Covid 19 Vaccination

What Alphas Need to Know – Dr. Ken Chapman

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Disclaimer

As I write this brief bit of advice for my patients with alpha-1 antitrypsin deficiency, it is early January and Health Canada has approved two vaccines now being distributed throughout Canada. I live in and practice medicine in the province of Ontario so my understanding of this rollout reflects what is happening in this province and not everything I say now will apply where you live. I am not a specialist in infectious diseases nor am I vaccine specialist. The advice I offer is as a specialist in respiratory medicine, one with considerable experience in the management of alpha-1 antitrypsin deficiency. I am not an official representative of any Canadian or provincial health care authority nor do I speak for the Canadian Thoracic Society. What follows is my best professional advice based upon the available evidence. There are some areas of uncertainty. For example, American recommendations and Canadian recommendations for vaccine use differ slightly. When even the experts disagree at a national level, we know that there are still important lessons to be learned and evidence to be gathered.

Quick Summary

If reading through several long paragraphs below is not your thing, I can summarize my recommendation as follows:

Get vaccinated at the earliest opportunity.

Patients with alpha-1 antitrypsin deficiency are at increased risk of adverse outcomes from the Covid 19 virus and there are very few contraindications to being vaccinated.

The Risk for Alphas

Before it ends, the death toll from the global coronavirus pandemic will be in the millions yet there is a surprising undercurrent of denial and misinformation online and in the media. One reason such foolishness continues is that the outcome of COVID-19 infection is so unpredictable. For many, the illness resembles any commonplace wintertime cold or flu with fever, headache accompanied by aches and pains all of which subside in a few days. For some, the virus seems to stir up no symptoms at all. But of course, for some the viral illness is severe, resulting in death or long term disability. Why is this? Who is vulnerable? We don't have all the answers but if you've been reading the news carefully, you will know that the biggest concern we have is for those patients who mount a damaging and self-destructive inflammatory response to the virus. That is, following the initial flu-like stage, some unlucky individuals suffer a second stage of illness that's been called the "cytokine storm". This means that the body's inflammatory response runs amok and begins to cause damage rather than helping to fight the infection. It's this second stage of illness that is of great concern to individuals with alpha-1 antitrypsin deficiency.

Alpha-1 antitrypsin is an important part of the body's response to injury and infection. Let's take a step back and talk about inflammation. We doctors use the word unconsciously and seldom think to explain what it means. Inflammation is simply the response of a healthy body to injury or infection. Imagine that you've been a bit unlucky handling some firewood and that you've got a small, annoying

splinter just under the surface of your skin. Even while you're wondering where the tweezers are, you body will respond by releasing inflammatory chemicals in the bloodstream (cytokines) to limit harm from the injury. Your skin will begin to swell as extra blood flows to the area carrying additional chemicals and injury-fighting cells like white blood cells. The white blood cells will encounter leaky blood vessels that allow them to leave the blood vessels and enter the skin where they can target foreign invaders such as the bacteria on the surface of the wood. These responses are inflammation and doctors are taught to look for the redness, swelling and pain of inflammation because sometimes inflammation is more damaging than helpful. For example, we all know that the swelling and pain (inflammation) of a twisted ankle can be reduced if we apply ice and doing so may hasten recovery from the injury.

The job of alpha-1 antitrypsin is to modulate or to hold in check the body's inflammatory tendency. This is how it holds lung damage in check. But if you have a severe deficiency of alpha-1 antitrypsin, your inflammatory response may not be modulated. We regard alpha-1 as a natural anti-inflammatory and there is concern that even mild deficiencies may increase the risk of exaggerated and damaging inflammatory responses to the COVID-19 virus. Even if your alpha-1 antitrypsin deficiency isn't accompanied by COPD, you may be in a special risk category.

A quick word for patients who are receiving augmentation therapy. It's always been especially important to continue your infusions through exacerbations. These days that could be difficult. You won't be allowed to visit the Innomar Clinic if you have symptoms of COVID or a documented COVID infection. Innomar will not send a visiting nurse to your home. (I've checked). So you and your physician should have a plan to make sure that you receive your regular infusion of Prolastin-C when you're ill. This might mean a brief admission to hospital for your intravenous infusion.

Do the Vaccines Work?

There is no question that the two approved vaccinations work and provide considerable protection against the coronavirus. Estimates are that the vaccinations confer 95% or greater protection over the tested three-month period.

Some people have expressed concern that the vaccinations were developed and approved relatively quickly as compared to previous vaccinations. This is true but this early approval has been justified by the tremendous loss of life that may occur without an effective vaccine. We can't afford to wait for years and years to develop and deploy an effective vaccine. Still, there should be little cause for concern. By now, thousands of people have received the vaccination and there have been no unusual side effects or problems. These vaccines appear to be as safe as the traditional vaccines we have used for many years. The only real concern about their early deployment is that we do not know the how long the protection from these vaccines will last. Is the protection just a few months or will it last for years? Will we need to repeat the vaccination annually or every five years? Will the protection last for a lifetime? We don't know the answers to these questions but that's not unusual. Some of you will have received the original pneumonia (pneumococcal) vaccination with the advice that it should be readministered in five years. Later this was changed to 10 years. Now, we recommend not repeating the pneumonia vaccination.

