

FEBRUARY 2022

# A Guide to Community Conversations About COVID-19: Vaccines, Myths & Implications for Pregnancy and Breastfeeding



# DISCLAIMER

Since the COVID-19 pandemic is an emerging and rapidly evolving situation, the information provided in this toolkit may be updated as we learn more about COVID-19. The information is for your general knowledge and should not be used for medical advice.

# INTRODUCTION

After our webinar on December 8, 2021 *"Equipping Frontline Staff to Encourage the COVID-19 Vaccine Among Pregnant and Breastfeeding Women"*, we realized the importance of sharing the content in multiple mediums for home visitors and those interacting with pregnant and breastfeeding individuals.

Given the ever-changing nature of COVID-19, this guide attempts to compile the complex information into one document that may be useful for those working with families to refer to when discussing COVID-19 and vaccines. We understand and value that the decision to get vaccinated is an individual one. The purpose of this guide is to present the scientific evidence and debunk myths and misconceptions about the virus and the vaccine.

If you or anyone you know would like to watch the webinar, the link is below:

<https://bit.ly/NHSACOVIDVaccineWebinar1>

We thank you in advance for exploring this content and for your commitment to the families in your community.

# CONTENTS

05

What is Coronavirus?

09

Effect Of COVID-19  
on Pregnancy Outcomes

10

The Burden of COVID-19  
and Health Disparities

12

Vaccine Background

13

Development of Vaccine

18

Vaccine Recommendations

19

Safety of the COVID-19  
Vaccines While Pregnant  
or Breastfeeding

20

Why Do We Vaccinate?

23

Why Do We Vaccinate  
During Pregnancy?

23

Benefits for Infants

24

Pregnancy-Related  
Vaccine Myths

25

Survey Overview

26

Frequently Asked Questions

28

Talking with Patients about  
COVID-19 Vaccination

30

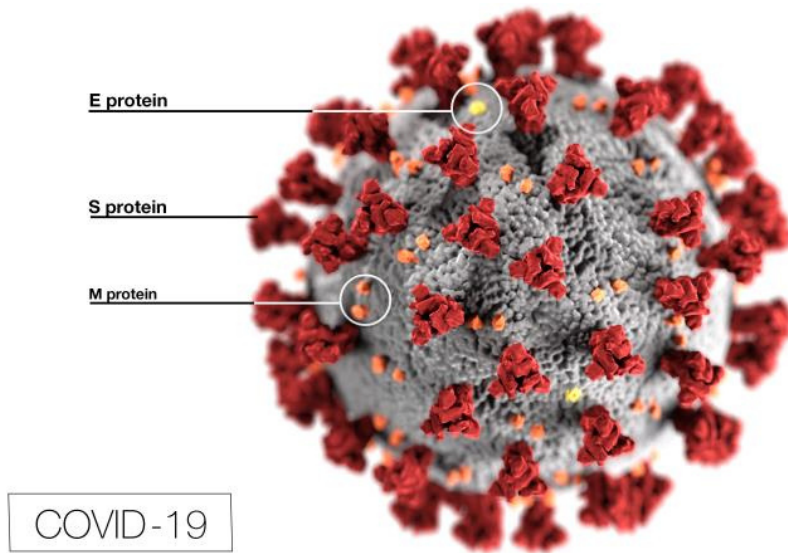
Resources for More Information

31

Acknowledgements

32

References



Source: Centers for Disease Control and Prevention PHIL ID #23313

## What is Coronavirus?

Coronaviruses are one of the largest RNA viruses (viruses with ribonucleic acid as their genetic material) and are characterized by spike proteins that project from their surface giving the appearance of a corona, which is the Latin word for crown. These spike proteins help the virus attach to and infect healthy cells.

Coronaviruses have been in existence for decades – the first human coronavirus was identified in the mid-1960s.

There are hundreds of coronaviruses, most of which are found among animals such as pigs, camels, bats, and cats. Sometimes those viruses jump to humans – called a spillover event – and can cause disease.

Four of the seven known coronaviruses that sicken people cause only mild to moderate disease.

MERS-CoV is a coronavirus that causes Middle East Respiratory Syndrome (MERS). Transmitted from camels, MERS was identified in September 2012 and continues to cause sporadic and localized outbreaks. SARS-CoV is a coronavirus that emerged in November 2002 and disappeared by 2004, and causes severe acute respiratory syndrome (SARS).

SARS-CoV-2 is the coronavirus which causes COVID-19 and was discovered in December 2019. COVID-19 is a respiratory illness with symptoms similar to the common cold, flu, or pneumonia. COVID-19 not only affects the lungs and respiratory system but can also affect several other parts of the body.

## Symptoms

Common symptoms of COVID-19 are listed to the right. Symptoms typically appear 2-14 days after exposure to the virus. Please note this list does not include all possible symptoms as the CDC continues to update this list as data becomes available.

## Post-COVID Conditions

While most people with COVID-19 recover within weeks of being ill, some individuals may experience post-COVID conditions also known as “long-COVID.” Post-COVID conditions can be new, returning, or ongoing health problems individuals experience four or more weeks after first being infected with the virus that causes COVID-19. Those who did not have COVID-19 symptoms while they were infected can still develop post-COVID conditions. These conditions can present in a variety of ways and for varying lengths of time. These conditions may also be known as long COVID, long-haul COVID, post-acute COVID-19, long-term effects of COVID, or chronic COVID.

## Severe Long-Term Complications

COVID-19 can lead to severe long-term complications such as cardiomyopathy (a disease that weakens the heart muscle and does not allow it to effectively pump blood to the rest of the body), chronic lung disease, chronic kidney disease, skin rashes/changes, hair loss, stroke and Guillain-Barre Syndrome (a condition that can cause temporary paralysis).

## Common COVID-19 Symptoms

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

## Common Long-Term Effects of COVID-19

- Difficulty breathing or shortness of breath
- Tiredness or fatigue
- Symptoms that get worse after physical or mental activities (also known as post-exertional malaise)
- Difficulty thinking or concentrating (sometimes referred to as “brain fog”)
- Cough
- Chest or stomach pain
- Headache
- Fast-beating or pounding heart (also known as heart palpitations)
- Joint or muscle pain
- Pins-and-needles feeling
- Diarrhea
- Sleep problems
- Fever
- Dizziness on standing (lightheadedness)
- Rash
- Mood changes
- Change in smell or taste
- Changes in menstrual period cycles

## Risk Factors for COVID-19



### Common Risk Factors for COVID-19

- Pregnancy
- Cancer
- Chronic Kidney Disease
- Chronic Liver Disease
- Chronic Lung Disease
- Dementia or other neurological conditions
- Diabetes (type 1 or type 2)
- Down Syndrome
- Heart Conditions
- HIV Infection
- Immunocompromised state (weakened immune system)
- Mental Health Conditions
- Overweight/Obesity
- Sickle cell disease or thalassemia
- Smoking, current or former
- Solid organ or blood stem cell transplant
- Stroke or cerebrovascular disease, which affects blood flow to the brain
- Substance use disorders
- Tuberculosis

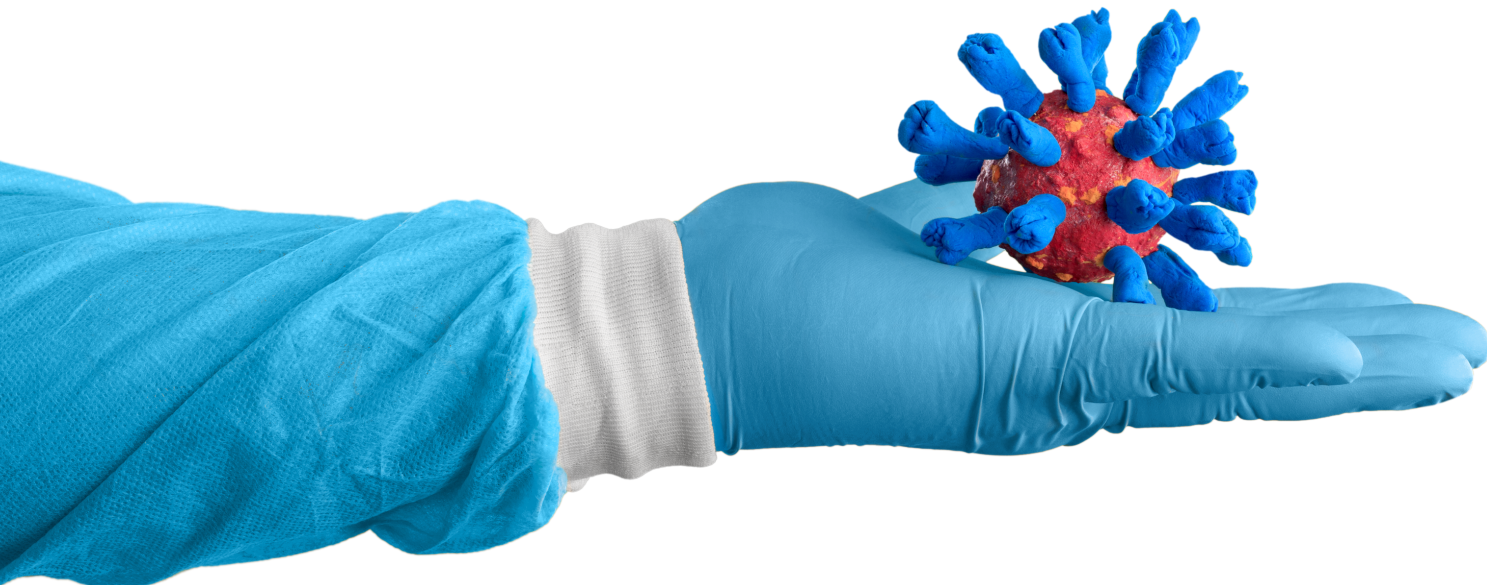
Older adults are at the highest risk of getting severely ill from COVID-19. Over 80% of deaths from COVID-19 occur in individuals over the age of 65. People of color are also disproportionately affected by COVID-19.

Individuals with these chronic diseases or conditions listed in the box above are at higher risk of contracting COVID-19. Risk of severe illness from COVID-19 increases as the number of these medical conditions increases in an individual.

## Variants

As viruses spread, they have new opportunities to change, which result in variants. Variants of viruses are expected to occur; sometimes new variants emerge and disappear, while other times they become the dominant variant.

