"Call it a clan, call it a network, call it a tribe, call it a family: Whatever you call it, whoever you are, you need one." ~ *Jane Howard*

CHAP Weekly Update

December 4, 2020

COVID-19 Vaccination Update

Brief Immune System Review

When a person gets an infection, the immune system takes several actions:

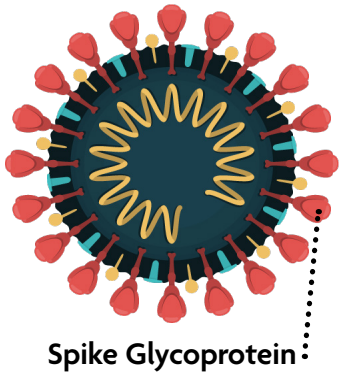
Actions:	Responsible Cells:
The germ is eaten.	White cells called macrophages
Antibodies are made. They attack the virus or bacteria.	B lymphocytes
Infected cells are killed so they can't infect other cells.	Killer T-lymphocytes

Fighting Infection:

This process may take several days to weeks, depending on the virus or bacteria. When it is done, the body remembers the germ. If it shows up again, the immune system is prepped and ready to fight the infection. The person might not even get sick because the immune system may fight off the infection quickly.

How Vaccines Work

Vaccines protect people from disease by prepping the immune system. Vaccines teach the immune system what a particular virus or bacteria looks like. The immune system then prepares killer T cells, macrophages and antibodies that are ready to destroy the real invader if it appears in the nose, throat, eyes, skin, or elsewhere.

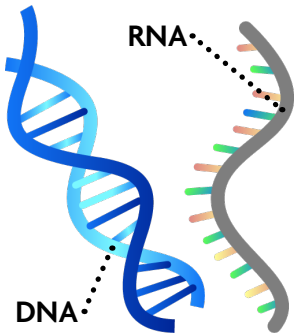


To teach the immune system, vaccines use different techniques. For COVID-19 prevention, most vaccines target the spike protein, the little spike on the outside of the virus. The virus uses the spike to attach to and invade human cells. If the immune system learns to recognize the spike protein, it will destroy the virus before it can attach.

DNA and RNA – What's that all about?

DNA is double stranded genetic material.

- It lives in the nucleus of the cell.
- It stores the genetic information.
- It is the written instruction for all processes in the body. It contains the instructions to build, maintain, and repair everything.
- DNA can copy itself.



RNA is single stranded genetic material.

- It is the copy of the instructions. RNA tells the cells what proteins to make so the body can do the building, maintaining, and repairing.
- mRNA stands for messenger RNA. It is the copy of the DNA that travels to the building site with the instructions for what to build or maintain or fix.

DNA is like the template; it is used to make perfect copies and then the copies are used to give instructions and do the work. Once the work is done, the copies might be torn or messed up and are no longer needed and are recycled.

"You never let a serious crisis go to waste. And what I mean by that is it's an opportunity to do things you think you could not do before."
~ Rahm Emanuel

CHAP Weekly Update

December 4, 2020

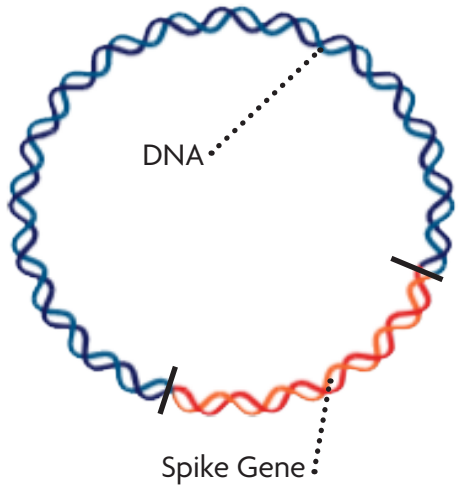
COVID-19 Vaccines

mRNA Vaccines

- The vaccine contains a little piece of mRNA that matches the code for the spike protein on the COVID-19 virus (SARS-CoV-2). The vaccine is injected into the arm muscle. The muscle cells read the instruction on the mRNA and make the spike protein. Then they display the spike protein on their surface, where it is seen by the immune system. The immune system recognizes it as foreign and quickly mounts a defense.
- **What happens to the mRNA from the vaccine?** The muscle cells break it down after using it.
- **Vaccine Examples:** Pfizer Vaccine and Moderna Vaccine
  - One is stored at minus 70° C and the other at minus 20° C
  - Why are they stored differently? The protective layer surrounding the mRNA needs to be kept cold so that it can be effective.

