or Moderna COVID-19 vaccine, plus 1 booster of Pfizer-BioNTech or Moderna COVID-19 vaccine, given on the schedule shown below. Only Pfizer-BioNTech COVID-19 vaccine is available for teens ages 12–17 years.⁷⁶
 - A booster dose is recommended for everyone ages 5 and older after completing their COVID-19 vaccine primary series.⁷⁷ For more information go to CDC’s COVID-19 Vaccine: Interim COVID-19 Immunization Schedule for Ages 5 Years and Older. See Appendix 2 for more information about COVID-19 vaccine approvals and authorizations.⁷⁸

^dGoogle Trends

^eWHO EARS

^fCDC-INFO

^gCDC-INFO

Identified misinformation themes that may impact vaccine confidence:

- A 2nd booster dose was only authorized for big pharma profits.[79,80](#)
- A 2nd booster dose was only authorized because the COVID-19 vaccine is ineffective.[81,82,83](#)
- The booster dose will not be effective because it was developed for the original 2019 strain of the virus.[84,85,86](#)

Ways public health and partners can take action to improve vaccine confidence

- Encourage primary care physicians, public health experts, and community leaders to explain why the 2nd booster dose is necessary and its role in preventing severe illness from COVID-19 and infection from new variants.
- Share resources for individuals to help determine where they can access booster shots, that the COVID-19 primary series and booster doses are free, and that no health insurance is required.
- Create and disseminate messages, especially with trusted messengers, that clarify who is eligible for the second booster dose.

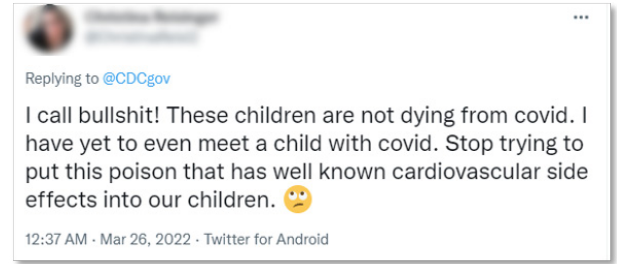


Consumers express concerns and opposition to COVID-19 vaccines for children.

Parents and consumers continue to wait for final FDA approval of COVID-19 vaccines for children under 5 years of age. Pfizer hopes to have vaccines available for children 6 months to 4 years of age by June.⁸⁷ Moderna is submitted paperwork to the FDA for emergency use authorization for their COVID-19 vaccine in children 6 months to 6 years of age.⁸⁸ As the summer travel season approaches and government agencies update mask recommendations, many parents are seeking vaccine answers while others continue to express concerns regarding vaccine necessity, effectiveness, and side effects related to myocarditis.^{89,90,91}

Perceptions, Concerns, and Threats to Vaccine Confidence

- Some social media users believe that COVID-19 vaccines are ineffective at stopping COVID-19 or spread of the virus in children.^{92,93}
- Government officials made public statements against vaccines for healthy children.⁹⁴
- Consumers are worried about the unknown side effects from COVID-19 vaccines in children, such as myocarditis.^{95,96}
- Some consumers believe that the COVID-19 vaccine is not warranted in children because they are considered a low-risk population with minimal health effects from the virus and have a low death rate.^{97,98,99}



Content Gaps and Information Voids

- Should children be vaccinated before international travel?^h
 - CDC recommends that all recommend ages should be up to date with COVID-19 vaccines before travel (see appendix 2), which includes additional doses for individuals who are immunocompromised or booster doses when eligible.¹⁰⁰
- Why is the vaccine recommended for all age groups regardless of health status?
 - Just like adults, children and teens can get very sick from COVID-19, have both short- and long-term health problems, and spread COVID-19 to others, including at home and school. There is no way to tell in advance how children or teens will be affected by COVID-19. However, those with underlying medical conditions or who have a weakened immune system are more likely to get severely ill from COVID-19.¹⁰¹
- Do COVID-19 vaccines cause myocarditis?
 - Although rare, cases of myocarditis reported to the Vaccine Adverse Event Reporting System (VAERS) have occurred after mRNA COVID-19 vaccination (Pfizer-BioNTech or Moderna), especially in male adolescents and young adults, more often after the second dose, and usually within a week of vaccination. Most patients with myocarditis or pericarditis who received care responded well to medicine and rest and felt better quickly.¹⁰²