As of December 13th, 2021, the variants of concern are Omicron and Delta. Omicron spreads more easily than other variants, including Delta, but data suggests that Omicron is less severe in general. Evidence suggests that fully vaccinated people who become infected with the Omicron variant can spread the virus to others, but the vaccines are effective at preventing severe illness, hospitalizations, and death.





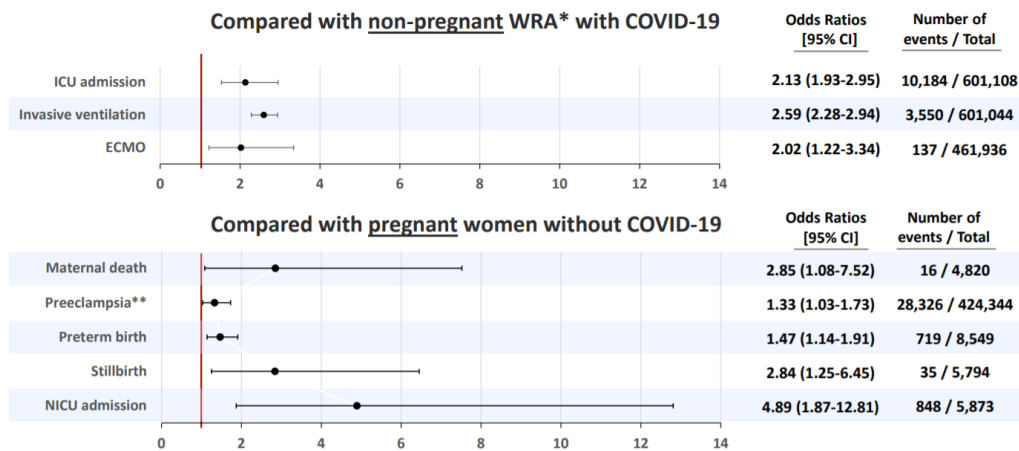
# Effect of COVID-19 on Pregnancy Outcomes

COVID-19 infection in pregnancy can lead to miscarriage, intrauterine death, fetal growth restriction, long term morbidity and disability, prematurity, stillbirth and maternal death.

The chart below presents odds ratios for severe illness and adverse maternal, pregnancy, and neonatal outcomes due to COVID-19. An odds ratio quantifies the relationship between an exposure (in this case, COVID-19) and an outcome (intensive care unit (ICU) admission, invasive ventilation, etc.).

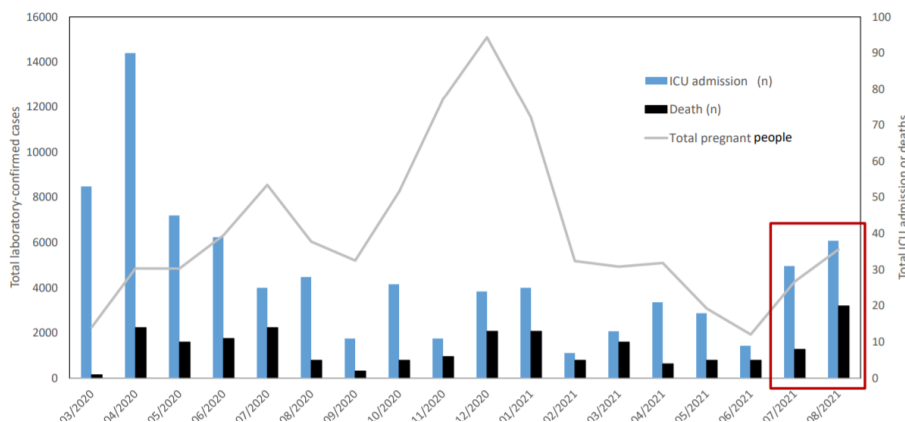
An odds ratio of greater than 1.0 indicates the exposure might be a risk factor for the outcome. As the chart shows, pregnant women with COVID-19 have higher odds of ICU admission, invasive ventilation, and need for extra corporeal membrane oxygenation (ECMO) than non-pregnant women of reproductive age (WRA). Additionally, when compared with pregnant women without COVID-19, pregnant women with COVID-19 have higher odds of maternal death, preeclampsia, preterm birth, stillbirth, and need for neonatal intensive care unit (NICU) admission.

## Severe illness and adverse maternal, pregnancy, and neonatal outcomes among pregnant women with COVID-19



Source: Centers for Disease Control and Prevention

## COVID-19 cases, ICU admission and death among pregnant people (National COVID-19 Case Surveillance Data; Jan 22, 2020 – Sep 13, 2021)



Source: Centers for Disease Control and Prevention

## The Burden of COVID-19 and Health Disparities

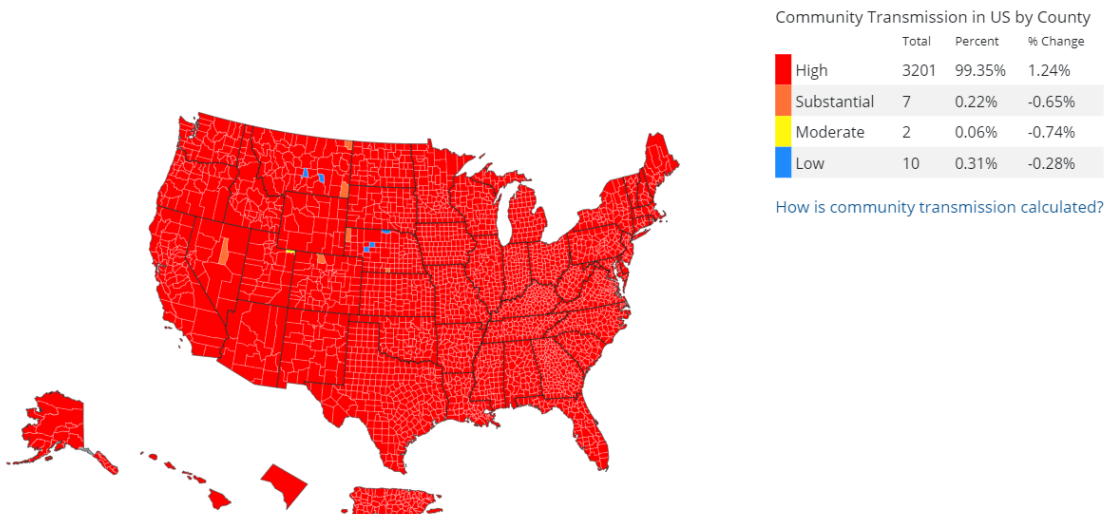
As of January 30, 2022, the United States has had over 74,037,216 cases of COVID-19 and over 850,000 COVID-19 deaths. People of color are at an increased risk of getting sick and dying from COVID-19.

### Cases, Hospitalization, and Death by Race/Ethnicity

Rate ratios compared to White, Non-Hispanic persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons
Cases <sup>1</sup>	1.6x	0.6x	1.0x	1.6x
Hospitalization <sup>2</sup>	3.3x	0.8x	2.6x	2.5x
Death <sup>3</sup>	2.2x	0.9x	1.9x	2.1x

Source: Centers for Disease Control and Prevention

### Level of Community Transmission of All Counties in US



Current 7-days is Thu Jan 06 2022 - Wed Jan 12 2022 for case rate and Tue Jan 04 2022 - Mon Jan 10 2022 for percent positivity.  
The percent change in counties at each level of transmission is the absolute change compared to the previous 7-day period.

● High ● Substantial ● Moderate ● Low ● No Data

Source: Centers for Disease Control and Prevention

## Why are People of Color More Likely to be Affected by COVID-19?

The disproportionate effects that COVID-19 has on people of color highlights how systemic racism has led to this health disparity. Discrimination, lack of access to adequate healthcare, lack of access to testing, income and education gaps, and housing inequities have led to people of color being at higher risk for COVID-19. These inequities have attributed to people of color having higher morbidity and mortality rates from COVID-19.

People of color are at increased risk of being exposed to COVID-19 due to conditions in the places where they live, work, learn, play, and worship. Many of these families live with inadequate housing conditions, where they are less likely to socially distance and are more likely to be exposed to higher levels of air pollution. These conditions may increase the risk of severe illness, hospitalization, and death from COVID-19.

People of color are also more likely to work in what are considered essential jobs, such as grocery stores, healthcare facilities, farms, and factories.

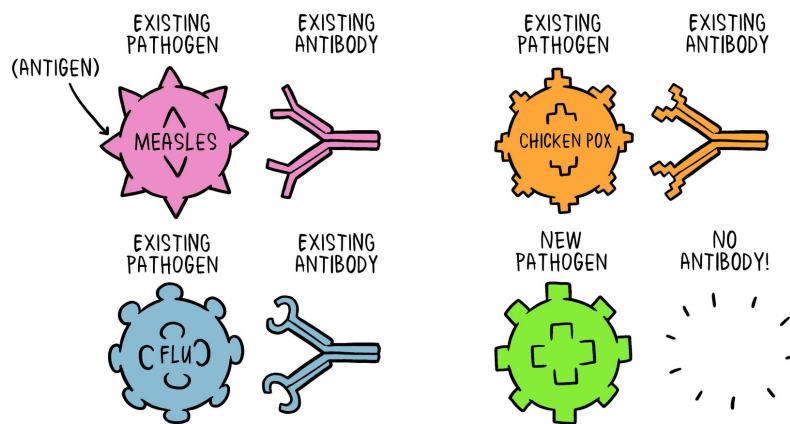
These jobs often require face-to-face interactions and public transportation, thus increasing exposure to COVID-19. Overall, people of color lack access to proper education leading to not only educational gaps but also income and wealth gaps.

People of color have a higher level of pre-existing conditions but less access to proper healthcare, which increases their susceptibility to COVID-19. They also often mistrust the medical system due to a history of medical harm and mistreatment. When the virus emerged, there were also false reports that melanin was a barrier for the virus, causing people to believe that African Americans could not get the illness. Initially, this led to a lack of management of the illness within the African American population. People of color are also more likely to wait until symptoms are extreme to get the care they need. Once hospitalized, they are at a significantly higher risk of needing to be sent to the ICU, needing to be put on a ventilator, and sadly, dying.



