



COVID-19 VACCINE

information misinformation and disinformation

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District Health Department #10



We will Cover

01

Introduction and
Overview of Situation

03

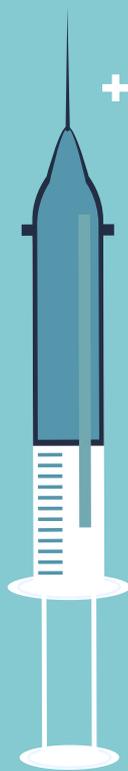
Information vs
Misinformation vs
Disinformation

02

Discussion of Risk

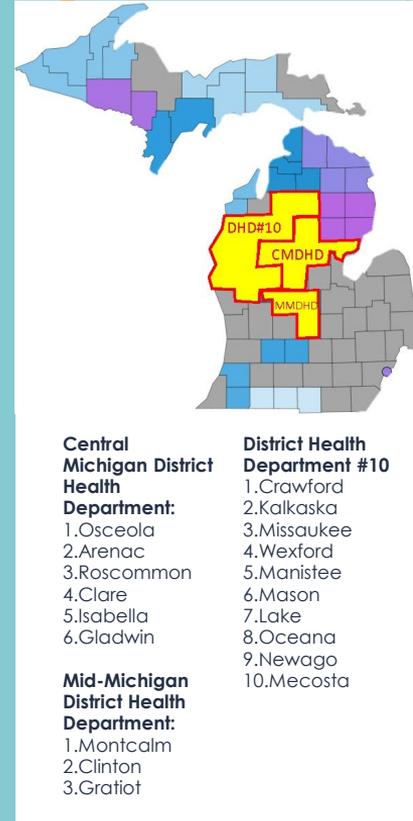
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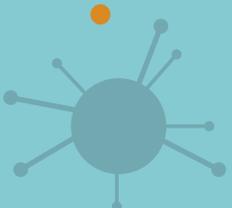
Common COVID-19
Vaccine Questions and
Answers



Why am I talking to you?

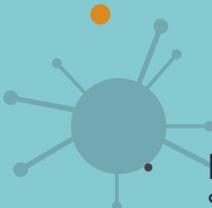
- Medical doctor (MD) for 20 years; specialize and board certified in Family Medicine; have a Master's in Public Health (MPH)
- I have lived in Clare County my entire life (minus the 11 years I was gone getting my medical education and training)
- I practiced family medicine in Clare just over a decade; took care of all ages, gave lots of vaccines
- Since then, I have worked as the medical director of 3 local health departments (19 counties) for over 5½ years
- I work for the Peer Education Program, providing education about vaccinations to other healthcare providers
- My family and I are fully vaccinated
- All of my family that is old enough to get the COVID-19 vaccine is fully vaccinated. Once it is approved for children, they will get it too.





Overview

- This has been a very difficult time for everyone, still with much uncertainty and questions and many unanswered questions
 - We have felt like we haven't had much control over the situation
 - It is Ok to have concerns and questions and want more information
 - We do have reasons to feel hopeful at this point
 - Some promising treatments are available and being used
 - Effective vaccinations are widely available
 - To empower you own health and safety and help protect your friends, family and community:
 - Get vaccinated
 - Continue to wear mask in public
 - Avoid gatherings with large groups of people, especially indoors
- 



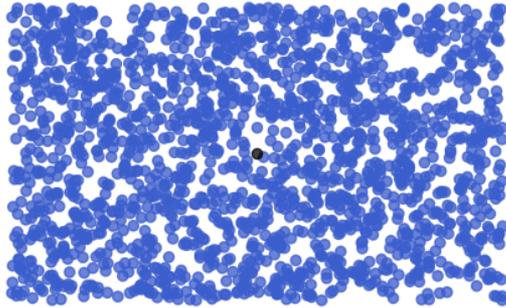
How Will this Ever End?

Enough people need to be immune to COVID-19 that if someone gets infected, it won't easily spread to other people because of that immunity

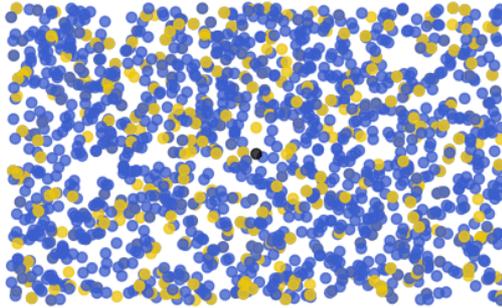
- In other words, we need to break the chain of transmission
 - This is called community immunity or herd immunity
 - There are two paths to getting people immune
 - One of them is through what we call natural infection or getting infected with COVID-19
 - We don't know how long immunity will last after infection but it seems to be at least 3 months and likely much longer
 - Getting immune this way comes with the risks from getting sick
 - The other way is vaccine immunity, which develops after you get vaccinated
 - Vaccines, including COVID-19 vaccine, usually give you longer-lasting immunity
 - Since COVID-19 is a new illness, we can't be completely sure how much of the community needs to be immune to stop the COVID-19 pandemic. It's one of those things that we're gaining a better understanding of along the way
 - We likely will need somewhere between 70 to 90%, or 7 to 9 out of 10 people, to be immune
 - Since people come in and out of our area all the time, it is important that the entire population (our county/state/country/world) have community immunity
 - Likely COVID-19 will never go away, but we will get the pandemic under control and make it manageable.
- 

Community Immunity: How It Works

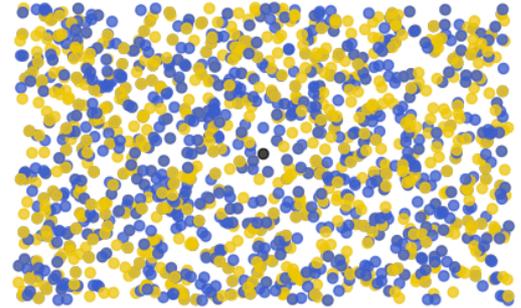
Percent Vaccinated: 0%



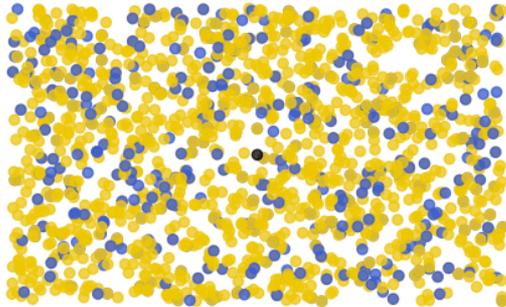
Percent Vaccinated: 25%



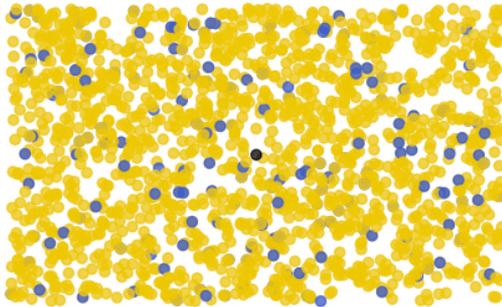
Percent Vaccinated: 50%



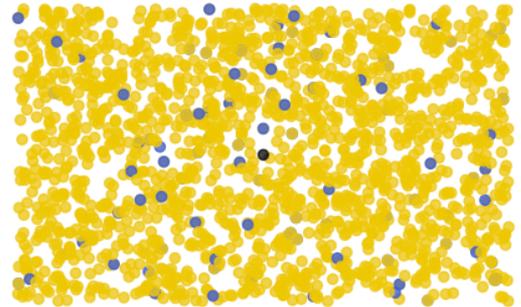
Percent Vaccinated: 75%



Percent Vaccinated: 90%



Percent Vaccinated: 95%



• Infected • Unvaccinated • Vaccinated

<https://imgur.com/a/8M7q8>

How Far Are We From Community Immunity?

