



COVID-19 Vaccination and HCU

December 28, 2020

What you need to know....

Hello,

As COVID-19 continues to impact all of our lives, there is some hope on the horizon with the introduction of several extremely effective vaccines from multiple sources. The speed in which these vaccines have been designed, tested and produced is truly amazing and due to the diligent work by many dedicated people. We will look back at this momentous effort as a true miracle of modern science.

Our next task, as a population, is to encourage and participate in widespread vaccination of the everyone in our population so that new COVID-19 infections will drop and we will be able to return to interacting with others in person outside our household. Only widespread vaccination, estimates are at least 50%, but more likely 70-90% of the population needs to be vaccinated, will protect us all.

According to science's current knowledge, having an organic acidemias (of any type) does not preclude getting the COVID19 vaccine and so we encourage everyone to get the vaccine when they are able. There will be some individuals who cannot get the vaccine (discuss with your own doctor if you have concerns), however having homocystinuria is not one of the reasons.

For those who have a protein restriction, neither of the COVID-19 vaccines being produced by Pfizer and Moderna contain any protein.

The Moderna and Pfizer COVID-19 vaccines are a very new kind of vaccine (for infectious diseases---the technology has been used to help treat cancer in the past). These vaccines are made of RNA (ribonucleic acid) protected by a coat of lipid (naturally occurring fats). RNA is the building block our own cells use as the code for producing important proteins. The cells read RNA code and build new proteins using amino acids already in your body. After the vaccine is injected into muscle, the muscle cells take up the RNA-lipid particles and strip the lipid coating off. The RNA code then teaches the muscle cells to produce a single protein from the COVID-19 virus. The code provided is the code for the COVID-19 spike protein, one protein that is found on the outside of the COVID-19 virus particle. The muscle cells will transiently produce the COVID-19 spike protein (but not the whole virus) for just a few days until the RNA code spontaneously degrades. The spike protein is 'presented' to the outside of the muscle cell wall where the immune cells circulating in the blood can see it. Since it is a foreign protein not normally found in our bodies, the immune cells recognize the spike protein as foreign and start gathering everything needed to

destroy the protein. A second injection of the vaccine three weeks later really solidifies the immune response and commits it to the memory of the immune system. Thereafter, if the individual encounters the actual COVID-19 virus which is covered in spike proteins, her immune system will immediately recognize the foreign spike proteins and reactivate to destroy the virus. I have reviewed the data provided by Pfizer and Moderna to the FDA on the efficacy of their vaccine; it is remarkably effective.

Traditional vaccines, like the influenza vaccine, are based upon injecting the actual virus which has either been altered to not cause severe disease or has been killed. The vaccine still carries the viral proteins that the immune system will recognize as foreign. Traditional vaccines do contain protein, but the amount of protein injected is very small compared to the amount of protein consumed even in the most strict homocystinuria diet. Even though traditional vaccines contain protein, we still advise everyone with an organic acidemia to receive all recommended vaccinations.

To conclude, the Pfizer and Moderna COVID-19 vaccines do not contain any protein. They contain a code that will allow the transient production of a very small amount of a virus protein from amino acids already in the body. They will not affect methionine metabolism. It is crucial that all of us participate in the COVID-19 vaccination program in order to defeat this pandemic. I encourage everyone with homocystinuria to participate.

The CDC and your state's government's Board of Health have the most up-to-date information for vaccination plans in your area. Please be patient, much of the information about the tiering system that prioritizes vaccine delivery is on your state's government's Board of Health website, but I can confirm that this can change daily depending on the availability of vaccine in your area.

If you have questions regarding the vaccine for you reach out to your metabolist and potentially primary care physician.

Thanks so much.

A handwritten signature in black ink, appearing to read 'Kimberly A. Chapman', written over a light blue grid background.

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