Source: League of Minnesota Cities

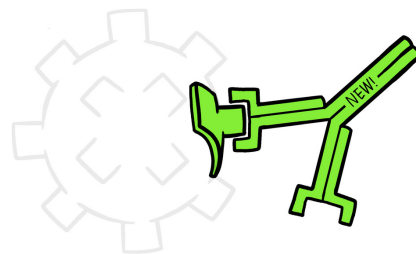
## Vaccine Background: How do vaccines work?



When a new pathogen or disease enters our body, it introduces a new antigen. For every new antigen, our body needs to build a specific antibody that can grab onto the antigen and defeat the pathogen.

VACCINE

NEW ANTIBODY



A VACCINE is a tiny weakened non-dangerous fragment of the organism and includes parts of the antigen. It's enough that our body can learn to build the specific antibody. Then if the body encounters the real antigen later, as part of the real organism, it already knows how to defeat it.

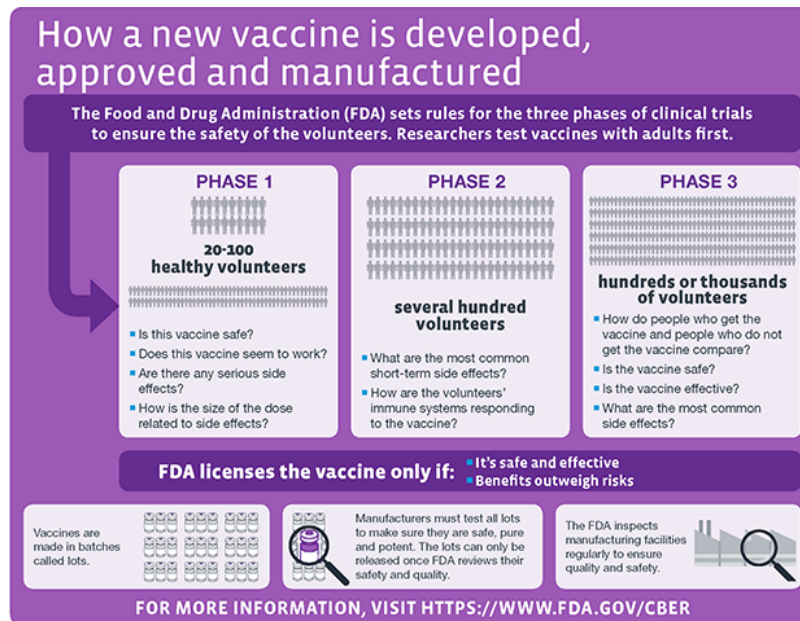
Vaccines introduce a weakened or inactive version of the infectious organism or a blueprint of the antigen (the part of the infectious organism the body recognizes) which allows your immune system to develop the necessary forces to battle the organism without causing the actual disease. As the image above shows, once your body has been exposed to the infectious organism (pathogen), your body develops antibodies to fight the illness. Therefore, if you come in contact with the same pathogen again, your immune system can recognize it, and has the antibodies to fight it.

When one is infected with a new pathogen such as SARS-CoV-2, the virus that causes COVID-19, the immune system has no antibodies developed to fight it since it has never seen this virus before. Vaccination allows your body to develop antibodies so that when one is exposed to the infectious agent, your body has the ability to fight it, so it does not lead to serious illness.

Source: World Health Organization

Source: World Health Organization

## Development of Vaccine



Source: Centers for Disease Control and Prevention

A vaccine goes through multiple phases of testing when being developed. The phases include the preclinical phase, Phase 1, Phase 2, Phase 3 and Phase 4. The preclinical stage involves testing in the laboratory on animal subjects. Phase 1 is the beginning of human testing, but the testing is done on a minimal number of participants with the focus being on safety. In Phase 2, testing is performed on several hundred participants with two parts. Phase 2a focuses on dosing while Phase 2b focuses on efficacy. Phase 3 performs testing on anywhere between 1,000 and 3,000 participants. The vaccine is then submitted for FDA approval where it is reviewed for safety and efficacy and compared to the standard of care. If the necessary criteria is met then the product is approved. Phase 4 happens after the FDA approves the vaccine. The vaccine then undergoes post-licensure monitoring where it is monitored for safety; this phase includes thousands of participants.

While COVID-19 vaccines were developed rapidly, all steps were taken to make sure they are safe and effective. Scientists have been working for many years to develop vaccines against viruses like the one that causes COVID-19. This knowledge helped speed up the initial development of the current COVID-19 vaccines.

Typically, each phase of vaccine development is conducted one step at a time. Due to the dire nature of COVID-19, the first three phases of testing overlapped. Many different public organizations and private companies came together to speed up the process so that this critical tool could be developed to control the spread of COVID-19. The clinical trials involved tens of thousands of participants from different ages, races, and ethnicities. While these COVID-19 vaccines were created swiftly, the vaccine underwent each step of rigorous testing. The vaccines met high standards of safety, efficacy and manufacturing quality leading to FDA approval.

## Available COVID-19 Vaccines and Ingredients

There are three COVID-19 vaccines available in the United States. Two are mRNA vaccines (Pfizer and Moderna) and one is a recombinant viral vector vaccine (Johnson & Johnson). The ingredients of the vaccines are below.

### **Pfizer**

Ingredients in vaccine for people ages 12 years and older: mRNA, lipids (fats), salts and sugar

Ingredients in vaccine for people ages 5-11 years: mRNA, lipids (fats), sugar and acid stabilizers

### **Moderna**

Ingredients: mRNA, lipids (fats), salt, sugar, acid stabilizers, and acid

### **Johnson & Johnson**

Ingredients: recombinant vector, sugars, salts, acid and acid stabilizer

A few additional notes about the vaccines:

- None of the COVID-19 vaccines contain a live virus and cannot make anyone sick with COVID-19
- The mRNA in the vaccine does not enter the cell nucleus where our DNA is
- The viral vector gene does not enter the cell nucleus where our DNA is



Source: Center for Disease Control and Prevention

## How mRNA & Recombinant Viral Vector Vaccines Work

mRNA vaccines contain material from the virus that causes COVID-19 that gives our cells instructions for how to make a harmless protein. After our cells make copies of the protein, they destroy the genetic material from the vaccine. Our bodies recognize that the protein should not be there and build T-lymphocytes and B-lymphocytes that will remember how to fight the virus that causes COVID-19 if we are infected in the future.

Vector vaccines contain a modified version of a different virus than the one that causes COVID-19. Inside the shell of the modified virus, there is material from the virus that causes COVID-19. This is called a “viral vector.” Once the viral vector is inside our cells, the genetic material gives cells instructions to make a protein. Using these instructions, our cells make copies of the protein. This prompts our bodies to build T-lymphocytes and B-lymphocytes that will remember how to fight that virus if we are infected in the future.

# How mRNA COVID-19 Vaccines Work

## Understanding the virus that causes COVID-19.

Coronaviruses, like the one that causes COVID-19, are named for the crown-like spikes on their surface, called **spike proteins**. These **spike proteins** are ideal targets for vaccines.

## What is mRNA?

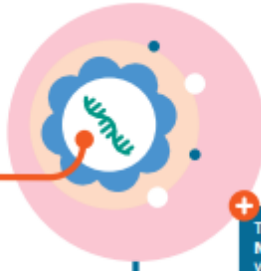
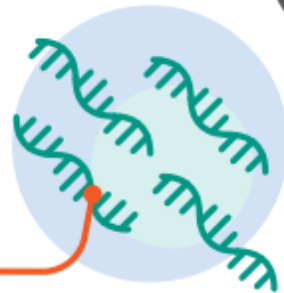
Messenger RNA, or mRNA, is genetic material that tells your body how to make proteins.

## What is in the vaccine?

The vaccine is made of mRNA wrapped in a coating that makes delivery easy and keeps the body from damaging it.

## How does the vaccine work?

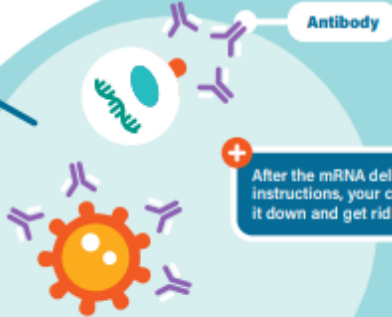
The mRNA in the vaccine teaches your cells how to make copies of the **spike protein**. If you are exposed to the real virus later, your body will recognize it and know how to fight it off.



+ The vaccine **DOES NOT** contain **ANY** virus, so it cannot give you COVID-19. It cannot change your DNA in any way.

+ When your body responds to the vaccine, it can sometimes cause a mild fever, headache, or chills. This is completely normal and a sign that the vaccine is working.

+ After the mRNA delivers the instructions, your cells break it down and get rid of it.



## GETTING VACCINATED?

For information about COVID-19 vaccine, visit: [cdc.gov/coronavirus/vaccines](https://www.cdc.gov/coronavirus/vaccines)



# How Viral Vector COVID-19 Vaccines Work

## Understanding the virus that causes COVID-19.

Coronaviruses, like the one that causes COVID-19, are named for the crown-like spikes on their surface, called **spike proteins**. These **spike proteins** are ideal targets for vaccines.

## What is a viral vector vaccine?

A viral vector vaccine uses a harmless version of a different virus, called a "vector," to deliver information to the body that helps it protect you.

## How does the vaccine work?

The vaccine teaches your body how to make copies of the **spike proteins**. If you are exposed to the real virus later, your body will recognize it and know how to fight it off.



The vaccine **DOES NOT** contain the virus that causes COVID-19 and cannot give you COVID-19. It also cannot make you sick from the virus that is used as the vector. It cannot change your DNA in any way.

When your body responds to the vaccine, it can sometimes cause tiredness, headache, muscle pain, nausea, or mild fever. These are normal signs the vaccine is working.

## GETTING VACCINATED?

For information about COVID-19 vaccine, visit [cdc.gov/coronavirus/vaccines](https://www.cdc.gov/coronavirus/vaccines)



Source: Center for Disease Control and Prevention



## Vaccine Immunity vs Natural Immunity

Getting vaccinated for COVID-19 provides enhanced immune protection and further reduces risk of reinfection in comparison to natural immunity from contracting COVID-19. Studies show that those that have natural immunity from a prior COVID-19 infection are more than two times likely to be reinfected than those that were vaccinated for COVID-19. People infected with earlier variants of COVID-19 and are unvaccinated are more susceptible to newer, more contagious and virulent variants of COVID-19. Studies have also shown that roughly one-third of people infected with COVID-19 had no apparent natural immunity.