AT BEST, 54% of our state has immunity to COVID-19 at this time. Need to fully vaccinate AT LEAST another 20% of population, or around 2 million more Michiganders

Percent of Random Blood Samples in Michigan Positive for Antibodies for COVID-19 Infection (not due to immunization) in 1336 samples tested (as of Feb 2021)		
Age Group	Amount with Antibodies	% of Michigan Population in this age group
1-17	21.1%	20.4%
18-49	21.3%	40.3%
50-64	17.1%	20.4%
65+	12.1%	17.6%
AGE ADJUSTED ANTIBODY POSITIVITY: 18.9%		

Fully Vaccinated in Michigan (As of 4/23/21)		
Age Group	% Fully Vaccinated	% of Michigan Population in this age group
16-19	5.9%	2.6%
20-29	13.8%	13.8%
30-39	21.3	12.1%
40-49	24.4	11.8%
50-64	40	20.4%
65-74	65.2	10.4%
75 over	64.5	7.2%
AGE ADJUSTED VACCINATION RATE: 35.5%		

Sources:
<https://covid.cdc.gov/covid-data-tracker/#national-lab>
<https://www.mdch.state.mi.us/osr/Population/npPopAge.asp>
https://www.michigan.gov/coronavirus/0,9753,7-406-98178_103214-547150--,00.html



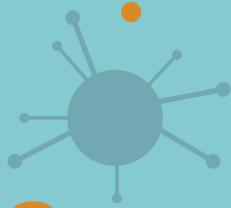
Question: Isn't it better to let the virus spread through the community and get our immunity that way?

ANSWER:

- Based on the information on the last slide:
 - At best, about 54% of people in Michigan are immune to COVID-19 through either vaccination or having antibodies from infection
 - $9.9 \text{ million (Michigan's population)} \times 54\% = 5.3 \text{ million people immune}$
 - At best, about 4.6 million people in Michigan ($9.9 \text{ million} \times 46\%$) are still NOT immune to COVID-19
 - We need at least 20% more of the population to get immune to have herd immunity ($9.9 \text{ million} \times 20\% = 2 \text{ million}$)
 - If we let all 2 million get immune by getting infected with COVID-19, 1 to 2% of them would die
 - $2 \text{ million} \times 1 \text{ to } 2\% = 20,000 \text{ to } 40,000 \text{ people could die}$
 - This is more than 1 to 2 times the number of people that have already died in Michigan from COVID-19 so far (17,467 as of 4/28/21)
- 



Risks of COVID-19 Illness compared to Vaccine



Risks of Getting Vaccination vs Risk of Getting COVID

Risk of Vaccination

Expected side effect due to action of vaccine (typically last up to 1-3 days)

Pfizer

- 79% local injection site pain
- 54% fatigue
- 47% muscle pain
- 43% headache
- 31% chills
- 29% fever (after second dose)

Moderna

- 78% local injection site pain
- 25% fatigue
- 18% muscle pain
- 20% headache
- 8% chills
- 8% fever (after first dose)

Johnson and Johnson

- 49% local injection site pain
- 39% headache
- 38% fatigue
- 33% muscle pain
- 9% fever

Risk of COVID-19 Infection

1-2 out of 6 infected with COVID-19 never develop any symptoms but can still spread infection to others

The remaining 4-5 out of 6 people will have symptoms. The most common symptoms are:

- Cough in 50%
- Fever in 43%
- Muscle pain in 36%
- Headache in 34%
- Difficulty breathing in 29%
- Sore throat in 20%
- Diarrhea in 19%
- Nausea/vomiting in 12%
- Loss of smell or taste, abdominal pain, and runny nose in fewer than 10% percent each

Of those that have symptoms,

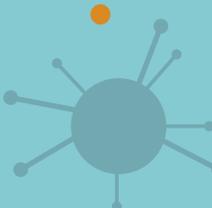
- About 80% will have symptoms mild enough to recover at home,
- The other 20% will need to be in the hospital
 - About 1 in 4 of those in the hospital will need to be in intensive care.

Risks of Getting Vaccination vs Risk of Getting COVID

Risk of Vaccination	Risk of COVID-19 Infection
	<p>Regardless of how severe your illness with COVID-19 is, the 4-5 out of 6 that have symptoms can have long term symptoms:</p> <ul style="list-style-type: none">• Fatigue in 15-87% for 3 months or longer• Shortness of breath in 10-71% for 2 to 3 months or longer• Chest discomfort in 12-44% for 2 to 3 months• Cough in 17-34% for 2 to 3 months or longer• Loss of smell in 10-13% for 1 month, rarely longer• Post-traumatic stress disorder in 7-24% for 6 weeks to 3 months or longer• Impaired memory in 18-21% for weeks to months• Poor concentration in 16% for weeks to months• Anxiety/depression in 22-23% for weeks to months• Joint pain, headache, poor appetite, dizziness, vertigo, insomnia, hair loss, sweating, and diarrhea in less than 10% for weeks to months

Risks of Getting Vaccination vs Risk of Getting COVID

Risk of Vaccination	Risk of COVID-19 Infection
<p><i>Risk of specific blood clots, Cerebral Venous Sinus Thrombosis (CVST) with low platelets (thrombocytopenia):</i></p> <ul style="list-style-type: none"> Mainly among females under 50 years old within the first two weeks of Janssen/Johnson & Johnson vaccine Found 15 cases out of nearly 8 million doses given, or 1-2 cases per 1 million doses given <ul style="list-style-type: none"> In 18–50-year-old women: rate was 7 per million doses given <p><i>Risk in general of population (not vaccinated)</i></p> <ul style="list-style-type: none"> CVST incidence: 14–28 per million U.S population CVST with thrombocytopenia: 0.7–1.6 per million U.S. population <p><i>Similar Vaccine not used in United States:</i> AstraZeneca vaccine in UK:</p> <ul style="list-style-type: none"> 168 reports of blood clots with low platelets <ul style="list-style-type: none"> 77 events of CVST with thrombocytopenia; 91 in other major veins with thrombocytopenia 93 women, 75 men, aged 18–93 years 32 deaths Rate: 7.9 per million (21.2 million AZ doses given) <p>(Source: meta-analysis of CVST among patients hospitalized for COVID-19 https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2021-04-23/06-COVID-Oliver-508.pdf)</p>	<p><i>Risk of clots from COVID-19 infection</i></p> <ul style="list-style-type: none"> In the early stages of the pandemic: 25-43% of COVID-19 patients in the ICU developed blood clots in veins More recent studies find 5-10% of ICU patients and under 5% of hospitalized patients develop blood clots in veins Clots in arteries causing stroke, heart attack, lack of blood flow to limbs, and other serious complications is increased but not as high as blood clots in veins <p>(Source: Up To Date)</p> <p>Review of 513,284 patients with a confirmed diagnosis of COVID-19 found:</p> <ul style="list-style-type: none"> 20 out of the 513,284 patients with COVID-19 were diagnosed with a CVST in the two weeks following their diagnosis with COVID-19 <ul style="list-style-type: none"> Absolute risk: 39 per million people The risk of being diagnosed with a CVST in the two weeks after ChAdOx1 nCoV-19 vaccine (Astra Zeneca) <ul style="list-style-type: none"> 169 cases out of 34 million people at time of study, or 5.0 per million people <p>(Source: Taquet, M, Husain,M, Geddes,J, Luciano, S, Harrison, P. (2021). Cerebral venous thrombosis: a retrospective cohort study of 513,284 confirmed COVID-19 cases and a comparison with 489,871 people receiving a COVID-19 mRNA vaccine. https://osf.io/a9jdg/)</p>



Risks of Getting Vaccination vs Risk of Getting COVID

Risk of Vaccination	Risk of COVID-19 Infection
<p>Risk of severe allergic reaction:</p> <ul style="list-style-type: none">• 2 to 5 per every million shots given (no deaths reported)	<p>Around 1-2% of people infected with COVID will die</p>
<p>Out of 225,640,460 COVID-19 vaccines given in United States so far:</p> <ul style="list-style-type: none">• 3 deaths from CVST with thrombocytopenia with J&J vaccine<ul style="list-style-type: none">• Rate of 0.013 per 1,000,000 vaccines (or 1.3 per 100,000,000) <p>NOT in US:</p> <ul style="list-style-type: none">• Out of out of at least 21.2 million doses of AstraZeneca vaccine given in England: 32 deaths<ul style="list-style-type: none">• Rate of 1.5 per million vaccines	<p>Out of 32,007,115 cases of COVID-19 in the United States so far:</p> <ul style="list-style-type: none">• 571,424 have died<ul style="list-style-type: none">• Age adjusted risk of death from COVID-19 in 2020:<ul style="list-style-type: none">• 915 per 1,000,000 per TOTAL US population