Identified misinformation themes that may impact vaccine confidence

- Children who are healthy do not need to receive the COVID-19 vaccine.¹⁰³
- COVID-19 vaccines are ineffective and are not required for children.^{104,105}
- The COVID-19 vaccine is an experiment on children and is not needed because children can build “natural immunity” through virus exposure.^{106,107}
- Children vaccinated against COVID-19 are up to 52 times more likely to die following COVID-19 vaccination than unvaccinated children.^{108,109,110}

Ways public health and partners can take action to improve vaccine confidence

- Encourage pediatricians, public health authorities, and community leaders to describe the benefits of COVID-19 vaccination in all children.
- Continue to provide up-to-date data regarding adverse events, side effects, and benefits of vaccines.
- Provide education and comparison data on outcomes for unvaccinated and vaccinated pediatric COVID-19 cases.
- Provide information regarding safety precautions, thereby reducing risk of exposure for children who are not yet eligible for the vaccine.

New and emerging theme that may impact vaccine confidence



Consumers continue to discuss the safety of the COVID-19 vaccines, especially related to reports of tinnitus and hearing loss following vaccination.

A recent [WHO Pharmaceuticals newsletter](#) noted that the Uppsala Monitoring Centre identified hearing loss and tinnitus following COVID-19 vaccination frequently enough to warrant further investigation. The newsletter reported that reported cases of tinnitus and hearing loss occurred after vaccination with Pfizer/BioNTech, Moderna, and AstraZeneca. As of February 22, 2022, there were 164 case reports of hearing loss after COVID-19 vaccination and 367 cases of tinnitus following COVID-19 vaccination. The newsletter states that these cases occurred in 10 countries and no alternative causes were identified for most cases, although some had contributing morbidities. Time to onset of hearing loss or tinnitus was 0 to 1 day. Of those cases that reported outcome information, 50% were recovering or recovered while the other half had not recovered.

Consumers continued discussing other common COVID-19 vaccine safety concerns such as the impact of the COVID-19 vaccines on pregnancy and fertility,¹¹¹ myocarditis,¹¹² and whether the vaccine impacts DNA.¹¹³ Consumer discussions also continued about the release of a Pfizer document that listed reported adverse events following vaccination with Pfizer BioNTech’s COVID-19 vaccine.^{114,115,116}



Perceptions, Concerns, and Threats to Vaccine Confidence

- Social media users discussed their belief that the COVID-19 vaccine causes tinnitus and hearing loss^{117,118,119} while others posted about how the incidence of hearing loss and tinnitus after vaccination was so low that it was not a concern.^{120,121,122}
- There were 22 CDC-INFO inquiries inquiring about the possibility of COVID-19 vaccine-related tinnitus and hearing loss.ⁱ
- News outlets discussed the release of the WHO newsletter that noted cases of tinnitus and hearing loss after vaccination.^{123,124,125,126,127}
- News outlets and some social media users continued to discuss the impact of the COVID-19 vaccines on fertility and pregnancy.^{128,129,130,131,132,133}
- Discussions of vaccine related fertility and pregnancy concerns increased 16% (52,900 mentions) during this reporting period.^j
- Several studies were released during this reporting period that presented evidence that infection with the virus that causes COVID-19 can impact the reproductive system of males and females.^{134,135,136}

Content Gaps and Information Voids

- Do COVID-19 vaccines cause hearing loss or tinnitus?
 - At the time of the publication of this report, at least two studies have examined the relationship between COVID-19 vaccination and hearing loss. One publication found no association¹³⁷ while the other found an association with a small effect size.¹³⁸
- What are the side effects of COVID-19 vaccines?
 - Common side effects include pain, redness, swelling, tiredness, headache, muscle pain, and fever.^{139,140} Severe allergic reactions and adverse effects that could cause a long-term health problem are extremely rare.^{141,142}
- What is the risk of myocarditis after mRNA COVID-19 vaccination?
 - The known risks of COVID-19 illness and its related, possibly severe, complications, such as long-term health problems, hospitalization, and even death, far outweigh the potential risks of having a rare adverse reaction to vaccination. This includes the possible risk of myocarditis or pericarditis.¹⁴³
 - Most patients with myocarditis or pericarditis who received care responded well to medicine and rest and felt better quickly. Patients can usually return to their normal daily activities after their symptoms improve.¹⁴⁴
 - Infection with the virus that causes COVID-19 increases the likelihood of myocarditis much more than vaccination.¹⁴⁵



