COVID VACCINES

COVID Town Halls December 2020

Last updated Dec 30





A vaccine is a tool that helps your body's immune system recognize a foreign invader.

HOW VACCINES WORK



A dead or weakened version of a virus is given to someone in a vaccine.

The small-scale virus infection raises the body's alarm. It produces virusfighting antibodies that stick around even after the practice battle is won.



When the body encounters the real-deal virus, those antibodies are already primed and ready to fight for the body's health. The "antigen" is the part of the virus that the vaccine uses train your immune system.

The antigen can be a dead or weakened virus, or just parts of the virus.



All of the covid vaccines currently in development use the "spike protein" as the antigen.



Spike Protein

Most vaccines are made of inactive virus, weakened virus, or virus subunits.



mRNA vaccines use your own protein synthesis machinery to make antigen.





mRNA vaccines vs conventional vaccines



- Conventional vaccines are made by growing viruses by injecting chicken eggs or other kinds of cell cultures.
- Then you have to purify it without messing up your antigen.
- This takes time and can be tricky, so you may have to do a lot of trial and error to get it right.
- mRNA is faster and simpler because it's synthesized in a machine in the lab.



Pfizer/BioNTech and Moderna Vaccines





Americans: "I'm not getting the Covid vaccine, I don't trust what they put in it!"

Also Americans: "Whoooo the McRib is back 😀 !!"



Pfizer-BioNTech COVID-19 Vaccine

Suspension for Intramuscular Injection

195 Multiple Dose Vials

(after dilution each vial contains 5 doses of 0.3 mL)





Side effects mean the vaccine is working!

- Side effects are your body's immune system responding to the vaccine and learning how to fight the coronavirus.
- The stronger the immune response, the greater the side effects.
 - Young (18-55) and healthy have a stronger immune response and therefore greater side effects
 - Side effects are greater after the second dose
- Serious side effects have been very rare and none permanent.
- The CDC has an app <u>vsafe.cdc.gov</u> for people to log their side effects so scientists can learn as more people get vaccinated.

	Pfizer	Moderna
Injection site pain	84.1%	91.6%
Fatigue	62.9%	68.5%
Headache	55.1%	63.0%
Muscle Pain	38.3%	59.6%
Chills	39.1%	43.4%
Joint Pain	23.6%	44.8%
Fever	14.2%	17.4%

- It's ok to treat side effects with acetaminophen or NSAIDS (ibuprofen etc).
- But take these meds AFTER not before the vaccine. Pre-treatment may dampen the immune response and make the vaccine less effective.



For comparison: COVID-19 long-term effects





FAQs

Can I work if I'm having vaccine side effects?

You can work as long as:

- You feel well enough to work
- You do not have a fever
- Side-effects are limited to those associated with the vaccine and not COVID-19 disease (cough, SOB, loss of taste or smell)



What if I can't come to work because I'm having side effects?

Call your manager and go through the same process as for COVID symptom call-offs. If you have a fever or are too sick to work for more than 2 days, you should get a COVID test.

What if I get the vaccine, but sometime in the future I have COVID-19 symptoms?

You should follow the same process as before we had a vaccine. Stay home, call your manager, and get tested. You could be the 5% that isn't immune.



"What if I have ... "

- The *vast majority* of people are ok to take the vaccine.
- A very small number of people have had severe allergic reactions (why they monitor you for 15 min)
- Some people with cosmetic fillers are having temporary inflammation with the Moderna vaccine
- Both <u>ACOG</u> and <u>SMFM</u> recommend vaccination for pregnant or lactating healthcare workers.
- Mythbuster: There is NO evidence that the vaccine causes infertility

(26 women got pregnant during the trial. There was one fetal loss, in the placebo group.)

Talk to your doctor if you have concerns about any pre-existing medical conditions.