Risks of Getting Vaccination vs Risk of Getting COVID-19

Summary

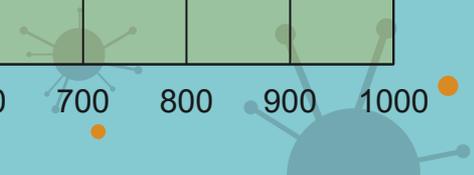
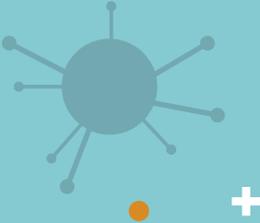
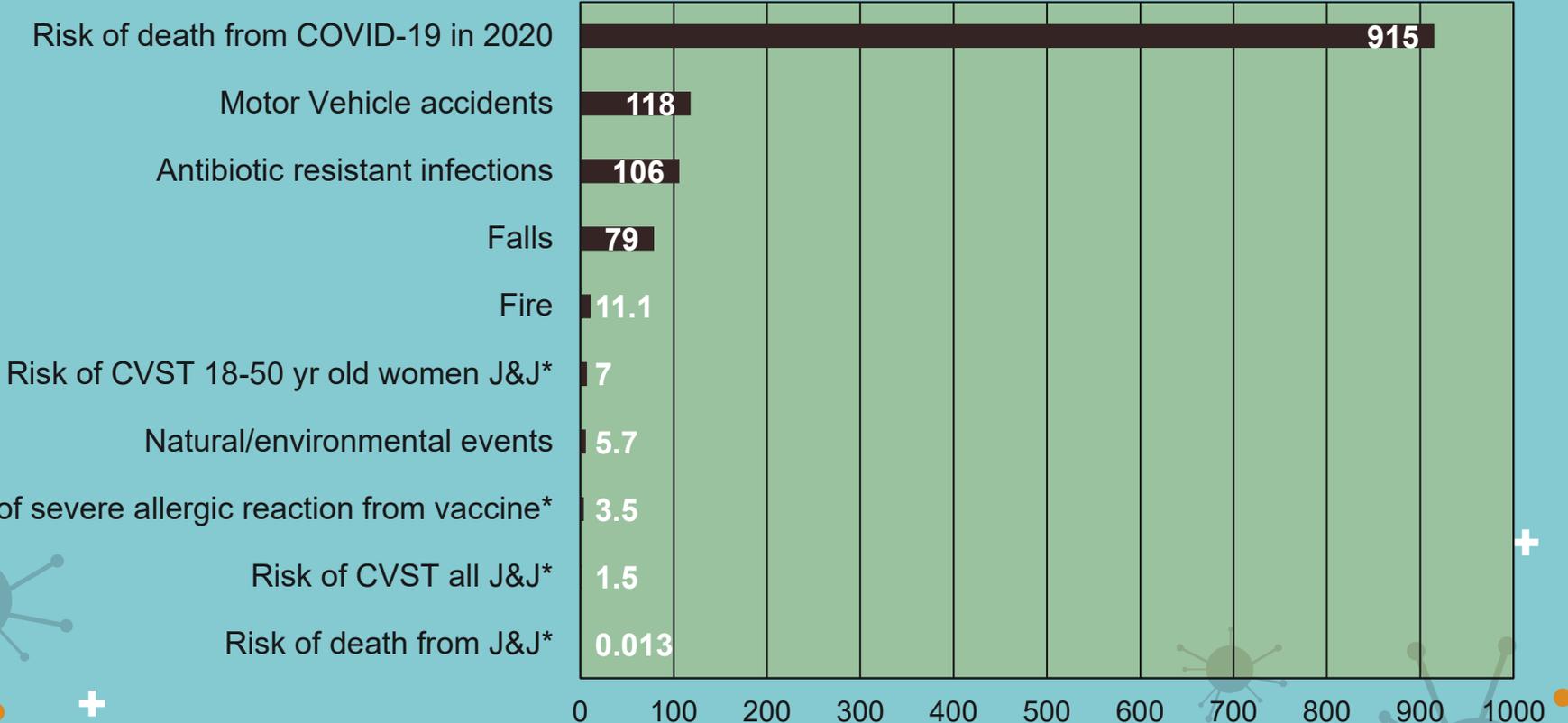
Risk of Vaccination	Risk of COVID-19 Infection
<p>Risk of severe allergic reaction (anaphylaxis)</p> <ul style="list-style-type: none">• 2 to 5 per every million shots given <p>Risk of CVST with thrombocytopenia</p> <ul style="list-style-type: none">• 1 to 2 per million Johnson and Johnson injections• In 18–50-year-old women: 7 per million <p>Risk of death in United States</p> <ul style="list-style-type: none">• 1.3 per 100,000,000 vaccines	<p>Age adjusted risk of death from COVID-19 in 2020:</p> <ul style="list-style-type: none">• 915 per 1,000,000 <p>Other Risks:</p> <p>Risk of death each year from</p> <ul style="list-style-type: none">• Motor Vehicle accidents: 118 per million• Antibiotic resistant infections: 106 per million• Falls: 79 per million• Fire: 11.1 per million• Natural/environmental events: 5.7 per million

Sources:

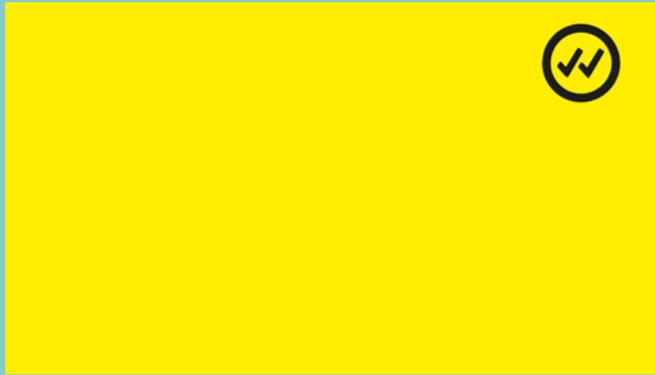
<https://www.cdc.gov/mmwr/volumes/70/wr/mm7014e1.htm>
https://www.usfa.fema.gov/data/statistics/fire_death_rates.html
<https://www.safewise.com/blog/household-accidents/>

<https://www.safewise.com/blog/household-accidents/>
<https://www.cdc.gov/injury/wisqars/index.html>
<https://www.cdc.gov/injury/wisqars/index.html>
<https://www.cdc.gov/drugresistance/about.html>

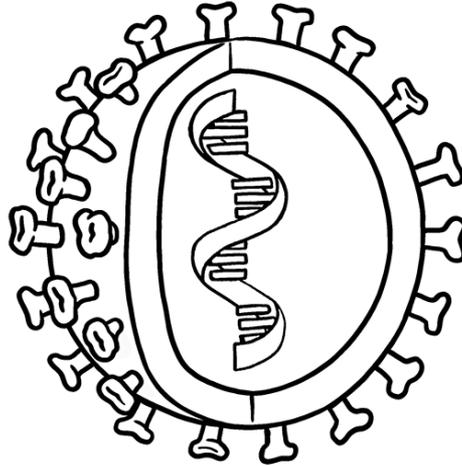
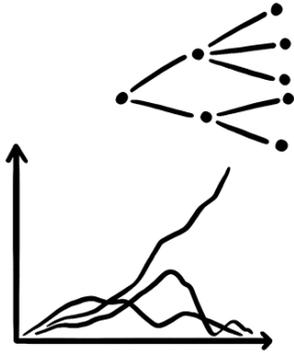
Rate per Million People in United States per Year (*per million doses vaccine)



How Does Vaccine Information get spread?



INFORMATION

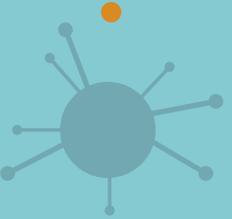


Understanding information <https://www.who.int/news-room/spotlight/let-s-flatten-the-infodemic-curve>



We are living in an INFODEMIC

What is that?



Infodemic: overabundance of information – some accurate and some not – that occurs during an epidemic. It can lead to confusion and ultimately mistrust in governments and public health response.

INFORMATION OVERLOAD!!!



Top tips for navigating the infodemic



1. Assess the source:

Who shared the information with you and where did they get it from? Even if it is friends or family, you still need to vet their source.



2. Go beyond headlines:

Headlines may be intentionally sensational or provocative.



3. Identify the author:

Search the author's name online to see if they are real or credible.



4. Check the date:

Is it up to date and relevant to current events? Has a headline, image or statistic been used out of context?



5. Examine the supporting evidence:

Credible stories back up their claims with facts.



6. Check your biases:

Think about whether your own biases could affect your judgment on what is or is not trustworthy.



7. Turn to fact-checkers:

Consult trusted fact-checking organizations, such as the International Fact-Checking Network and global news outlets focused on debunking misinformation.