ⁱCDC-INFO
^jMeltwater

- Do COVID-19 vaccines weaken the immune system?
 - No. There is no scientific evidence that COVID-19 vaccines weaken or impair the immune system.¹⁴⁶
- What are the effects of COVID-19 vaccines on fertility?
 - There is currently no evidence that any vaccines, including COVID-19 vaccines, affect fertility in women or men.^{147,148}
- What are the effects of COVID-19 vaccines on pregnancy?
 - There is currently no evidence that COVID-19 vaccines increase the risk of preterm birth, low birth weight, or stillbirth. Infection with the virus that causes COVID-19 during pregnancy may increase the risk of severe illnesses, hospitalizations and deaths in mothers and newborns.¹⁴⁹ A recent MMWR found that completion of a 2-dose mRNA COVID-19 vaccination series during pregnancy might help prevent COVID-19 hospitalization among infants less than 6 months old.¹⁵⁰
- Do the mRNA COVID-19 vaccines alter DNA inside human cells?
 - COVID-19 vaccines do not change or interact with your DNA in any way. The genetic material delivered by mRNA vaccines does not enter the nucleus of your cells, which contains DNA.¹⁵¹
- Does adverse event data in the Pfizer report indicate that vaccines are dangerous?
 - The Pfizer document is an inventory of adverse events, or health issues reported following vaccination, regardless of whether the vaccine caused them.¹⁵²

Identified misinformation themes that may impact vaccine confidence:

- WHO said that the COVID-19 vaccines definitely cause hearing loss.¹⁵³
- COVID-19 vaccines cause reproductive health problems such as miscarriages, premature birth, genetic disorders in fetuses, and infertility.^{154,154,155}
- COVID-19 vaccines contain “strange life forms”¹⁵⁶ and can be transcribed into human DNA.¹⁵⁷
- COVID-19 vaccines are not vaccines but experimental gene therapy.^{158,159}
- COVID-19 vaccines cause recipients to develop vaccine-induced acquired immune deficiency syndrome (VAIDS).¹⁶⁰

Ways public health and partners can take action to improve vaccine confidence:

- Tailor and disseminate messages through trusted messengers related to the following topics:
 - COVID-19 vaccines do not weaken or impair the immune system, and there is no such thing as VAIDS.
 - COVID-19 vaccines do not change or interact with the human DNA in any way.
 - CDC continues to monitor the safety of COVID-19 vaccines for everyone, including pregnant women.
 - The risks of infection with the virus that causes COVID-19 include, but are not limited to, erectile dysfunction, preterm births, myocarditis and death.
 - COVID-19 vaccines do not affect fertility.
 - Serious adverse events after vaccination are rare.
 - The increased severity of hearing difficulties may totally or partially be explained by physiologic deterioration of the condition, or by a misperception due to the use of face masks.¹⁶¹
- Create and disseminate simple, clear messages about the process for authorizing, approving, making recommendations for, monitoring the safety of, distributing, allocating, and administering COVID-19 vaccines, including data handling.
- Provide regular updates on the benefits, safety, side effects and effectiveness of COVID-19 vaccines and clearly communicate what is known and what is being done to find out what isn’t known.

Continuing and evolving theme that may impact vaccine confidence

The themes below have been noted in previous reports and continue to undermine vaccine confidence. The information highlighted below focuses on what is new or different from previous reports. For additional context and previous recommendations on these themes, see previous [Insights Reports](#).



Consumers and news outlets discussed the effectiveness and availability of COVID-19 treatments