**Already had COVID-19?**

Studies show that getting a **COVID-19 vaccine** after you recover from COVID-19 provides added protection to your immune system.

Vaccines are a safe way to keep you from getting and spreading COVID-19. COVID-19 vaccination also helps **protect you** from serious illness if you get sick again.

The infographic features two illustrations: on the left, a man with a white face mask and a light blue shirt has several yellow virus particles floating around him; on the right, a woman with a white face mask and a dark green shirt is shown in a circular frame, receiving a vaccine in her right arm. The background is a light blue-green color with several red virus particles scattered throughout. At the bottom left is the CDC logo, and at the bottom right is the URL [cdc.gov/coronavirus](https://www.cdc.gov/coronavirus). Below the URL is the text 'Visit **Vaccines.gov** to find vaccination providers near you.'

323388-L

Source: Center for Disease Control and Prevention

## Boosters

Booster shots are necessary due to the waning protection from the primary vaccine series and the constant mutation of the SARS-CoV-2 virus. This is similar to getting the flu vaccine each year. The COVID-19 vaccine is still effective at preventing severe disease but data is showing that its ability to prevent infection and illness wanes over time. Especially with the emergence of the more virulent Omicron variant, boosters are needed to provide added protection.

Boosters are strongly recommended at least 5 months after the second dose of Pfizer, 5 months after the second dose of Moderna, or at least 2 months after completing the primary dose of the Johnson & Johnson vaccine.

## Side Effects of the Vaccine

After receiving the vaccine, common side effects include discomfort from the pain, fever and other symptoms. These are an indication that your body is developing the immune protection against the virus. If the redness or tenderness where the shot was given gets worse after 24 hours, you believe you are having a severe allergic reaction, or if the side effects are worrying or do not go away after a few days, contact a doctor or healthcare provider. Serious side effects that can lead to long-term health problems are very unlikely with the COVID-19 vaccine. Side effects from the booster are similar to those of the primary vaccine series. Fever, headache, fatigue, and pain at the injection site are the most common side effects and are typically mild or moderate.

## Vaccine Recommendations

COVID-19 vaccination is recommended for all people aged 5 years and older, including people who are pregnant, breastfeeding, or who trying to get pregnant now or might become pregnant in the future.

To be considered fully vaccinated an individual needs to have received both doses of either the Pfizer or Moderna vaccinations and one primary dose of the Johnson & Johnson vaccine. The Centers for Disease Control and Prevention has updated its recommendations for COVID-19 vaccines with a preference for people to receive an mRNA COVID-19 vaccine (Pfizer or Moderna.)


Pfizer boosters are recommended at least 5 months after second dose for anyone 12 years and older, Moderna boosters are recommended at least 5 months after second dose for anyone 18 years and older, and Johnson & Johnson boosters are recommended at least 2 months after completing the primary dose for anyone 18 years and older.

**WHEN TO GET YOUR BOOSTER SHOT**

<b>PFIZER-BIONTECH</b>	<b>MODERNA</b>	<b>J&amp;J (JANSSEN)</b>
5 MONTHS SINCE COMPLETING THE PRIMARY SERIES AND YOU ARE	5 MONTHS SINCE COMPLETING THE PRIMARY SERIES AND YOU ARE	2 MONTHS SINCE COMPLETING THE PRIMARY VACCINATION AND YOU ARE
AGE 12+	AGE 18+	AGE 18+

ELIGIBLE INDIVIDUALS MAY CHOOSE WHICH BRAND THEY RECEIVE, BUT ONLY PFIZER-BIONTECH CAN BE USED AS A BOOSTER IN THOSE AGE 12-17.

**SAVE LIVES. GET VACCINATED TODAY!**



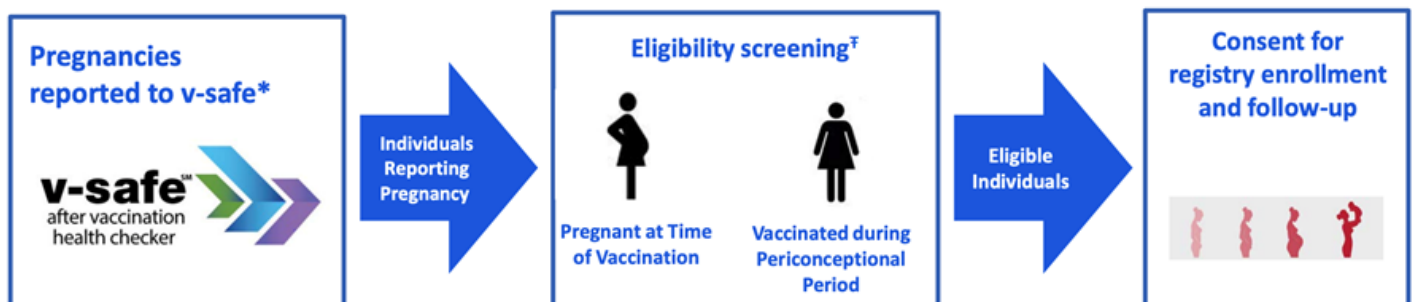
Source: Arkansas Department of Health

## Safety of the COVID-19 Vaccines while Pregnant or Breastfeeding

Once a vaccine is approved for use then Phase 4 of vaccine testing begins. Vaccine safety surveillance systems are created to monitor any adverse reactions to the vaccine and watch for potential safety concerns. This monitoring allows for any adverse effects that may not have been seen during the earlier phases of testing to be identified. When an adverse effect is identified, professionals immediately study it to assess whether it is a crucial safety concern. Then experts decide if recommendations and clinical guidance for the vaccine needs to be changed. This is imperative to ensure that the benefits of the vaccine outweigh the risks.

There is a vaccine safety surveillance system focused on pregnant people known as the v-safe COVID-19 Vaccine Pregnancy Registry. This surveillance system collects information from people who received the COVID-19 vaccination in the periconception period (within 30 days before last menstrual period) or during pregnancy. Participation is voluntary and participants can opt out at any time. Participants are contacted several times during their pregnancy and asked health questions about their pregnancy and health history. Once the baby has been delivered, participants might be contacted again. The information gathered is used to better understand pregnancy outcomes (e.g., miscarriage and stillbirth), pregnancy complications (e.g., preeclampsia and gestational diabetes) and problems with the newborn (e.g., preterm birth, poor growth, or birth defects).

One research study analyzed data from over 35,000 pregnant v-safe participants who received an mRNA COVID-19 vaccine and did not find any safety concerns for them or their baby. Additionally, studies in animals receiving Moderna, Pfizer, or Johnson & Johnson COVID-19 vaccine before or during pregnancy found no safety concerns in pregnant animals or their babies. As of December 20, 2021, more than 180,000 individuals signed up for the v-safe system and indicated they were pregnant at the time they received the COVID-19 vaccine.



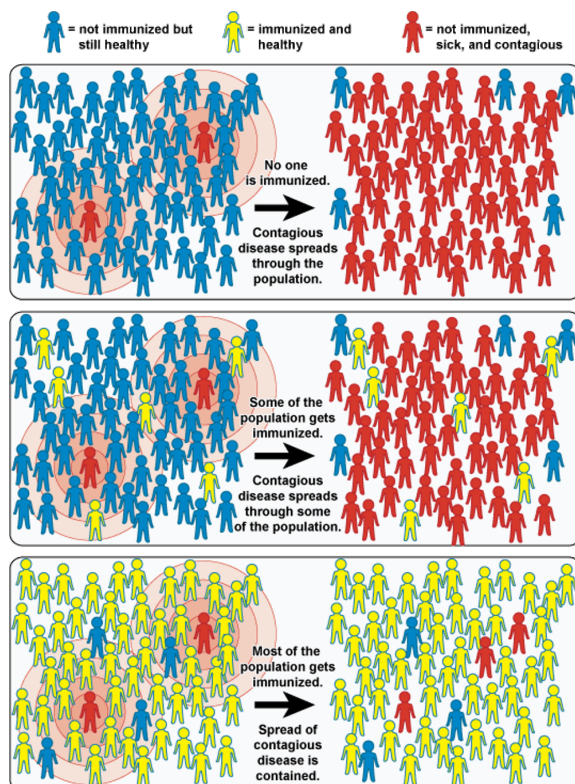
Source: Centers for Disease Control and Prevention

## Why Do We Vaccinate?

We vaccinate to prevent illness from infectious diseases by building immunity. Immunity is when your immune system (which fights illness) can recognize and respond to infectious agents to fight and protect against the disease. For more information on how vaccines help build immunity, see the 'How Vaccines Work' section.

Not only do vaccines protect individuals from developing serious illness, but they also mitigate the spread of the infectious agent through the community. If the infectious agent is transmitted to an individual that is vaccinated, they are less likely to pass the virus on to the next person due to their immune system's ability to fight the virus. Vaccines, including the COVID-19 vaccine, are an important tool to limit the spread of an infectious agent and thus reduce the infection rate.

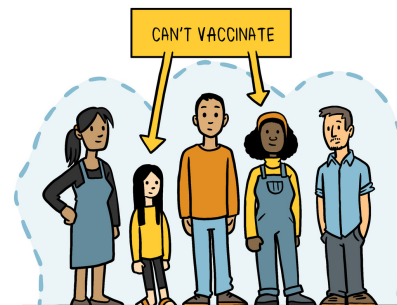
Herd immunity occurs when there are enough members of the population that have built immunity to the disease and thus the chain of infection/transmission is halted in that community. This is especially important for vulnerable members of society that cannot receive the vaccination such as individuals that are immunocompromised. As the figure below shows, a large portion of the community needs to be immunized for herd immunity to be accomplished as even if a small portion of the population is immunized the disease can still run rampant. The herd immunity threshold, the percentage of the population that needs to be vaccinated to put an end to the transmission of COVID-19, is estimated at about 90%.



Source: National Institutes of Health



A vaccine protects an individual...



Community vaccination protects the whole community, even those who can't vaccinate.