How to Fight the Infodemic

- Learn how to evaluate your sources
 - *Evaluation of Information* <https://guides.library.jhu.edu/evaluate/social-media>
 - *Disinformation, Misinformation, and Media Literacy* <https://www.bpl.org/blogs/post/disinformation-misinformation-and-media-literacy/>
- *Take Care Before You Share*, a program of the United Nations <https://shareverified.com/en/> and <https://www.takecarebeforeyoushare.org/>
- World Health Organization Infodemic Website <https://www.who.int/health-topics/infodemic>
- Where to report misinformation online <https://www.who.int/campaigns/connecting-the-world-to-combat-coronavirus/how-to-report-misinformation-online>
 - Facebook
 - YouTube
 - Twitter
 - Instagram
 - WhatsApp
 - TikTok
 - Linkedin
 - Viber
 - VK





Vaccine Resources



FACT CHECKING SITES

- Busting coronavirus myths <https://factcheck.afp.com/busting-coronavirus-myths>
- www.Factcheck.org
- The International Fact Checking Network <https://www.poynter.org/ifcn/>
- <https://www.reuters.com/fact-check> (all topics)
- Children's Hospital of Philadelphia (CHOP) Questions and Answers about COVID-19 Vaccine <https://www.chop.edu/centers-programs/vaccine-education-center/making-vaccines/prevent-covid>

SCHOOLS, HOSPITALS, AND EXPERT GROUPS

- The Albert B. Sabin Vaccine Organization www.sabin.org
- Every Child by Two www.ecbt.org
- Immunization Action Coalition www.immunize.org
- Institute for Vaccine Safety www.vaccinesafety.edu
- Parents PACK (provided by the Vaccine Education Center at The Children's Hospital of Philadelphia) www.vaccine.chop.edu/parents
- Vaccine Education Center at The Children's Hospital of Philadelphia <http://www.chop.edu/centers-programs/vaccine-education-center>
- Immunization Action Coalition www.vaccineinformation.org
- The Vaccine Page www.vaccines.org
- Vaccinate Your Baby www.vaccinateyourbaby.org
- California Immunization Coalition www.whyichoose.org
- National Foundation of Infectious Diseases www.adultvaccination.com
- PATH Vaccine Resource Library <http://www.path.org/vaccineresources/>
- Johns Hopkins Institute for Vaccine Safety www.vaccinesafety.edu/

PROFESSIONAL ASSOCIATIONS

- American Academy of Pediatrics (AAP) www.aap.org/immunization
- American College of Obstetricians and Gynecologists (ACOG) www.immunizationforwomen.org

PARENT AND FAMILY ORGANIZATIONS

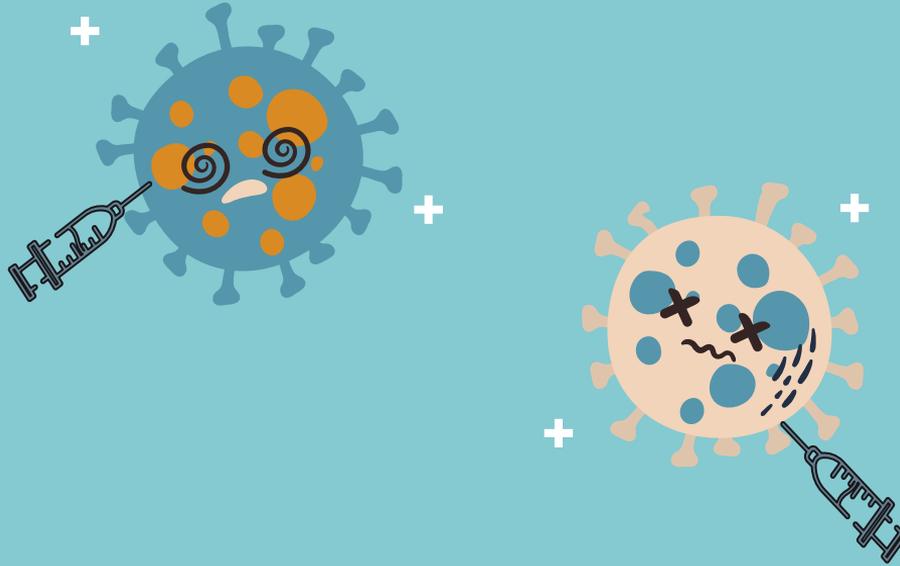
- Families Fighting Flu www.familiesfightingflu.org
- The National Meningitis Association www.nmaus.org
- Meningitis Angels www.meningitis-angels.org
- Parents of Kids with Infectious Diseases www.pkids.org
- Voices for Vaccines www.voicesforvaccines.org
- Autism Science Foundation <https://autismsciencefoundation.org/>
- I Vaccinate <https://ivaccinate.org/>

GOVERNMENT

- Centers for Disease Control and Prevention (main) www.cdc.gov/vaccines
 - CDC (flu) www.cdc.gov/flu
 - CDC (childhood vaccines) www.cdc.gov/vaccines/conversations
 - Advisory Committee on Immunization Practices <http://www.cdc.gov/vaccines/acip>
 - I Vaccinate <https://ivaccinate.org/>
- 

COVID19 Vaccine Questions

We Hear and Get Asked





Question: Does the COVID-19 vaccine affect a women's fertility or ability to have a baby?

ANSWER: NO

The COVID-19 vaccines encourage our bodies to create antibodies to a specific protein found on the virus's surface. This protein is called the spike protein. This "teaches" the body's immune system to fight the virus that has that specific spike protein on it.

This myth started after a false report on social media said the spike protein on COVID-19 was similar to another protein called syncytin-1. Syncytin-1 is involved in the growth and attachment of the placenta during pregnancy. While the spike protein and syncytin-1 share a few similar amino acids, they are not similar enough that antibodies to the spike protein would fight syncytin-1.

If this was a real problem, we would expect to see large amounts of infertility issues since the pandemic started in December 2019. Also, during the Pfizer vaccine tests, 23 women volunteers involved in the study became pregnant, and the only one who had a pregnancy loss had not received the actual vaccine, but a placebo.

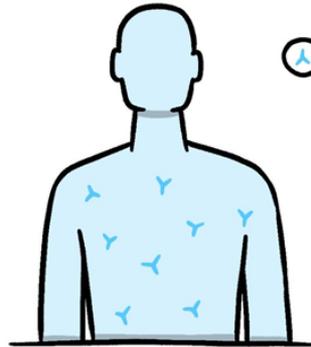


Question: I've already had COVID-19, do I need a vaccine? Do I need both doses?

ANSWER: Yes and Yes

The vaccine likely gives you a bigger immune response, which better prepares the body to fight off COVID-19 in the future. We don't know how long a natural infection with COVID-19 provides immunity from the disease so it is best to still get vaccinated to protect you from getting sick again. There are reports of individuals being reinfected with the virus, even after being very ill with COVID-19.

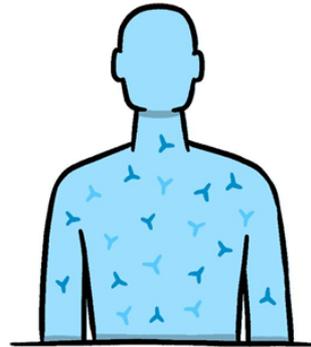
Do people who've already had the virus still need to be vaccinated?



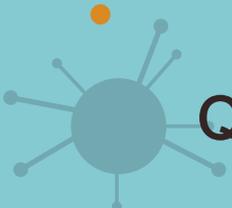
Natural Immunity

Immunity can weaken over time and be strengthened with vaccinations.

Even if a person has contracted and recovered from COVID-19, their immunity can be boosted by a vaccine.



Natural Immunity + Vaccine



Question: Weren't these vaccines made too fast to be safe?