DNA Vaccines

- A circle of DNA is artificially made. The code for the spike protein is inserted into that circle. When the DNA gets into the human body, the cells read the instruction for the spike protein and use mRNA to make the spike protein. Then the immune system reacts as normal against the spike protein.
- **Vaccine Examples:** None in humans yet. A corona virus vaccine using this method is in development.



Vector Vaccines

- The spike protein gene is put in another virus, like a common cold virus. The cold virus gets taken up by the human body. Once again, the cells make the spike protein and the immune system then makes antibodies.
- The vector is either a virus that doesn't infect humans, or it is weakened so that it doesn't cause disease.
- **Vaccine Examples:** None are used in Alaska. The Ebola vaccine used this technology. Corona virus vaccines using this method include Astorozenica and Johnson and Johnson, currently in final trials.

Protein Subunit* Vaccines

- A harmless piece of the COVID-19 virus is in the vaccine. It doesn't cause illness, but it is recognized as foreign so the body makes antibodies. (*protein subunit = a piece of the virus)
- **Vaccine Examples:** The HPV and Hepatitis vaccines use this method. Several corona virus vaccines using this method are in development, but are not yet in final trials.

Inactivated or Attenuated Vaccines

- To make these vaccines, the virus is first grown in chicken eggs or in tanks of cells. Then it is inactivated or weakened so it can't cause disease. These vaccines can take a long time to make. For a new disease, it's a slow process.
- **Vaccine Examples:** Influenza, chickenpox, MMR. A corona virus vaccine using this method is in development.

** Images on page created in Biorender.com*

CHAP Weekly Update

December 4, 2020

Questions You Might Be Asked

What are the side effects from the vaccine?

- Aching arm, low grade fever, body aches – not due to getting the virus, but from the body's immune system ramping up.
- For at least 2 of the vaccines, the side effects may be more severe with a high fever, swelling at injection site, joint pains and flu-like symptoms.
- Side effects may be more severe in young, healthy people.

Medicines that treat inflammation and fever will help: Ibuprofen, Tylenol® etc.

Can I get COVID-19 from the vaccine?

No. There is no virus in the vaccine so you cannot get the disease from the vaccine.

Can I get COVID-19 after being vaccinated?

Yes, there is a very low possibility. Both of the first vaccines are > 90 percent effective. Of the people who become infected, none had severe disease.

Questions Still Under Study

How long does the vaccine last?

Still under study.

If someone already had COVID-19, should they still take the vaccine?

Still under study; likely, yes.

Will children and pregnant women get the vaccine?

These studies are just beginning. No data yet.

Vaccine Resources to Bookmark

Alaska Department of Health and Social Services vaccine web site: http://dhss.alaska.gov/dph/Epi/id/Pages/COVID-19/VaccineInfo.aspx

CDC, COVID-19 Vaccination: https://www.cdc.gov/vaccines/covid-19/vaccination-resources.html

CDC, Vaccine Safety website: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety.html

For more information on vaccine development and safety, look at November 13, 2020 bulletin.

CHA/P on Facebook

Community Health Aide/Practitioner Facebook page: https://www.facebook.com/groups/AlaskaCommunityHealthAidesPractitioners

SAVE THE DATE

Next session: December 8, 2020

Please join us for the CHAP Weekly Update today at noon. Drs. Joe McLaughlin, Ellen Hodges, Anne Musser and the DHSS Corona Response team will be discussing the CDC's new Coronovirus Quarantine Guidelines, the BINAX Now Cards, and influenza immunization.

Thanks to:

The Alaska Department of Health and Social Services Coronavirus Response Team who participated in the call and brought us education about COVID-19 Vaccination.

Let us know what you think! aka-CHAPCOVID-19weeklyupdates@anthc.org

Send questions for presenters and each other, and suggest topics for discussion.

ALASKA NATIVE TRIBAL HEALTH CONSORTIUM