Source: World Health Organization

## Why Do We Vaccinate? (continued)

Vaccines prevent infection, serious illness, and death from COVID-19. Additionally, people who are fully vaccinated with an additional or booster dose had lower case rates compared with those without an additional or booster dose. In October 2021, unvaccinated persons had a 5 times higher risk of testing positive for COVID-19 and a 14 times risk of dying from COVID-19 compared to fully vaccinated persons. Additionally, unvaccinated persons had a 10 times higher risk of testing positive for COVID-19 and a 20 times higher risk of dying from COVID-10 compared to fully vaccinated persons with additional or booster doses. For the week ending on November 27, 2021, unvaccinated individuals had a hospitalization rate 22 times that of vaccinated people.

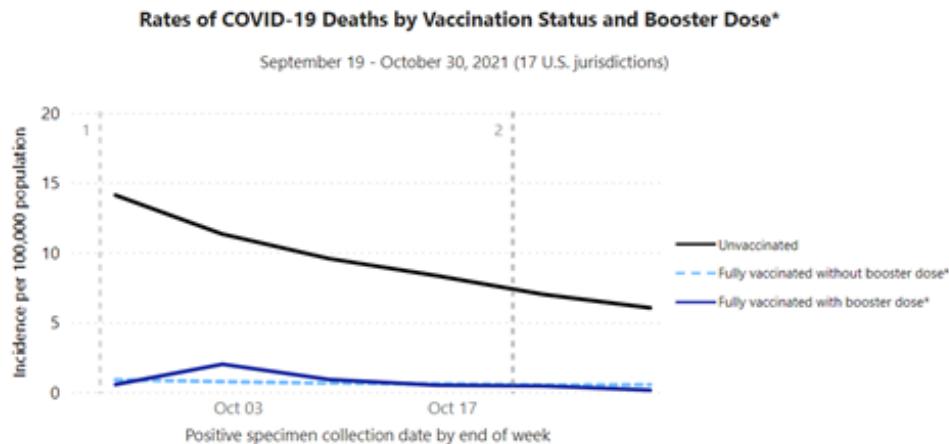
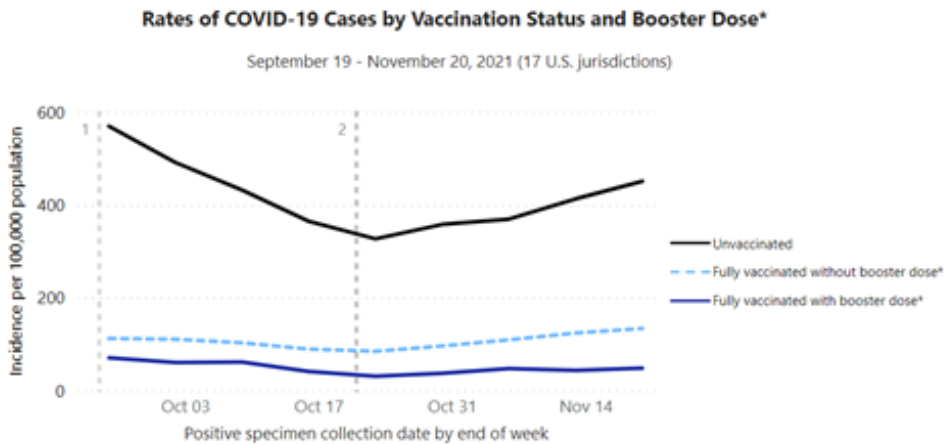
**In October, unvaccinated persons had:**

**5x**  
Risk of Testing Positive for COVID-19

and

**14x**  
Risk of Dying from COVID-19

**compared to fully vaccinated persons**



Source: Centers for Disease Control and Prevention

**In October, unvaccinated persons had:**

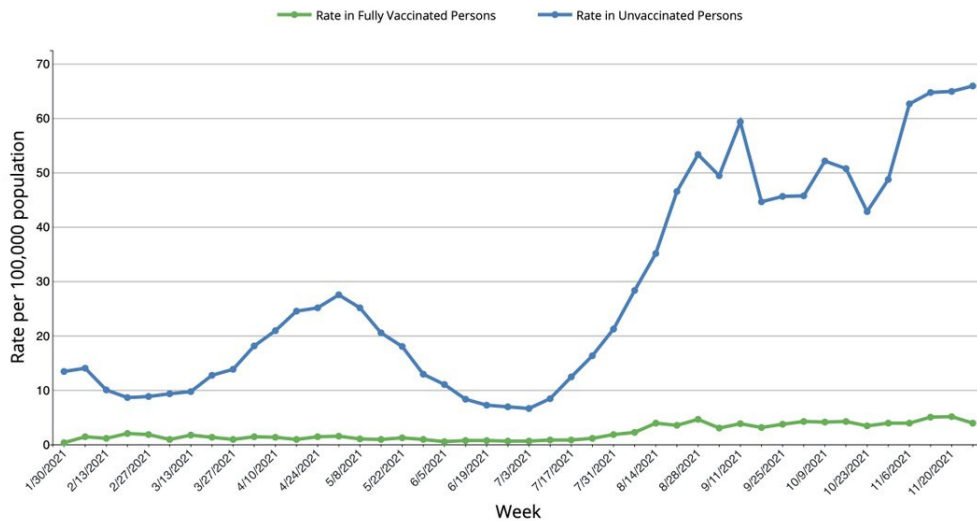
**10x**  
Risk of Testing Positive for COVID-19

**and**

**20x**  
Risk of Dying from COVID-19

**compared to fully vaccinated persons with additional or booster doses**

Age-Adjusted Rates of COVID-19-Associated Hospitalizations by Vaccination Status in Adults Ages ≥18 Years, January–November 2021



Source: Centers for Disease Control and Prevention

## Breakthrough Infections

Like other vaccines, the COVID-19 vaccines are not 100% effective, so breakthrough infections are expected. However, fully vaccinated people with a vaccine breakthrough infection are less likely to develop serious illness than those who are unvaccinated and get COVID-19. Additionally, even when fully vaccinated people develop symptoms, they are usually less severe symptoms than in unvaccinated people, meaning they are much less likely to be hospitalized or die than people who are not vaccinated. It is also important to note that people who experience breakthrough infections can still be contagious.

## Why Do We Vaccinate During Pregnancy?

Due to the physiological changes that occur during pregnancy, studies have found higher risk of adverse effects from COVID-19 infections. The immune system is slightly impaired during pregnancy making contracting an infectious disease like COVID-19 more detrimental. During pregnancy, the respiratory system goes through several changes that makes one more vulnerable to infection and worsens maternal outcomes. This makes pregnant people more susceptible to poorer symptoms and disease course than the general population. COVID in pregnancy can lead to miscarriage, intrauterine death, fetal growth restriction, long term morbidity and disability, prematurity, still birth and maternal death.

Data from the COVID-19-Associated Hospitalization Surveillance Network (COVID-NET) in 2021 indicated that approximately 97% of pregnant people hospitalized (either for illness or for labor and delivery) with confirmed SARS-CoV-2 infection were unvaccinated. This is why we vaccinate during pregnancy. Vaccination helps to reduce the risk of infection and to protect from serious illness from COVID-19 by boosting the slightly weakened immune system of pregnant people to build antibodies to protect themselves and their baby.

**PREGNANT PEOPLE** with symptomatic COVID-19 have a **70%** **INCREASED RISK OF DEATH.**

COVID-19 during pregnancy increases the risk for adverse pregnancy and neonatal outcomes, including preterm birth and admission of the baby to an intensive care unit.

**ONLY 31%** of pregnant people have been vaccinated against COVID-19

**GET VACCINATED. FIND A COVID-19 VACCINE NEAR YOU. VACCINES.GOV**

320031AJ

Source: Centers for Disease Control and Prevention

## Benefits for Infants

The COVID-19 vaccine has been shown to produce a robust immune response (antibodies) in pregnancy at a greater level than natural infection from contracting COVID-19. Antibodies passed through the placenta protect the baby for the first few months of life and breastmilk offers a continued transfer of antibodies for further protection.

## Pregnancy-Related Vaccine Myths

### **Fertility**

There is no evidence that shows that the COVID-19 vaccine causes any fertility problems for women or men. Research shows that there is no difference in pregnancy success rates for women that have received the COVID-19 vaccine and those that have not. Research also shows that there were no significant changes in the characteristics of sperm of men prior to receiving the vaccine and after; thus, the vaccine does not cause fertility issues in men either.

### **Miscarriage**

Research shows that there is no difference in the rates of miscarriages prior to and after receiving the COVID-19 vaccine. One study analyzed data from 3,958 participants who enrolled in the v-safe Pregnancy Registry and found miscarriage rates among those vaccinated against COVID-19 were similar to miscarriage rates before the COVID-19 pandemic. Another study analyzed data from 2,456 participants enrolled in the v-safe Pregnancy Registry and found the risk of miscarriage was similar to that of the general population. In another study, researchers used data from the Vaccine Safety Datalink -- a collaboration between the Centers for Disease Control and Prevention and 9 health systems -- and found that of 105,446 pregnancies, spontaneous abortions did not have an increased odds of exposure to a COVID-19 vaccination. A study done in Norway analyzed data from 13,956 women with ongoing pregnancies and 4,521 women with miscarriages and found no evidence of an increased risk for early pregnancy loss after COVID-19 vaccination.

### **Preterm Births or Small for Gestational Age**

There has been no evidence that COVID-19 vaccination is associated with preterm births or small-for-gestational age at birth. One study analyzed data from 46,079 pregnant women, 21.8% of whom were vaccinated, and did not find an increased risk of preterm birth for those vaccinated. This study also analyzed data for 40,627 live births and found that there was no increase in small-for-gestational age at birth among mothers who were vaccinated.