ANSWER: No

You can also see another video all about the vaccine research and development at <https://youtu.be/uLXSmAOfy7A>

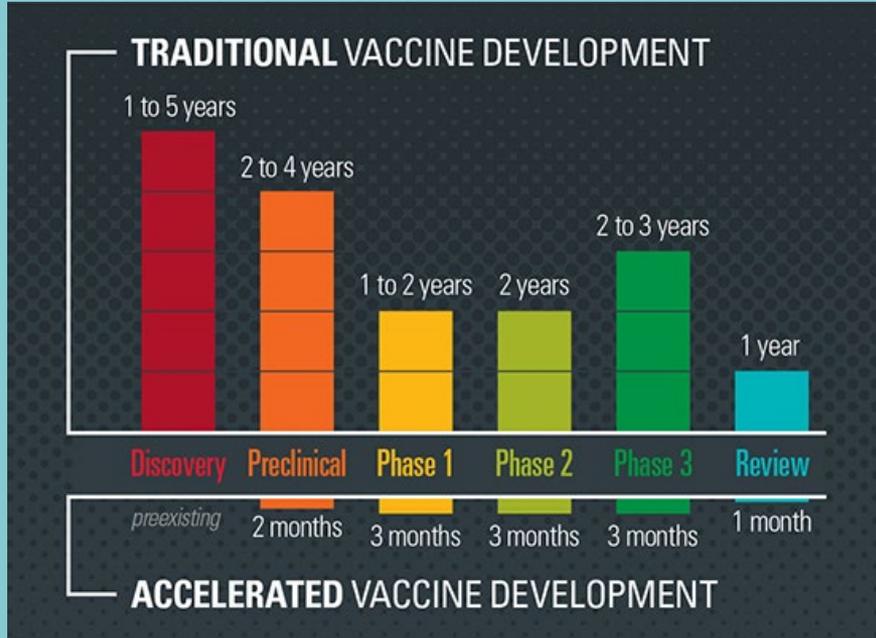
The technology used to develop the new mRNA COVID-19 vaccines isn't new. The original research on messenger RNA (mRNA) vaccines is decades old. This is just the first one to be used widely on the public. The type of vaccine used in the Johnson and Johnson vaccine, which uses a weakened adenovirus, or cold virus, has also been studied extensively as a way to make other vaccines.

The clinical trials for the COVID-19 vaccines were done following the same standards applied to all vaccine trials, and the results were reviewed and approved by the same independent advisory panels. Increased collaboration, use of new technology, and more funding meant that vaccine developers could work quickly during this pandemic to get this done quickly.



Question: Weren't these vaccines made too fast to be safe?

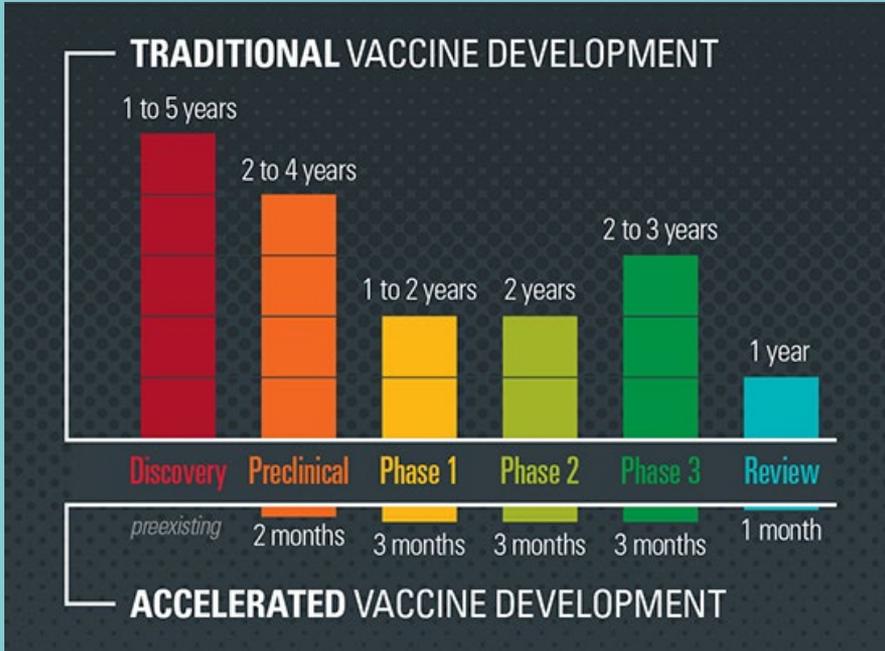
Answer: NO



1. Researchers had already done a lot of the discovery and preclinical work on other types of coronavirus vaccines, especially SARS and MERS, and knew what types of vaccines and targets of the virus would work best.
2. Researchers have been developing mRNA vaccines (the type used by Pfizer and Moderna) and learning what works and what doesn't for decades. The genetic sequence for the virus that causes COVID-19 was available very soon in the pandemic, so it was simple for researchers to find the code for the spike protein and put it into the vaccine technology they had already developed.
3. Researchers have also been studying adenovirus vector vaccines (the type used by Johnson & Johnson) for years. It is another type of vaccine that could be made very quickly once the genetic code was available.

Question: Weren't these vaccines made too fast to be safe?

Answer: NO



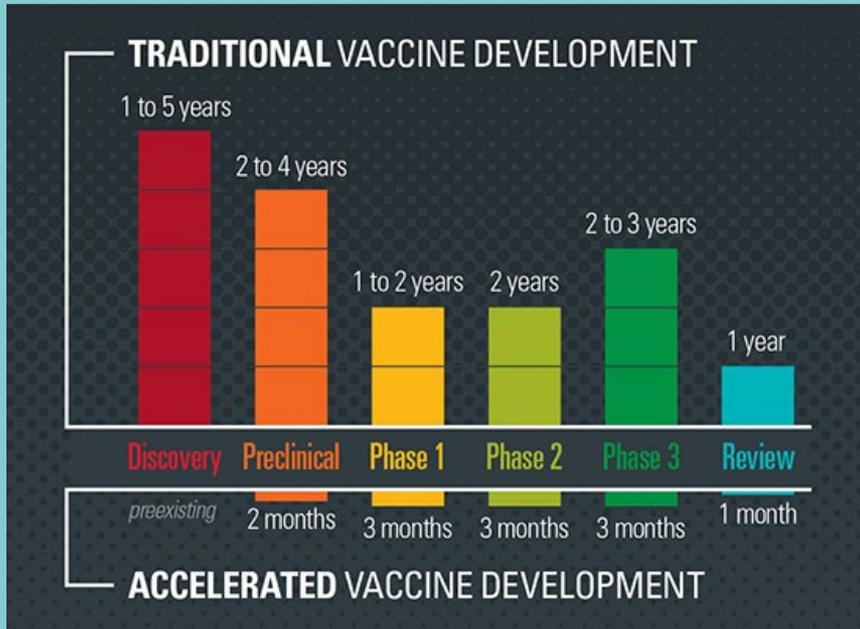
4. Participants for trials were signed up quickly and, because the virus was very common and spreading in the community, it was easier to tell if the vaccine worked in a shorter time.

5. Large amounts of money were invested in COVID-19 vaccine research and development, which usually isn't available in vaccine research and development. This made a big difference in how quickly things could get done.

6. Buildings to manufacture vaccine were readied before the vaccines were authorized to prevent any delays.

Question: Weren't these vaccines made too fast to be safe?

Answer: NO



7. The FDA review process and re-review process, which normally takes 6 to 9 months, was completed in weeks for COVID-19 vaccines. They did this by having more people work longer hours, not by cutting corners.

8. The phases of the trials were shorter but were still held to the same standard as other clinical trials. They were allowed to be shorter due to the risk at stake if it took too long. If the trials were longer, we may have learned more about how long the immunity from the vaccines lasts, if they prevent shedding of virus in people that don't know they are infected, or other things that we are learning as we use the vaccine. However, if we waited, more and more people would have died of COVID-19 or struggled with complications from COVID-19 infection.



Question: Should I even bother getting vaccinated since the virus keeps mutating?

ANSWER:

The variant that causes COVID-19 does mutate but not as fast as some viruses, like the flu virus. So far, the vaccines we have still appear to work against the new variants.

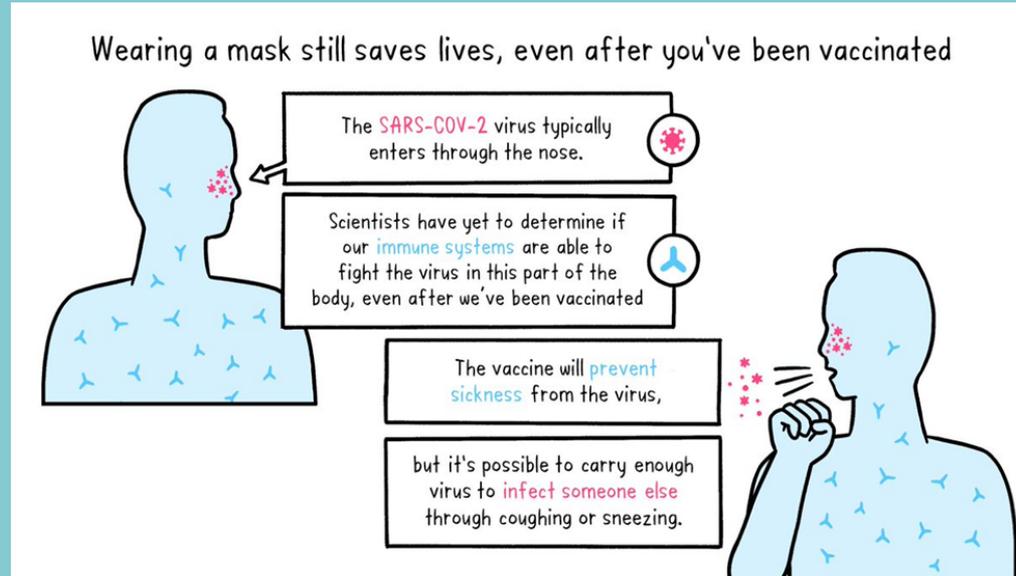
Also, the virus can only mutate if it is dividing and spreading, so the best way to stop mutations and variants is to stop the spread. Since a fully vaccinated person is better able to fight off the virus, this helps slow the spread of COVID-19 and helps to slow down the development of more new mutations.



