



NATIONAL CANCER INSTITUTE

Center for Cancer Research

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COVID-19 and Vaccines

Thank you for your participation in our research on the DNA repair conditions xeroderma pigmentosum (XP), trichothiodystrophy (TTD) and Cockayne syndrome (CS) at the National Institutes of Health. During these difficult times we would like to provide you with some information to help you and your families stay healthy.

It is important to remember that COVID-19 is a new disease caused by the SARS-CoV-2 virus. Currently, there continues to be limited data about the virus's impact on many underlying medical conditions and whether they increase the risk for severe illness from COVID-19. However, physical distancing, frequent hand washing, use of hand sanitizers and wearing face coverings such as tightly woven cloth face masks in addition to UV blocking face shields are still the best ways to prevent spreading or contracting the virus.

Recently three COVID 19 vaccines, have been approved by the US Food and Drug Administration for emergency use. They have been developed by Moderna, Pfizer and Johnson and Johnson (J&J). All three vaccines are very active against the virus and provide excellent protection against serious outcomes from infection including hospitalization and death.

About the Vaccines

The vaccines work in different ways. Both the Moderna and Pfizer vaccines are RNA vaccines. These vaccines do not contain the virus or even a piece of the virus and cannot cause COVID-19 infection. The RNA vaccines use a new approach for vaccination. They have a special RNA that makes the SARS-CoV-2 spike protein. These RNA vaccines must be stored at extremely cold temperatures. Once injected, the immune system senses these spike proteins and makes antibodies and active cells that fight the virus. If a person who has received the vaccine is exposed to the coronavirus, the person's immune system will "see" the spike protein on the virus, fight off the infection and prevent hospitalization and death.

The Johnson and Johnson (J&J) vaccine uses a more traditional method to stimulate the immune system. The vaccine uses a harmless cold virus (adenovirus) to deliver a gene that carries the blueprint for the spike protein. This vaccine can be stored at usual refrigerator temperatures. The vaccine does not cause a cold and the spike protein gene cannot cause COVID-19 infection. The harmless adenovirus carrying the gene enters cells and stimulates the immune system to 'see' the spike protein and fight off the infection. As in the Moderna and Pfizer vaccines, the action of the stimulated immune system will prevent hospitalization and death.

All three vaccines have been thoroughly tested on large groups of ethnically diverse people from all over the world. Like any medication the vaccines can have side effects including sore arm at injection site, fatigue, headache, muscle ache, fever, and chills. The only known contraindication to taking the vaccines, is a history of a severe allergic reaction like anaphylaxis to similar vaccine ingredients. The benefits of any of the COVID-19 vaccines outweigh any potential risks and all are three highly effective against the

virus. However, it is unclear at the present time, whether people with a compromised immune system can make enough protective immunity following vaccination. But, based on experience with other virus-based vaccines, no major or unique side effects have been reported in patients with compromised immune systems.

Who Can Receive the Vaccine?

The Pfizer vaccine is approved for people 16 years and older and requires 2 injections given 3 weeks apart. The Moderna vaccine is approved for individuals 18 years and older and is also given in 2 injections, but at least 4 weeks apart. The J&J vaccine is approved for individuals age 18 years or older but only requires one injection. Currently no COVID 19 virus vaccine has been approved for children under age 16. However, research is underway to study the safety and effectiveness of COVID 19 virus vaccines in younger children.

Frontline health care workers, nursing home residents, and individuals with underlying medical conditions are being prioritized to receive the vaccine. The underlying health conditions will likely include people with cancer, chronic kidney disease, chronic lung diseases, heart conditions, diabetes, liver disease, weakened immune system from any cause, bone marrow or solid organ transplants and people 65 years and older. Guidelines for people with rare diseases are being developed.

We advise you and your family members to work closely with your primary health care providers about being vaccinated against COVID-19. The option to be vaccinated against the COVID 19 virus is a personal decision and should be made on fact-based information.

Additional Information about COVID 19 and the vaccines:

NIH information on COVID19 <https://covid19.nih.gov/>

CDC information on COVID19 <https://www.coronavirus.gov/>

Journal of the American Medical Association Patient page about the Johnson and Johnson vaccine. <https://jamanetwork.com/journals/jama/fullarticle/2777172>

Johns Hopkins website (<https://www.hopkinsmedicine.org/coronavirus/covid-19-vaccine/>)

Each States' Department of Health websites have information on the vaccines and where they can be obtained in your local area.

We are thinking of you during this difficult time and are here for you if questions or concerns arise. Please contact us at the email and phone numbers listed below.

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