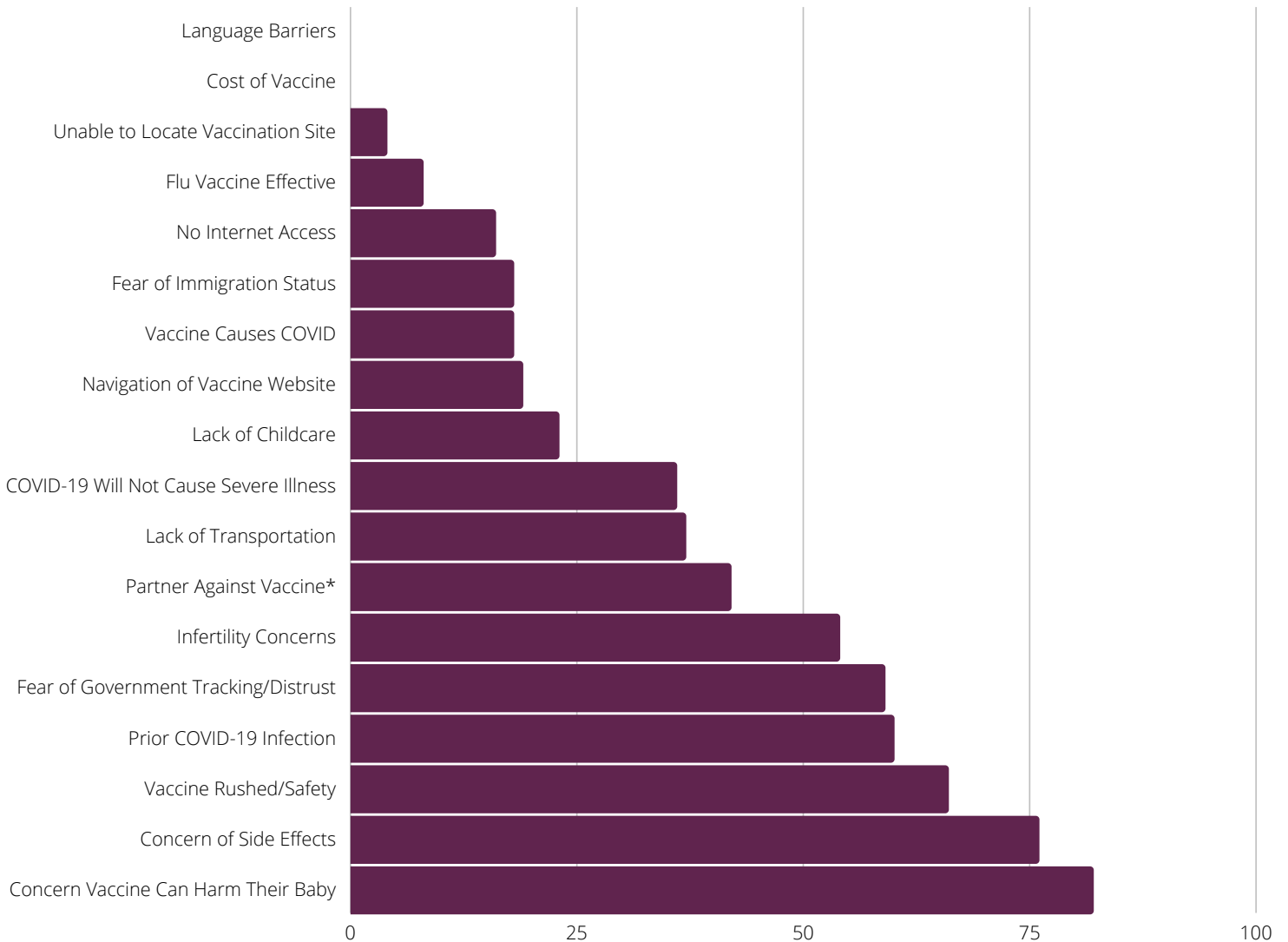
### **Stillbirths**

There is no evidence that the COVID-19 vaccine causes stillbirths (fetal death at  $\geq 20$  weeks gestation). As of January 10, 2022, 185,218 women participated in v-safe indicating that they received the COVID-19 vaccine while pregnant. A study analyzed the data from 35,691 v-safe participants and found no evidence of stillbirth or other pregnancy complications resulting from the COVID-19 vaccine.



## Survey Overview

The National Healthy Start Association invited Healthy Start Project Directors to share their thoughts on what they perceive as barriers to receiving the COVID-19 vaccine among their pregnant and breastfeeding participants. Below are the most commonly stated barriers that were used to guide the Frequently Asked Questions portion of this document.



\*The results of our survey showed over 40% of respondents identified 'partner against vaccine' as a barrier to getting vaccinated. Therefore, it is crucial to include the partner and/or father of the child in the conversation regarding benefits of the vaccine and its role in protecting the family. For more information, please see our *"COVID-19 Vaccine: Myths, Benefits, & Fathers Role in Protecting their Family"* infographic that accompanies this guide.

## Frequently Asked Questions

Below are questions that pregnant and breastfeeding people and families may have regarding the COVID-19 vaccine.

### Was the vaccine rushed?

No, the COVID-19 vaccine was not rushed. The groundwork for the vaccine has been around for decades. Due to the urgency of the global pandemic, many public and private companies came together to provide the necessary manpower and develop the vaccine. Like other vaccines, the COVID-19 vaccine went through all of the clinical trials, with some of the phases overlapping in order to obtain faster data. Recruitment of volunteers is a process that can typically take years, but since so many people were exposed to the virus, the vaccine developers were able to quickly recruit a large number of study volunteers who were willing to help with COVID-19 research. Thus, all of the necessary, rigorous measures were taken and the vaccine met the highest standards of safety and efficacy necessary for FDA approval.

### Is the vaccine experimental?

No, the vaccine is not experimental. The E in EUA stands for Emergency and not experimental. Since COVID-19 was declared a public health emergency, the FDA granted Emergency Use Authorization for vaccines to make it quickly accessible to the public. The vaccine still had to undergo all of the phases of the clinical trials.

### Why should I get vaccinated?

The vaccine can help you from getting seriously ill even if you do get COVID-19. If you get the vaccine, you can protect vulnerable family members and friends who are not eligible for the vaccine and can get severely ill from the virus. Getting the vaccine is especially important for pregnant individuals since there is an increased risk of severe illness, pregnancy complications, and even death from COVID-19. Antibodies from the vaccine have been found in umbilical cord blood and breast milk samples which means that the vaccine will not only provide protection for you, but also for your baby.

### Should I get vaccinated if I already had COVID-19?

Yes. The protection provided from already having COVID-19 is uncertain. Those that have had COVID-19 in the past are still at high risk of catching the newer, stronger variants. The vaccine is the most effective at protecting against these new forms of COVID-19.

### **Do I still need to wear a mask and socially distance if I am vaccinated?**

Yes. The COVID-19 vaccine minimizes your risk of contracting the virus that causes COVID-19, but does not eliminate that risk. Therefore, you can still transmit the virus to others. It is recommended that everyone wear a mask and practice social distancing especially indoors where there is a high transmission of the virus.

### **What is the booster? Do I need it?**

A COVID-19 booster is an additional dose of the vaccine that is provided after protection from the original dose(s) begins to decrease. Booster shots are necessary due to the waning protection from the primary vaccine series and the constant mutation of the SARS-CoV-2 virus. This is similar to getting the flu vaccine each year. Boosters are especially important due to the emergence of the more virulent Omicron variant.

### **Can COVID-19 vaccine give you COVID-19?**

None of the COVID-19 vaccines contain live virus and cannot make anyone sick with COVID-19.

### **Will the COVID-19 vaccine alter your DNA?**

The mRNA in the vaccine does not enter the cell nucleus where our DNA is. The viral vector gene does not enter the cell nucleus where our DNA is.

### **Will the COVID-19 vaccine cause infertility?**

Studies have found no evidence that the COVID-19 vaccine can cause infertility in women or men.

### **Will the vaccine harm my baby or cause a miscarriage?**

No, the vaccine will not harm your baby. Researchers have analyzed data from thousands of pregnant individuals and have found no evidence of increased rates of miscarriages among those who were vaccinated. Additionally, getting the vaccine while pregnant builds antibodies that could protect your baby.

### **What are the side effects of the vaccine?**

Side effects include soreness, discomfort, fever, chills, fatigue and other symptoms, but they are normal signs that your body is building protection and should only last a few days.

## Talking with Patients about COVID-19 Vaccination

### *How to Apply Motivational Interviewing During a Patient Visit*

Here are four steps to apply motivational interviewing rapidly (1–5 minutes) during a patient visit.

#### **Step 1: Embrace an attitude of empathy and collaboration**

- Be compassionate, show empathy, and be genuinely curious about the reasons why the patient feels the way they do.
- Be sensitive to culture, family dynamics, and circumstances that may influence how patients view vaccines.
- Remember: Arguing and debating do not work. Taking a strong initial stand may also backfire, especially with people who have concerns about vaccines.

#### **Step 2: Ask permission to discuss vaccines - Start by asking permission to discuss vaccines. Say something like, “If it is okay with you, I would like to spend a few minutes talking about COVID-19 vaccines and your family.”**

- If the patient says no, respect that.
  - Option 1: Move on and say, “I respect that, and because I care about your overall health, maybe we could talk about the vaccines at a future time.”
  - Option 2: Based on the patient’s demonstrated emotions and your assessment of the patient’s worldview and values, you could spend several minutes curiously exploring why the patient doesn’t want to talk about it. The goal is to understand, not to change their mind.
  - Remember: These conversations may take time, and they may continue over multiple visits.
- If the patient says yes to talking about the vaccines, move to Step 3.
- If the patient asks a question about COVID-19 vaccine safety, vaccine risks, or their health or mental health, see potential responses in Step 4.

#### **Step 3: Motivational interviewing**

- Ask the patient a scaled question. For example, “On a scale of 1 to 10, how likely are you to get a COVID-19 vaccine?” (1 = never; 10 = already have an appointment to get vaccinated). Then explore both sides of whatever number is given.
- Example: Let’s assume someone says 4. This is where curiosity comes in. You can say, “Okay, why 4? And why not a lower number?” Let them answer, and ask a follow-up question like, “What would help you move to a 5 or 6?”
- The goal is to help the patient become more open to moving toward higher numbers—in other words, getting vaccinated.