Question: Why can't I stop wearing my mask and start doing whatever I want after I get vaccinated?

ANSWER:

We know the COVID-19 vaccines protect you from getting sick and seriously ill. We are pretty sure the vaccine will keep you from being infected and transmitting the virus to others without knowing it but that is still being studied. Until we are sure, and more people have been vaccinated, it is important to wear your mask, wash your hands, avoid big crowds, and maintain your distance from others.



Question: Will getting the COVID-19 vaccine give me COVID or make me test positive for COVID?

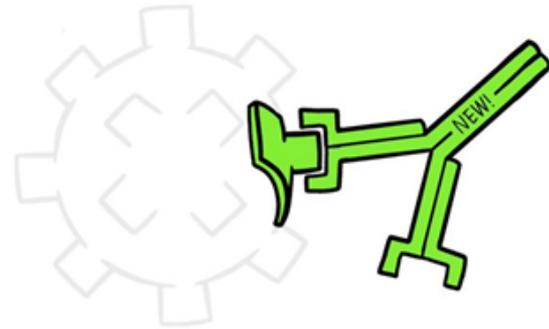
ANSWER:

The vaccines for COVID-19 cannot infect you or make you sick with COVID-19. The vaccines we have now instruct your cells to make a protein, called the spike protein, that is part of the COVID-19 virus. This allows our immune system to learn to recognize the spike proteins on the virus and attack it if you get infected in the future. The vaccines do not contain the whole virus, so you cannot get sick from the vaccine. You cannot shed the virus to cause anyone around you to get sick or to make you test positive for infection.

You can test positive for blood tests looking for antibodies to the spike protein, which is a test of past infection. Most antibody tests look for antibodies against other part of the virus to know if your antibodies are from a vaccine or from past infection. If you only test positive for the antibody to spike protein, that means you have antibodies due to vaccination. If you have antibodies to other parts of the virus, that means you likely were infected in the past.

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.



Question: Will the COVID-19 vaccines change my DNA? Are they some kind of Gene therapy?

ANSWER: No.

COVID-19 vaccines do not change or interact with your own DNA in any way.

There are currently two types of COVID-19 vaccines in use in the US: messenger RNA (mRNA) vaccines and a viral vector vaccine. Both mRNA and viral vector COVID-19 vaccines deliver instructions (genetic material) to our cells to start building protection against the virus that causes COVID-19. The material never enters the nucleus of the cell, which is where our DNA is kept. This means the genetic material in the vaccines cannot affect or interact with our DNA in any way. All COVID-19 vaccines work with the body's natural defenses to safely develop immunity to disease.

The vaccines are not gene therapy. Gene therapy is a “technique that modifies a person’s genes to treat or cure disease.”

- Learn more about how mRNA COVID-19 vaccines work (<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/mrna.html>).
- Learn more about how viral vector vaccines work (<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines/viralvector.html>)
- See previous video about how mRNA vaccines work at <https://youtu.be/ziZ5Wb3rGKw>
- See “Immune Cartoons” By Dr. Hoyos Velez <https://www.youtube.com/channel/UCVrgSd2UJLHRUil3se9puDQ/featured>





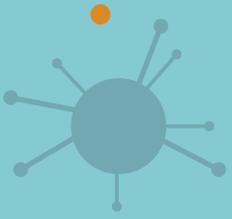
Question: If people that get vaccinated still can get COVID-19, why should I get vaccinated?

ANSWER:

No vaccine can be 100% effective in every person. However, studies of the vaccines done before they were authorized found them to be extremely effective in preventing illness from COVID-19. For the mRNA vaccines (Pfizer and Moderna), they prevented 19 out of 20 COVID-19 illnesses. The Johnson and Johnson vaccine prevented 3 out of 4 infections, and nearly 9 out of 10 cases of severe illness.

Real world experience is finding very few cases of “breakthrough” infection with COVID-19 after vaccination and studies of the mRNA vaccine have found only around 10% of those that get vaccinated test later positive for COVID-19, both with and without symptoms.





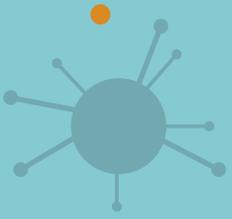
QUESTION: If I get vaccinated for COVID, then get infected with COVID-19, won't I be sicker because my immune system will go into overdrive?

ANSWER: NO

There have been people that have gotten COVID-19 after being vaccinated and usually their illness is very mild.

Total number of fully vaccinated people in the United states as of April 20, 2021	Over 87 million
Total number of vaccine breakthrough infections reported to CDC	7,157
People aged ≥60 years	3,265 (46%)
Asymptomatic infections	2,078 (31%)
Hospitalizations*	498 (7%)
Deaths [†]	88 (1%)
*167 (34%) of the 498 hospitalizations were reported as asymptomatic or not related to COVID-19. [†] 11 (13%) of the 88 fatal cases were reported as asymptomatic or not related to COVID-19. https://www.cdc.gov/vaccines/covid-19/health-departments/breakthrough-cases.html	





QUESTION: If I get vaccinated for COVID-19, then get infected with COVID-19, won't I be sicker because my immune system will go into overdrive (continued)?

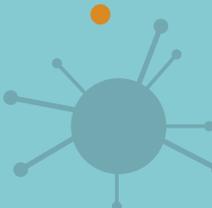
ANSWER: NO

This myth started and has been spread based on a 2012 paper [‘Immunization with SARS Coronavirus Vaccines Leads to Pulmonary Immunopathology on Challenge with the SARS Virus’](#). It reported a study of vaccines in mice for the virus that caused SARS in 2002. The vaccines used the whole virus or particles of the virus and studied it in 12 to 13 mice each. No vaccines like these are being used for COVID-19. After being vaccinated, 7 to 8 of the mice were exposed to SARS, were killed 2 days later and dissected. Most were found to have high levels of a specific kind of white blood cells, called eosinophils, causing inflammation in their lungs.

This type of reactions is called and antibody-dependent enhancement (ADE) and has been found to happen during research and development of other vaccines (see <https://www.chop.edu/centers-programs/vaccine-education-center/vaccine-safety/antibody-dependent-enhancement-and-vaccines>). This is why studies in animals are so important to see if things like this could happen before moving forward with more development of a vaccine.

This was not found to be an issue with the authorized COVID-19 vaccines in animal studies or during human trials. It has also not been found to happen since they have been used on millions of people.





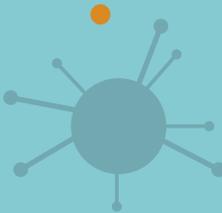
Question: Why are the vaccines being authorized on an emergency basis, and how is that different from full approval?

ANSWER:

Because of the public health risks of the ongoing pandemic, the Food and Drug Administration (FDA) is reviewing vaccines, along with COVID-19 test, treatments, and other urgently needed things, more quickly. The authorized vaccines, and tests, treatments, and so on, have received an emergency use authorization, or EUA, which is typically not as strict as a full licensure.

The FDA did add more rigorous requirements for a COVID-19 vaccine EUA. Under an ordinary EUA, regulators must find that the product “may be effective” and the “known and potential benefits outweigh the known and potential risks.” For the COVID-19 vaccine EUAs, the FDA required “at least one well-designed Phase 3 clinical trial that demonstrates the vaccine’s safety and efficacy in a clear and compelling manner” and wanted to see at least two months of follow-up data on half or more of the participants. The FDA also said it expected vaccine companies to continue to collect data to pursue the full FDA-approval.





Question: I think I had a side effect from my vaccine. How do I report it?