Appendix B: Triage of persons presenting for mRNA COVID-19 vaccination

			The second
CONDITIONS	CONDITIONS Immunocompromising conditions Pregnancy Lactation ACTIONS Additional information provided* 15 minute observation period	CONDITIONS • Moderate/severe acute illness ACTIONS • Risk assessment • Potential deferral of vaccination • 15 minute observation period if vaccinated	CONDITIONS None ACTIONS N/A
ALLERGIES	 ALLERGIES History of food, pet, insect, venom, environmental, latex, or other allergies not related to vaccines or injectable therapies History of allergy to oral medications (including the oral equivalent of an injectable medication) Non-serious allergy to vaccines or other injectables (e.g., no anaphylaxis) Family history of anaphylaxis Any other history of anaphylaxis that is not related to a vaccine or injectable therapy ACTIONS 30 minute observation period: Persons with a history of severe allergic reaction (e.g., anaphylaxis) due to any cause 15 minute observation period: Persons with allergic reaction, but not anaphylaxis 	 ALLERGIES History of severe allergic reaction (e.g., anaphylaxis) to another vaccine (not including mRNA COVID-19 vaccines!) History of severe allergic reaction (e.g., anaphylaxis) to an injectable therapy ACTIONS: Risk assessment Potential deferral of vaccination 30 minute observation period if vaccinated 	ALLERGIES • History of severe allergic reaction (e.g., anaphylaxis) to any componen of an mRNA COVID-19 vaccine! ACTIONS • Do not vaccinate

† Refers only to mRNA COVID-19 vaccines currently authorized in the United States (i.e., Pfizer-BioNTech, Moderna COVID vaccines)



https://www.cdc.gov/vaccines/covid-19/info-by-product/clinical-considerations.html

FAQs

Can I get COVID-19 from the vaccine?

NO. The vaccine does not contain the virus. It contains a recipe for just one single part of the virus.

Will getting the vaccine cause a positive COVID-19 test? NO.

What if I have (or think I have) COVID-19 now? Can I get vaccinated?

If you have active symptoms and/or a positive test, you should **wait until you've recovered** and met the isolation criteria (24 hours without fever + 10 days since symptom onset or date of test). You do not need a negative test.





I've heard about people testing positive for COVID-19 just a few days after getting the vaccine. What's up with that?

They either had a covid infection incubating beforehand, or they contracted it a few days after their first dose.





FAQs

How long does the vaccine immunity last?

It's still to early to tell. The graphs on the last page show data for 4 months. Scientists will continue to track the clinical trial volunteers and other vaccine recipients to learn more.

Should I get the vaccine if I already had COVID-19?

YES. We know that natural immunity doesn't last forever, and people are getting covid twice. A vaccine may help boost immunity.

Do I still have to wear a mask if I get the vaccine?

YES. The vaccine prevents you from getting sick, but scientists don't yet know if the vaccine prevents asymptomatic spread.



What about that new strain of covid in the UK? Will the vaccine protect me?

- Probably.
- The mutated protein is 99% the same as the more common form
- Even if not, an advantage of mRNA vaccines is that they are quick & easy to tweak.
- A tweaked vaccine could be created in about 6 weeks, plus approval time.



A BioNTech vaccine 'highly likely' to work against new Covid variant, says chief executive - video

Coronavirus

Covid vaccine 'highly likely' to work on UK variant, BioNTech says

Chief executive Uğur Şahin says team will know within two weeks if vaccine works or needs adaption



https://www.theguardian.com/world/2020/dec/22/covid-vaccine-likely-to-work-on-uk-variant-biontech-boss-says

Did they skimp on safety? No. Well then how did they make the vaccine so FAST?

The fastest a vaccine has ever been made is 5 years

Small-scale production		Manufacturing		Large-scale		
of clinical trial material		scale-up		manufacturing		
Pre-clinical trials	Phase 1 trial Safety & dose selection	Phase 2 trial Small group efficacy	Phas Large effica	e 3 trial e group acy	Licensing	



- All hands on deck.
- Some steps that are usually done one-at-a-time were combined.
- Started building the manufacturing equipment before the vaccine was approved.
- Expedited review process at the FDA (Emergency Use Authorization, EUA)



More info about how the vaccine was developed:

This 60 Minutes segment about the Pfizer vaccine does a nice job explaining how they developed the vaccine so fast without compromising safety. (hat tip to Tarry Wolfe for recommending it!)

https://www.cbsnews.com/news/covid-vaccine-pfizer-biontech-60-

minutes-2020-12-20/

HOW A RISKY BET ON EXPERIMENTAL BIOTECHNOLOGY LED TO A COVID-19 VACCINE

Bill Whitaker reports on the scientists and advances in biotechnology behind a COVID-19 vaccine that could help end the pandemic.



What about other vaccines in development?

Track the progress of vaccines and other medications at one of the online tracker sites:

- <u>https://coronavirus.jhu.edu/vaccines</u>
- <u>Bloomberg</u>
- <u>NY Times</u>