## Talking with Patients about COVID-19 Vaccination

### Step 3 Continued:

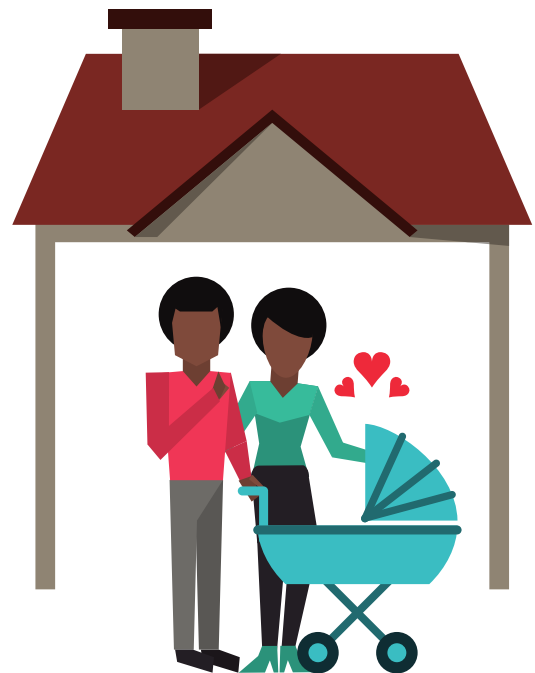
- You want them to talk about this out loud because talking actually changes how they process their choices and can develop forward momentum.
- People hesitant about vaccines usually have more practice explaining why they haven't gotten vaccinated, so it's good to reverse that. Ask them to express their vaccination benefits out loud.
- Be compassionate and curious about the patient's mixed feelings, both the part of them that wants to trust that getting a vaccine is important and safe and the other part that feels hesitant. It is important to show support for the patient to incorporate their personal values and the health needs of their family and community as they make their decision.

### Step 4: Respond to questions about vaccines, health, or mental health

- If a patient asks a question about vaccine safety, vaccine risks, or their health or mental health, respond within the boundaries of your competence, ethics, and scope of practice.
- If you feel competent and aware of how to answer the patient's question, respond with empathy and provide scientific information as needed. You can also refer the patient to resources on the CDC website.
- If the patient's question is outside of your competence or awareness, recommend that they speak with their medical or mental health provider or a knowledgeable expert, as needed.

### Tips for Talking with People about COVID-19 Vaccination

- Lead with listening
- Use patient-centered techniques
- Respond with empathy
- Address misinformation about COVID vaccination by sharing key facts
- Help individuals find their motivation for getting vaccinated
- Wrap up the conversation by encouraging your patients to take at least one action
- Reengage in conversations during follow up visits



## Resources for More Information

### Where to Access Vaccine Locations

[Vaccines.gov](https://www.vaccines.gov) or text your ZIP Code to 438829 (GETVAX) or call 1-800-232-0233 (TTY: 800-720-7489) for assistance in English, Spanish and other languages. For the Disability Information and Access Line (DIAL), call 1-888-677-1199 or email [DIAL@n4a.org](mailto:DIAL@n4a.org)

### Mother to Baby

Mother to Baby is the nation's leading authority and most trusted source of evidence-based information on the safety of medications and other exposures during pregnancy and while breastfeeding. Experts are available for free by phone or text.

<https://mothertobaby.org/ask-an-expert/>

Phone | 866.626.6847 toll free

Text | 855.999.3525 (standard messaging rates may apply)

### ACOG's COVID-19 Vaccines and Pregnancy Conversation Guide

<https://www.acog.org/covid-19/covid-19-vaccines-and-pregnancy-conversation-guide-for-clinicians>

### ACOG Infographic - Why Should I Get the COVID-19 Vaccine While I'm Pregnant?

<https://www.acog.org/womens-health/infographics/why-should-i-get-the-covid-19-vaccine-while-im-pregnant>

### Ad Council & COVID Collaborative Messaging Recommendations

[https://adcouncil-covid-vaccine-education-initiative.s3.amazonaws.com/TOOLKIT\\_MESSAGING+RECOMMENDATIONS.pdf](https://adcouncil-covid-vaccine-education-initiative.s3.amazonaws.com/TOOLKIT_MESSAGING+RECOMMENDATIONS.pdf)

### American Psychological Association Motivational Interviewing Guide

<https://www.apa.org/obesity-guideline/motivational-interviewing-guide.pdf>

### CDC Pregnant and Recently Pregnant People At Increased Risk for Severe Illness from COVID-19

<https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnant-people.html>

### CDC COVID-19 Vaccines While Pregnant or Breastfeeding

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html>

### CDC How to Tailor COVID-19 Vaccine Information to Your Specific Audience

<https://www.cdc.gov/vaccines/covid-19/hcp/tailoring-information.html>

### CDC How to Address COVID-19 Vaccine Misinformation

<https://www.cdc.gov/vaccines/covid-19/health-departments/addressing-vaccine-misinformation.html>

### Vaccine FAQ Videos Featuring Healthcare Workers

[https://www.greaterthancovid.org/theconversation/video-faqs/?\\_sft\\_topics=pregnancy](https://www.greaterthancovid.org/theconversation/video-faqs/?_sft_topics=pregnancy)

Link to NHTSA's "COVID-19: Myths, Benefits & Implications for Pregnancy and Breastfeeding" Infographic for Families



Link to NHTSA's "COVID-19: Myths, Benefits & Fathers' Role in Protecting the Family" Infographic for Families



## Acknowledgements

We would like to acknowledge the following individuals for helping guide the outline and content for this toolkit:

Haywood L. Brown, MD, NHSA, Women's Health Advisor; Professor of Obstetrics and Gynecology & Vice Dean for Faculty Affairs, Morsani College of Medicine at the University of South Florida; Senior Vice President of Academic and Faculty Affairs, USF Health

Akilah Jefferson Shah, MD, MSc, Assistant Professor of Pediatrics, Division of Allergy and Immunology, University of Arkansas for Medical Sciences, Arkansas Research Institute

Healthy Start Project Directors

NHSA staff:

Miriam Campbell, MPH

Caroline Valencia, MPH

Iman Newsome, MPH, BSN, CD(DTI)

Oluwaseun Robinson, BS, NHSA Graduate Intern

This project is in part funded by the Healthy Start TA & Support Center at NICHQ under the Supporting Healthy Start Performance Project (GRANT # UF5MC327500100)

This program is in part supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number U7BMC33635 Alliance for Innovation on Maternal Health Community Care Initiative (AIM CCI) Cooperative Agreement.

## References

- 1 National Foundation for Infectious Diseases. (December 2021). Coronaviruses. <https://www.nfid.org/infectious-diseases/coronaviruses/>
- 2 National Institutes of Health. (n.d.). Coronaviruses. <https://www.niaid.nih.gov/diseases-conditions/coronaviruses>
- 3 Centers for Disease Control and Prevention. (2021, November 4). Basics of COVID-19. <https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19/basics-covid-19.html>
- 4 Centers for Disease Control and Prevention. (2021, February 22). Symptoms of COVID-19 <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>
- 5 Centers for Disease Control and Prevention. (2021, September 16). Post-COVID Conditions. <https://www.cdc.gov/coronavirus/2019-ncov/long-term-effects/index.html>
- 6 Mayo Clinic. (2021). COVID-19 (coronavirus): Long-term effects. <https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-long-term-effects/art-20490351>
- 7 Centers for Disease Control and Prevention. (2021, December 14). People with certain medical conditions. <https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-with-medical-conditions.html>
- 8 Centers for Disease Control and Prevention. (2021, August 6). Understanding variants. <https://www.cdc.gov/coronavirus/2019-ncov/variants/understanding-variants.html>
- 9 Centers for Disease Control and Prevention. (2021, December 13). About variants. <https://www.cdc.gov/coronavirus/2019-ncov/variants/about-variants.html>
- 10 Wang, C. L., Liu, Y. Y., Wu, C. H., Wang, C. Y., Wang, C. H., & Long, C. Y. (2021). Impact of COVID-19 on Pregnancy. *International Journal of Medical Sciences*, 18(3), 763–767. <https://doi-org.ezproxy.hsc.usf.edu/10.7150/ijms.49923>
- 11 Thompson, J. L., Nguyen, L. M., Noble, K. N., & Aronoff, D. M. (2020). COVID-19-related disease severity in pregnancy. *American Journal of Reproductive Immunology (New York, N.Y. : 1989)*, 84(5), e13339. <https://doi-org.ezproxy.hsc.usf.edu/10.1111/aji.13339>
- 12 Allotey, J., Stallings, E., Bonet, M., Yap, M., Chatterjee, S., Kew, T., Debenham, L., Llavall, A. C., Dixit, A., Zhou, D., Balaji, R., Lee, S. I., Qiu, X., Yuan, M., Coomar, D., Sheikh, J., Lawson, H., Ansari, K., van Wely, M., van Leeuwen, E., (2020). Clinical manifestations, risk factors, and maternal and perinatal outcomes of coronavirus disease 2019 in pregnancy: Living systematic review and meta-analysis. *BMJ (Clinical research ed.)*, 370, m3320.
- 13 Centers for Disease Control and Prevention. (n.d.). COVID data tracker. <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html>
- 14 Centers for Disease Control and Prevention. (2021, November 30). Health equity considerations & racial & ethnic minority groups. <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html>
- 15 Centers for Disease Control and Prevention. (2021, November 30). Health equity considerations & racial & ethnic minority groups. <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html>
- 16 Laurencin, C. T., & McClinton, A. (2020). The Covid-19 pandemic: a call to action to identify and address racial and ethnic disparities. *Journal of Racial and Ethnic Disparities*, 7(3), 398-402. doi: 10.1007/s40615-020-00756-0
- 17 Millet, G. M., Jones, A. T., Benkeser, D., Baral, S., Mercer, L., Beyre, C., Honeremann, B., Lankiewicz, E., Mena, L., Crowley, J. S., Sherwood, J., & Sullivan, P. S. (2020). Assessing differential impacts of COVID-19 on black communities. *Annals of Epidemiology*, 47, 37-44. doi: 10.1016/j.annepidem.2020.05.003
- 18 Poulson, Michael., Geary, A., Annesi, C., Allee, L., Kenzik, K., Sanchez, S., Tseng, J., & Dechert, T. (2020). National disparities in covid-19 outcomes between black and white Americans. *Journal of the National Medical Association*, S0027-9684(20)30149-8. doi:10.1016/j.jnma.2020.07.009
- 19 Centers for Disease Control and Prevention. (2021). Developing COVID-19 vaccines. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/distributing/steps-ensure-safety.html>
- 20 Centers for Disease Control and Prevention. (2021). Pfizer-BioNTech COVID-19 Vaccine (also known as COMIRNATY) Overview and Safety. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Pfizer-BioNTech.html>
- 21 Centers for Disease Control and Prevention. (2021). Moderna COVID-19 Vaccine Overview and Safety. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/Moderna.html>
- 22 Centers for Disease Control and Prevention. (2021). Johnson & Johnson's Janssen COVID-19 Vaccine Overview and Safety <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/janssen.html>