ANSWER:

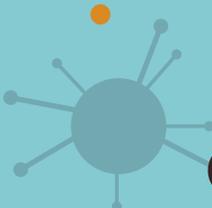
After you get vaccinated, you can sign up for V-safe, a smartphone-based tool that checks in on you after your COVID-19 vaccination. You can report any problems you are having on this app and this information is followed. Sign up here: <https://vsafe.cdc.gov>

You can report side effects or problems to the provider that administered your vaccine. They can report concerning issues to the Vaccine Adverse Event Reporting System (VAERS).

You can also report your side effect yourself to the Vaccine Adverse Event Reporting System (VAERS) at <https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/reportingaes.html>

If you need further assistance, email info@VAERS.org or call 1-800-822-7967.





Question: Are the side effects from vaccines hidden from us?

ANSWER: NO

Anyone can access the Vaccine Adverse Event Reporting System (VAERS) data at <https://wonder.cdc.gov/vaers.html>. Note that this is raw data and it has not been interpreted yet. It has not been compared against the larger populations to see if there may be a cause/effect relationship between the reported effect and the vaccine or if the rate of the effect is similar to rate in people that did not get vaccinated.

There is more information on how to search VAERS at <https://www.cdc.gov/vaccinesafety/ensuringsafety/monitoring/vaers/access-VAERS-data.html>



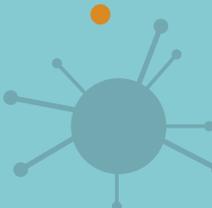
Question: Is there a microchip that gets injected into me when I get my COVID-19 vaccine?

ANSWER: NO

This disinformation started from a highly circulated video that was edited and doctored to create this false message. The original message contained a discussion about an optional Radio Frequency Identification chip that could be part of the labelling on individual dose vaccine packaging. Essentially, it could be used like a fancy bar code for identifying information about the vaccine itself. There was never reference to anything within the injection. For more information about this video, you can see <https://www.reuters.com/article/uk-factcheck-vaccine-microchip-gates-ma/fact-check-rfid-microchips-will-not-be-injected-with-the-covid-19-vaccine-altered-video-features-bill-and-melinda-gates-and-jack-ma-idUSKBN28E286>

The images to the right show a microchip implanting syringe vs. vaccine syringe. Current microchips used on humans and animals would not fit through vaccine syringe.





Question: Do the vaccines have aborted fetal tissue in them?

ANSWER: NO

Some viral vaccines are grown in one of three different cell strains, named cell lines WI-38, PER.C6 and MRC-5. Each of these cell lines were started from cells taken from three separate fetuses that were aborted decades ago, 2 in the 1960s and one in the 1980s. They are not all from the United States. These fetuses were aborted by the mother's choice and not for the purpose of making vaccines. These cell lines have been continued since the 1960s and 1980s. There have been no additional fetuses used for this purpose. Fetuses are not continually being aborted for vaccine manufacture. The PER.C6 cell line is used to grow the adenovirus used in the Johnson and Johnson COVID-19 vaccine.

The cells used now are called descendent cells. They are NOT the original aborted fetal cells, but rather the descendants of these original cells. Viruses are grown in the human descendent and are then removed and purified. There are no fetal cells or DNA in the final vaccine product.

The Congregation for the Doctrine of the Faith, the head of the Catholic religion, has judged that 'when ethically irreproachable Covid-19 vaccines are not available... it is morally acceptable to receive Covid-19 vaccines that have used cell lines from aborted fetuses in their research and production process.' However, if one can choose among equally safe and effective COVID-19 vaccines, the vaccine with the least connection to abortion-derived cell lines should be chosen.

"...given the world-wide suffering that this pandemic is causing, we affirm again that being vaccinated can be an act of charity that serves the common good."

<https://www.usccb.org/news/2021/us-bishop-chairmen-doctrine-and-pro-life-address-use-johnson-johnson-covid-19-vaccine>





Question: Is the vaccine too expensive for me to get?

ANSWER: It Should Be NO COST to You

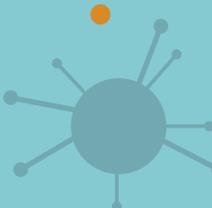
The federal government is providing the vaccine free of charge to all people living in the United States, regardless of their immigration or health insurance status.

COVID-19 vaccination providers cannot:

- Charge you for the vaccine
- Charge you directly for any administration fees, copays, or coinsurance
- Deny vaccination to anyone who does not have health insurance coverage, is underinsured, or is out of network
- Charge an office visit or other fee to the recipient if the only service provided is a COVID-19 vaccination
- Require additional services in order for a person to receive a COVID-19 vaccine; however, additional healthcare services can be provided at the same time and billed as appropriate

COVID-19 vaccination providers can:

- Seek appropriate reimbursement from the recipient's insurance plan or program for a vaccine administration fee
 - However, providers cannot charge the vaccine recipient the balance of the bill
 - Seek reimbursement for uninsured vaccine recipients from the Health Resources and Services Administration's COVID-19 Uninsured Program
- 



Question: Can the vaccines cause me to have autoimmune disorders?

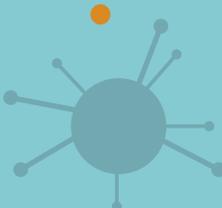
ANSWER:

Autoimmune diseases occur when the body reacts against itself. Some examples include Guillain-Barre Syndrome (GBS), multiple sclerosis, rheumatoid arthritis, and type I diabetes. Genetic factors seem to put people at risk for getting autoimmune diseases. Sometimes infection with bacteria or viruses can trigger an autoimmune disease. Some germs may have elements that are like our own body's proteins, or antigens, and our body makes antibodies that cross react. The body may also attack our own tissues as the infection destroys our tissue. Or just getting the immune system revved up could accidentally switch on autoimmunity.

Over time it has been thought that vaccines may increase the risk of autoimmunity. Numerous studies have examined many different vaccines. To date, no vaccine has consistently been shown to cause autoimmune diseases. There have been a few studies suggesting influenza vaccine increases the risk of Guillain-Barre Syndrome (GBS) at a rate of one extra case per million vaccine recipients. But natural influenza infection causes GBS in 17 per million people infected.

Those with family histories of autoimmune disorders or are concerned about autoimmune disorders should get vaccinated because active infections, like COVID-19, are a risk for triggering these diseases.





Question: Are we going to have to keep getting vaccines?



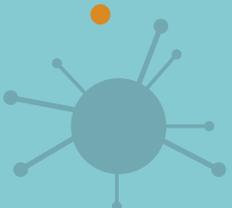
ANSWER:

More recent studies indicate that most people who've had COVID-19 have good immune protection for at least 3 months, but usually eight to nine months, basically as long as we've been able to follow them after their infection.

Since people who've been vaccinated usually mount an even better immune response, immunity from the COVID-19 vaccines may last several years but we can't be sure right now. A revaccination program may be necessary if variants appear that are different enough from the vaccines we use now.

The faster we get everyone vaccinated, the smaller the chances that a new variant will emerge that threatens our vaccine-induced immunity. Remember, viruses only mutate when they multiply. They only multiply when they spread from person to person so the more people that get vaccinated the less variants we will see.





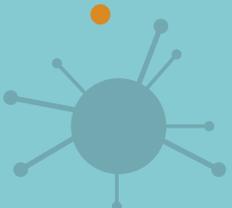
Question: I'm young and healthy. Why should I be worried about getting vaccinated?

ANSWER:

The effects of COVID-19 are unpredictable. The CDC reports that even though many people with a COVID-19 infection only have a mild illness, some become very sick from COVID-19. Even for those without an increased risk from advanced age or chronic health conditions, symptoms can be severe or long-lasting. In extreme cases, you could even die. You should receive the COVID-19 vaccine to ensure you are protected from severe illness and death from COVID-19. It also helps protect you from spreading COVID-19 to your family, friends, and others around you who may be at high risk for serious illness and death.

Whether you have symptoms or not, getting infected with COVID-19 gives the virus more opportunity to mutate and spread throughout the community. Getting vaccinated helps to stop these risks and stop the pandemic sooner.





Question: Shouldn't I wait to see if it is safe before I get the vaccine?



ANSWER:

As of April 25, 228,661,408 doses of COVID-19 vaccine have been given in the United States. Worldwide, 1.03 billion doses have been given. Side effects and adverse events from vaccines typically develop within days, sometimes weeks. Given the number of vaccines that have been given in the last four months, the rarity of any serious side effects, and the risks from delaying further, you should consider getting a vaccine as soon as possible.



Question: Wasn't the vaccine made by the government? I don't trust that.

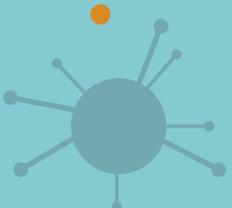
ANSWER:

While a lot of funding, plans for distribution, and resources came from government sources, the vaccine didn't. Private companies and universities developed the vaccines.