The United States Food and Drug Administration (FDA) issued an emergency use authorization (EUA) for two oral antivirals - Pfizer's Paxlovid and Merck's molnupiravir for outpatient treatment of mild to moderate COVID-19 infection.¹⁶² In addition, the Test to Treat initiative was launched nationwide to improve accessibility to effective COVID-19 therapeutics¹⁶³ within 5 days of symptoms onset.^{164,165,166} However, the 5-day timeline associated with the Test-to-Treat program has highlighted several challenges. These include patients' delay of COVID-19 testing and treatment as well as their dismissal of symptoms, patient and providers lack of awareness, poor transportation, and long clinic wait times.^{167,168,169} Moreover, some patients have refused these antiviral treatments due to safety concerns and fears of drug interactions.¹⁷⁰ Access and distribution disparities were also reported for AstraZeneca's Evusheld monoclonal antibody treatment administered to immune-compromised individuals,¹⁷¹ while FDA halted use of Sotrovimab due to its ineffectiveness against the Omicron BA.2 variant of the Omicron.^{172,173,174,175} A recent study showed that Ivermectin did not lower COVID-19 hospitalization rates.^{176,177,178,179} Searches for "bebtelovimab" and "new hampshire ivermectin" rose by 1,150% and 2,350%, respectively during this reporting period.^k

Although vaccine hesitancy remains a major public health threat, the availability and uptake of monoclonal antibody treatment could decrease the risk of severe illness, hospitalizations, and deaths, particularly among the unvaccinated.

Perceptions, Concerns, and Threats to Vaccine Confidence

- Some have expressed fears about an inability to partake in the Test-to-Treat program if pharmacists aren't authorized to prescribe COVID therapeutics.¹⁸⁰ Despite demand, there are reports that many therapeutics remain unused.^{181,182}
- There are concerns that rural and underserved communities are less likely to receive COVID-19 therapeutics or to have access to a health care provider.^{183,184}
- Some have voiced concerns that COVID-19 vaccine and treatment disparities may worsen because the federal spending bill passed on March 15 did not include funding for future COVID-19 mitigation measures.^{185,186,187,188}
- Some consumers are asking if they can take vitamin C and vitamin D to boost the immune system against COVID-19!^l

Content Gaps and Information Voids

- What therapeutics might your health care provider recommend when sick from COVID-19?
 - For people at high risk of disease progression, the FDA has issued Emergency Use Authorizations (EUA) for oral antiviral medications and monoclonal antibody treatment treatments for COVID-19.¹⁸⁹
 - Monoclonal antibody treatment should be started as soon as possible after SARS-CoV-2 infection is confirmed by a test and within 10 days of symptom onset. Monoclonal antibody treatment might be considered in patients who are not hospitalized and have mild to moderate COVID-19 symptoms and certain risk factors for disease progression.¹⁹⁰
- How do antivirals work?
 - Oral antiviral medications target specific parts of the SARS-CoV-2 virus which helps to prevent these viruses from making copies of themselves and spreading through the patient's body.¹⁹¹
- How do monoclonal antibodies work?
 - Monoclonal antibody treatment could help the immune system recognize and respond more effectively to the virus.¹⁹²
- Can a health care provider combine antiviral medications and monoclonal antibody treatment?
 - There are currently no data on the combined use of antiviral agents and anti-SARS-CoV-2 monoclonal antibody treatment of non-hospitalized patients with COVID-19. Clinical trials are needed to determine whether this combination therapy has a role in the treatment of COVID-19.¹⁹³

Ways public health and partners can take action to improve vaccine confidence

- Continue to engage health care provider and advocacy groups that support immunocompromised patients to help increase overall awareness and utilization of COVID-19 therapeutics.
- Craft and disseminate messages about why people need to be up to date on COVID-19 vaccinations even though therapeutics exist.