- 23 Centers for Disease Control and Prevention. (2021). How vaccines work. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/how-they-work.html>
- 24 Cavanaugh, A. M., Spicer, K. B., Thoroughman, D., Glick, C., & Winter, K. (2021). Reduced Risk of Reinfection with SARS-CoV-2 After COVID-19 Vaccination - Kentucky, May-June 2021. *Morbidity and Mortality Weekly Report*, 70(32), 1081–1083. <https://doi.org/10.15585/mmwr.mm7032e1>
- 25 Bozio CH, Grannis SJ, Naleway AL, et al. Laboratory-Confirmed COVID-19 Among Adults Hospitalized with COVID-19–Like Illness with Infection-Induced or mRNA Vaccine-Induced SARS-CoV-2 Immunity — Nine States, January–September 2021. *Morbidity and Mortality Weekly Report*, 2021;70:1539–1544. DOI: <http://dx.doi.org/10.15585/mmwr.mm7044e>
- 26 Liu, W., Russell, R. M., Bibollet-Ruche, F., Skelly, A. N., Sherrill-Mix, S., Freeman, D. A....Hahn, B. H. (2021). Predictors of Nonseroconversion after SARS-CoV-2 Infection. *Emerging Infectious Diseases*, 27(9), 2454-2458. <https://doi.org/10.3201/eid2709.211042>.
- 27 Centers for Disease Control and Prevention. (2021). Preparing for your COVID-19 vaccination. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/prepare-for-vaccination.html>
- 28 Centers for Disease Control and Prevention. (2021, December 9). COVID-19 vaccine booster shots. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>
- 29 Centers for Disease Control and Prevention. (2021). Possible side effects after getting a COVID-19 vaccine. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/expect/after.html>
- 30 Centers for Disease Control and Prevention. (2021, December 9). COVID-19 vaccine booster shots. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>
- 31 Centers for Disease Control and Prevention. (2021). COVID-19 vaccines while pregnant or breastfeeding. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html>
- 32 American College of Obstetricians and Gynecologists. (2021). COVID-19. <https://www.acog.org/covid-19>
- 33 Centers for Disease Control and Prevention. (2021, December 6). Pregnancy or breastfeeding. [https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html#anchor\\_1628692520287](https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html#anchor_1628692520287)
- 34 Shimabukuro TT, Kim SY, Myers TR, et al. Preliminary Findings of mRNA Covid-19 Vaccine Safety in Pregnant Persons. *N Engl J Med* 2021; 384:2273–2282. DOI: 10.1056/NEJMoa2104983.
- 35 Centers for Disease Control and Prevention. (2021, December 21). V-safe Pregnancy Registry. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafepregnancyregistry.html>
- 36 World Health Organization (2021) How do vaccines work? <https://www.who.int/news-room/feature-stories/detail/how-do-vaccines-work>
- 37 Orenstein, W. A., & Ahmed, R. (2017). Simply put: Vaccination saves lives. *Proceedings of the National Academy of Sciences of the United States of America*, 114(16), 4031–4033. <https://doi-org/10.1073/pnas.1704507114>
- 38 van Seventer, J.M., & Hochberg, N.S. (2017). Principles of Infectious Diseases: Transmission, Diagnosis, Prevention, and Control. *International Encyclopedia of Public Health*, 22 - 39.
- 39 Vitiello, A., Ferrara, F., Troiano, V., & La Porta, R. (2021). COVID-19 vaccines and decreased transmission of SARS-CoV-2. *Inflammopharmacology*, 29(5), 1357–1360. <https://doi-org/10.1007/s10787-021-00847-2>
- 40 Barker, P., Hartley, D., Beck, A.F., Oliver, G., Sampath, B., Roderick, T., Miff, S. (2021) Rethinking Herd Immunity: Managing the Covid-19 Pandemic in a Dynamic Biological and Behavioral Environment. *New England Journal of Medicine Catalyst*. doi: 10.1056/CAT.21.0288
- 41 Centers for Disease Control and Prevention. (n.d.). Rates of COVID-19 cases and deaths by vaccination status. <https://covid.cdc.gov/covid-data-tracker/#rates-by-vaccine-status>
- 42 Centers for Disease Control and Prevention. (n.d.). Rates of laboratory-confirmed COVID-19 hospitalizations by vaccination status. <https://covid.cdc.gov/covid-data-tracker/#covidnet-hospitalizations-vaccination>
- 43 Centers for Disease Control and Prevention. (2021, December 17). Possibility of COVID-19 illness after vaccination. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/effectiveness/why-measure-effectiveness/breakthrough-cases.html>
- 44 Wang, C. L., Liu, Y. Y., Wu, C. H., Wang, C. Y., Wang, C. H., & Long, C. Y. (2021). Impact of COVID-19 on Pregnancy. *International journal of medical sciences*, 18(3), 763–767. <https://doi-org.10.7150/ijms.49923>
- 45 Thompson, J. L., Nguyen, L. M., Noble, K. N., & Aronoff, D. M. (2020). COVID-19-related disease severity in pregnancy. *American journal of reproductive immunology (New York, N.Y. : 1989)*, 84(5), e13339. <https://doi-org.ezproxy.hsc.usf.edu/10.1111/aji.13339>

- 46 Centers for Disease Control and Prevention. (2021). Covid-19 vaccination for pregnant people to prevent serious illness. Deaths, and adverse pregnancy outcomes from Covid-19. Retrieved from HAN Archive - 00453 | Health Alert Network (HAN) (cdc.gov)
- 47 Centers for Disease Control and Prevention. (2021). COVID-19 Vaccines While Pregnant or Breastfeeding. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html>
- 48 Gray, K. J., Bordt, E. A., Atyeo, C., Deriso, E., Akinwunmi, B., Young, N., Baez, A. M., Shook, L. L., Cvrk, D., James, K., De Guzman, R., Brigida, S., Diouf, K., Goldfarb, I., Bebell, L. M., Yonker, L. M., Fasano, A., Rabi, S. A., Elovitz, M. A., Alter, G., ... Edlow, A. G. (2021). Coronavirus disease 2019 vaccine response in pregnant and lactating women: a cohort study. *American journal of obstetrics and gynecology*, 225(3), 303.e1–303.e17. <https://doi-org/10.1016/j.ajog.2021.03.02>
- 49 Centers for Disease Control and Prevention. (2021b). COVID-19 Vaccines for People Who Would Like to Have a Baby. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/planning-for-pregnancy.html>
- 50 Morris R. S. (2021). SARS-CoV-2 spike protein seropositivity from vaccination or infection does not cause sterility. *F&S reports*, 2(3), 253–255. <https://doi.org/10.1016/j.xfre.2021.05.010>
- 51 Gonzalez DC, Nassau DE, Khodamoradi K, et al. Sperm Parameters Before and After COVID-19 mRNA Vaccination. *JAMA*. 2021;326(3):273–274. doi:10.1001/jama.2021.9976
- 52 Shimabukuro, T. T., Kim, S. Y., Myers, T. R., Moro, P. L., Oduyebo, T., Panagiotakopoulos, L., Marquez, P. L., Olson, C. K., Liu, R., Chang, K. T., Ellington, S. R., Burkel, V. K., Smoots, A. N., Green, C. J., Licata, C., Zhang, B. C., Alimchandani, M., Mba-Jonas, A., Martin, S. W., Gee, J. M., ... CDC v-safe COVID-19 Pregnancy Registry Team (2021). Preliminary findings of mRNA Covid-19 vaccine safety in pregnant persons. *The New England Journal of Medicine*, 384(24), 2273–2282. <https://www.nejm.org/doi/full/10.1056/nejmoa2104983>
- 53 Zauche, L. H., Wallace, B., Smoots, A. N., Olson, C. K., Oduyebo, T., Kim, S. Y., Petersen, E. E., Ju, J., Beauregard, J., Wilcox, A. J., Rose, C. E., Meaney-Delman, D. M., & Ellington, S. R. (2021). Receipt of mRNA Covid-19 vaccines and risk of spontaneous abortion. *New England Journal of Medicine*, 385, 1533-1535. <https://www.nejm.org/doi/full/10.1056/NEJMc2113891>
- 54 Kharbanda, E. O., Haapala, J., DeSilva, M., Vazquez-Benitez, G., Vesco, K. K., Naleway, A. L., & Lipkind, H. S. (2021). Spontaneous abortion following COVID-19 vaccination during pregnancy. *JAMA*, 326(16), 1629-1631. [https://jamanetwork.com/journals/jama/fullarticle/2784193?utm\\_campaign=articlePDF&utm\\_medium=articlePDFlink&utm\\_source=articlePDF&utm\\_content=jama.2021.15494](https://jamanetwork.com/journals/jama/fullarticle/2784193?utm_campaign=articlePDF&utm_medium=articlePDFlink&utm_source=articlePDF&utm_content=jama.2021.15494)
- 55 Magnus, M. C., Gjessing, H. K., Eide, H. N., Wilcox, A. J., Fell, D. B., & Håberg, S. E. (2021). Covid-19 Vaccination during Pregnancy and First-Trimester Miscarriage. *The New England journal of medicine*, 385(21), 2008–2010. <https://doi-org.ezproxy.hsc.usf.edu/10.1056/NEJMc2114466>
- 56 Centers for Disease Control and Prevention. (2021). Talking with Patients about COVID-19 Vaccination. <https://www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html>
- 57 Centers for Disease Control and Prevention. (2021, December 27). COVID data tracker. <https://covid.cdc.gov/covid-data-tracker/#demographics>
- 58 Centers for Disease Control and Prevention. (2021, December 27). COVID data tracker. <https://covid.cdc.gov/covid-data-tracker/#demographics>
- 59 Centers for Disease Control and Prevention. (2022, January 19). Talking with Patients about COVID-19 Vaccination. <https://www.cdc.gov/vaccines/covid-19/hcp/engaging-patients.html>



## Contact Information

National Healthy Start Association

1325 G Street NW Suite 500

Washington, DC 20005

[www.nationalhealthystart.org](http://www.nationalhealthystart.org)

[info@nationalhealthystart.org](mailto:info@nationalhealthystart.org)

(202) 296 - 2195