The voting members of the advisory committees in the FDA and the CDC that make the final recommendations to authorize and use the vaccines are NON-governmental, mostly holding academic and clinical positions (see tables to right)

Food and Drug Administration Center for Biologics Evaluation and Research Vaccines and Related Biological Products Advisory Committee	
Hana El Sahly, M.D., Chair	Associate Professor Department of Molecular Virology and Microbiology Department of Medicine Section of Infectious Diseases Baylor College of Medicine Houston,
Hayley Gans, M.D.	Professor of Pediatrics Department of Pediatrics Stanford University Medical Center Stanford, CA
Paula Annunziato, M.D.	Vice President and Therapeutic Area Head Vaccines Clinical Research Merck North Wales, PA
Holly Janes, Ph.D.	Associate Member Fred Hutchinson Cancer Research Center Vaccine and Infectious Disease Division Division of Public Health Sciences Seattle, WA
Archana Chatterjee, M.D., Ph.D.	Dean, Chicago Medical School Vice President for Medical Affairs Rosalind Franklin University North Chicago, IL
Michael Kurilla, M.D., Ph.D.	Director, Division of Clinical Innovation National Center for Advancing Translation Sciences National Institutes of Health Bethesda, MD
CAPT Amanda Cohn, M.D.	Chief Medical Officer National Center for Immunizations and Respiratory Diseases Centers for Disease Control and Prevention Atlanta, GA
Myron Levine, M.D., D.T.P.H., F.A.A.P	Professor Associate Dean for Global Health, Vaccinology & Infectious Diseases University of Maryland School of Medicine Baltimore, MD
Andrea Shane, M.D., M.P.H., M.Sc.	Chief, Division of Pediatric Infectious Diseases Marcus Professor of Hospital Epidemiology and Infection Control Emory University School of Medicine & Children's Healthcare of Atlanta Atlanta, GA
H. Cody Meissner, M.D.	Tufts University School of Medicine Director, Pediatric Infectious Disease Tufts Medical Center Boston, MA
Paul Spearman, M.D.	Director, Division of Infectious Diseases Albert B. Sabin Chair in Pediatric Infectious Diseases Cincinnati Children's Hospital Medical Center Professor, Department of Pediatrics University of Cincinnati School of Medicine Cincinnati, OH
Steven Pergam, M.D., M.P.H.	Infection Prevention Seattle Cancer Care Alliance Seattle, WA
Geeta K. Swamy, M.D.	Senior Associate Dean Vice Chair for Research & Faculty Development Associate Professor Department of Obstetrics & Gynecology Division of Maternal-Fetal Medicine Duke University Durham, NC
Gregg Sylvester, M.D., M.P.H.	Vice President Medical Affairs Seqirus Inc. Summit, NJ
David Kim, M.D., M.A.	Director, Division of Vaccines Office of Infectious Disease and HIV/AIDS Policy Office of Assistant Secretary for Health U.S. Department of Health and Human Services Washington, DC
COL Andrew Wiesen, M.D., M.P.H.	Director, Preventive Medicine Health Readiness Policy and Oversight Office of the Assistant Secretary of Defense (Health Affairs) Falls Church, VA
Jay Portnoy, M.D.	Professor of Pediatrics Medical Director of Telemedicine Section of Allergy, Asthma and Immunology Children's Mercy Hospital Kansas City, MO
Jonathan Yewdell, M.D., Ph.D.	Chief, Cellular Biology Section Laboratory of Viral Diseases National Institute of Allergy and Infectious Diseases (NIAID) National Institutes of Health (NIH) Bethesda, MD
David Wentworth, Ph.D.	Chief Virology Surveillance and Diagnosis Branch Influenza Division Centers for Disease Control and Prevention Roybal Campus Atlanta, GA

Department of Health and Human Services Centers for Disease Control and Prevention Advisory Committee on Immunization Practices	
ROMERO, José R., MD, FAAP, Chair	Arkansas Secretary of Health Director, Arkansas Department of Health Professor of Pediatrics, Pediatric Infectious Diseases University of Arkansas for Medical Sciences Little Rock, Arkansas
AULT, Kevin A., MD, FACOG, FIDSA	Department of Obstetrics and Gynecology University of Kansas Medical Center Kansas City, KS
BAHTA, Lynn, RN, MPH, CPH	Immunization Program Clinical Consultant Infectious Disease, Epidemiology, Prevention & Control Division Minnesota Department of Health Saint Paul, Minnesota
BELL, Beth P., MD, MPH	Clinical Professor Department of Global Health, School of Public Health University of Washington Seattle, WA
BERNSTEIN, Henry, DO, MHGM, FAAP	Professor of Pediatrics Zucker School of Medicine at Hofstra/Northwell Cohen Children's Medical Center New Hyde Park, NY
CHEN, Wilbur H., MD, MS, FACP, FIDSA	Professor of Medicine Center for Vaccine Development and Global Health University of Maryland School of Medicine Baltimore, MD
DALEY, Matthew F., MD	Senior Investigator Institute for Health Research, Kaiser Permanente Colorado Associate Professor of Pediatrics University of Colorado School of Medicine Aurora, CO
FREY, Sharon E., M.D.	Professor and Associate Director of Clinical Research Clinical Director, Center for Vaccine Development Division of Infectious Diseases, Allergy and Immunology Saint Louis University Medical School Saint Louis, MO
KOTTON, Camille Nelson, MD, FIDSA, FAST	Clinical Director, Transplant and Immunocompromised Host Infectious Diseases Infectious Diseases Division, Massachusetts General Hospital Associate Professor of Medicine, Harvard Medical School Boston, MA
LEE, Grace M., MD, MPH	Associate Chief Medical Officer for Practice Innovation Lucile Packard Children's Hospital Professor of Pediatrics, Stanford University School of Medicine Stanford, CA
LONG, Sarah S., MD	Professor of Pediatrics Drexel University College of Medicine Section of Infectious Diseases St. Christopher's Hospital for Children Philadelphia, Pennsylvania
MCNALLY, Veronica V., JD	President and CEO Franny Strong Foundation West Bloomfield, Michigan
POEHLING, Katherine A., MD, MPH	Professor of Pediatrics and Epidemiology and Prevention Director, Pediatric Population Health Department of Pediatrics Wake Forest School of Medicine Winston-Salem, NC
SANCHEZ, Pablo J., M.D.	Professor of Pediatrics The Ohio State University – Nationwide Children's Hospital Divisions of Neonatal-Perinatal Medicine and Pediatric Infectious Diseases Director, Clinical & Translational Research (Neonatology) Center for Perinatal Research The Research Institute at Nationwide Children's Hospital Columbus, Ohio
TALBOT, Helen Keipp, MD	Associate Professor of Medicine Vanderbilt University Nashville, TN



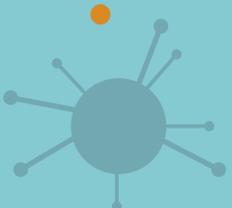
Question: How can they force me to get vaccinated?

ANSWER:

The vaccine is not required by the government. No vaccine is required by the state of Michigan. You have the right to waive vaccines for yourself and your child for philosophical or religious reasons.

Your *workplace* and other institutions are legally able to require vaccination. Many healthcare organization and other workplaces require several vaccines, like common childhood vaccines and an annual flu vaccine. Some are starting to require the COVID-19 vaccine unless there is a medical reason their employee cannot get it.





Thanks!



For general questions regarding COVID-19:

- Contact the state COVID-19 Hotline at 888-535-6136, email COVID19@michigan.gov

To find a COVID-19 vaccination near you:

- www.vaccinefinder.org or call the COVID-19 Hotline at 888-535-6136 (press 1)

In your area:

Central Michigan District Health Department (Counties: Osceola, Arenac, Roscommon, Clare, Isabella, Gladwin)

- To schedule vaccination and for general information: www.cmdhd.org
- For specific questions not available on-line: 989-773-5921 option 6

Mid-Michigan District Health Department (Counties: Montcalm, Clinton, Gratiot)

- To schedule vaccination and for general information: www.mmdhd.org
- For specific questions not available on-line: 989-875-3681, option 2

District Health Department #10 (Counties: Crawford, Kalkaska, Missaukee, Wexford, Manistee, Mason, Lake, Oceana, Newago, Mecosta)

- To schedule vaccination and for general information: www.dhd10.org
 - For specific questions not available on-line: 231-305-8675 or email covid@dhd10.org
- 