^kGoogle trends

^lCDC-INFO

Appendix 1: Inputs and Sources

Type	Input	Cadence	Sources	Tactics for Utilization
Social Media Listening & Media Monitoring	Communication Surveillance Report	Daily on weekdays	<ul style="list-style-type: none"> Google news Meltwater CrowdTangle Native platform searches 	<ul style="list-style-type: none"> Share of voice topic analysis to identify themes Emerging topics
	Meltwater	Daily	<ul style="list-style-type: none"> Facebook, Twitter, Instagram Blogs News media Online forums 	<ul style="list-style-type: none"> Share of voice topic analysis Emerging theme topics Identify high reach/velocity topics
	OADC (Office of the Associate Director of Communication) Channel COVID-19 Post metrics	Weekly	<ul style="list-style-type: none"> Sprout Social Native OADC account analytics 	<ul style="list-style-type: none"> Analyze # of posts, topics Success of messages, # of impressions, reach, # engagements
	OADC Channel Comment Analysis	Daily on weekdays	<ul style="list-style-type: none"> Native platform searches 	<ul style="list-style-type: none"> Sentiment analysis Identify message gaps/voids
Direct Reports	CDC-INFO Metrics	Weekly	<ul style="list-style-type: none"> CDC-INFO inquiry line list Prepared response (PR) usage report 	<ul style="list-style-type: none"> Cross-compare PR usage with inquiry theme analysis Sentiment analysis Identify information gaps/voids
	VTF Media Requests	Weekly	<ul style="list-style-type: none"> Media request line list 	<ul style="list-style-type: none"> Leading indicator for news coverage Identify information gaps/voids
	Web Metrics	Weekly	<ul style="list-style-type: none"> Top pages Google search queries Top FAQs Referring domains 	<ul style="list-style-type: none"> Identify information gaps/voids, Identify keywords/search terms, changes in web traffic
Research	Poll Review	Weekly	<ul style="list-style-type: none"> Harris Poll, PEW research, Gallup Poll, KFF New data related to vaccine hesitancy 	<ul style="list-style-type: none"> Identify socio-behavioral indicators related to motivation and intention to vaccinate
	Literature Review	Weekly	<ul style="list-style-type: none"> PubMed, LitCovid, ProQuest Central, Altmetric New data related to vaccine hesitancy 	<ul style="list-style-type: none"> Identify current vaccination intention Identify barriers to vaccination
Third Party Reports	Tanag Social Listening +Media Monitoring Report	Weekly	<ul style="list-style-type: none"> Meltwater Sprout Social First Draft Native platform searches 	<ul style="list-style-type: none"> Trending topics Demographic and geographic conversation monitoring
	CrowdTangle content insights report	Biweekly	<ul style="list-style-type: none"> Facebook 	<ul style="list-style-type: none"> Top pages (voices), groups General trends/sentiment analysis News analysis through posts
	First Draft News Vaccine Misinformation Insights Report	Monthly	<ul style="list-style-type: none"> Proprietary methods 	<ul style="list-style-type: none"> Media trends analysis Emerging threats and data deficits Online vaccine narratives
	Project VCTR	Weekly	<ul style="list-style-type: none"> Proprietary methods 	<ul style="list-style-type: none"> National and regional trends in negative attitudes toward vaccination Conversations around Legislation

Appendix 2: Interim Clinical Considerations

	Pfizer-BioNTech		Moderna	Janssen
Preferential recommendation	mRNA COVID-19 vaccines (Pfizer-BioNTech and Moderna) are preferred over Janssen COVID-19 Vaccine for the primary series and booster doses.			
Age groups	5 through 11 years of age	12 years of age and older	18 years of age and older	18 years of age and older
Vaccine type	mRNA	mRNA	mRNA	Replication-incompetent adenovirus type 26 vector
Dose	10 µg (orange cap)	<ul style="list-style-type: none"> ■ 30 µg (purple cap) ■ 30 µg (gray cap) 	<ul style="list-style-type: none"> ■ 100 µg (primary series and additional primary dose) ■ 50 µg (booster dose) 	5×10 ¹⁰ viral particles
Dosage (volume)	0.2 mL	0.3 mL	<ul style="list-style-type: none"> ■ 0.5 mL (primary series and additional dose for moderately or severely immunocompromised persons) ■ 0.25 mL (booster dose) 	0.5 mL
Immunization Schedule	<ul style="list-style-type: none"> ■ COVID-19 vaccination is recommended for persons 5 years of age and older. ■ For most people a primary series is 2 doses of an mRNA vaccine (Pfizer-BioNTech and Moderna) or a single dose of Janssen COVID-19 Vaccine. NOTE: mRNA vaccines (Moderna, Pfizer-BioNTech) are preferred in most situations over Janssen COVID-19 Vaccine. ■ For persons who are moderately or severely immunocompromised 5 years of age and older, a 3-dose primary series of an mRNA vaccine (Moderna, Pfizer-BioNTech) is recommended. An mRNA vaccine is preferred, but a single primary Janssen vaccine dose can be used for persons 18 years of age and older followed by a 2nd dose of an mRNA at least 4 weeks later. ■ A booster dose is recommended for persons 5 years of age and older. Some persons should receive a 2nd booster dose: ■ See the Interim COVID-19 Immunization Schedule for Ages 5 Years of Age or older at https://www.cdc.gov/vaccines/covid-19/downloads/COVID-19-immunization-schedule-ages-5yrs-older.pdf 			