Are the Vaccines Safe?

Yes, the vaccines are safe.

Some people are worried that the technology is new. It's true that we have not deployed mRNA vaccines widely before. However, they have been under development in several settings for about a decade and we know a great deal about how they work. You may be comforted to learn that you will not be receiving a vaccination with the actual virus. That is, there is no injection of live virus, weakened (attenuated) virus or dead virus. No viral material is used in the injection. Instead, the vaccine makers have developed a clever strategy whereby the body produces a harmless fragment of the virus to stir up an immune response. I've been asked if the vaccine alters DNA. It doesn't. We can think of DNA as the master blueprint or command central in a large factory. The vaccine is the equivalent of taking over one small machine on the factory floor to produce briefly a new product for inspection. DNA remains unaffected and the cell soon returns to its normal function.

What about illness that were reported in vaccine recipients prompting pauses in the research trials? I've been doing research for decades and I'm always frustrated at how the side effect story is misunderstood. Whenever a new drug (or vaccine) is tested, investigators look for problems or side effects. It's their task to write down any problem that arises whether it's an allergic rash or broken leg. To me, it's unsurprising that when the vaccine was given to many thousands of people and they were monitored for several months, some of them developed illnesses. Imagine for a moment that you pick some names at random and keep track of thousands of people for several months. It would not be surprising that during the monitoring period some had heart attacks, some developed arthritis, some developed skin rashes and many remained perfectly healthy. To know if a treatment is causing a problem you need to identify a higher than usual rate of certain events or events that uncover events that are clearly related to how your drug or intervention works. These vaccines have not been associated with any unusual pattern of problems even as their use is being ramped up to a larger and larger populations around the world. For years, anti-vaxxer nonsense has misinformed millions of people and put us all at risk by discouraging highly effective vaccinations to vulnerable populations. Vaccination against preventable illness is one of the greatest accomplishments of medicine goes a long way towards explaining the longevity of modern Western populations. Early in my career I worked briefly at a refugee camp in Asia and saw children die from preventable measles pneumonia. There should be a special place in hell for prominent anti-vaxxers. These vaccines are safe.

Is There Anyone Who Should Not Get the Vaccine?

There are very few people who should not receive one of these vaccines. It's likely that when the vaccine is made available to you, your healthcare provider will administer a checklist to make sure that you are not one of these rare individuals. Right now, these are the areas of concern:

1. Are you allergic to polyethylene glycol (PEG)?

Polyethylene glycol is a component of some vaccines and is also used as a treatment for constipation. True allergic reactions are rare but if you have previously had a rash, tongue swelling, difficulty breathing or dizziness from a documented polyethylene glycol exposure, you should not receive the vaccine. Let me quickly add, the doctors often hear patients report "allergies" that are highly suspect.

2. Have you had allergic reaction to the Pfizer or Moderna vaccine?

Currently, people are kept in the clinic for 15 minutes after vaccination in case there is an allergic reaction. If you have a clear and important allergic reaction after your first vaccination this must be reviewed carefully before the second vaccination. A severe reaction (anaphylaxis) would be a

contraindication to the second vaccination. A milder allergic reaction might not be an absolute contraindication and this situation should be reviewed with your physician.

3. Do you have a bleeding problem or are you taking anticoagulant therapy?

This is a standard question for all vaccinations given by intramuscular injection. There is, of course, a risk of bleeding into the muscle if you are taking a prescribed blood thinner or have been born with a coagulation problem. Generally, vaccination is still undertaken but with precautions to ensure that the risk of bleeding and muscle damage is minimized. In a word, your healthcare provider needs to know about this.

4. Do you have any problems with your immune system or are you taking any medications that can affect your immune system?

This is one of those areas that seems to differ between Canada and the United States. I would suggest that if you have an illness that compromises your immunity or if you are taking a drug that reduces your immune status you should especially receive the vaccine. The concern, from my perspective, is that you may not mount a complete response to the vaccine and may not acquire the intended immunity. In Canada, immune compromise has been listed amongst the contraindications to vaccination but this is not the case in the United States. You may remember earlier that I pointed out no live virus is used in this vaccine so there seems no reason to avoid vaccination in the immune compromised. Review this with your doctor and use your best judgement but I would advocate that any patient with immune compromise should especially receive one of these vaccines.

5. Are you pregnant?

In Canada, pregnant women have been advised not to be vaccinated. This is not the case in the United States and to my surprise I find myself lining up with the Americans on this one. Once again, review this with your physician and use your best judgement but I think that women who are pregnant are reasonable candidates for the vaccination.

6. Are you breast-feeding?

This is just like the question about pregnancy. In Canada it's considered a contraindication but not in the US. Once again, I'm with the Americans on this one. Review this with your physician.

7. Do you have an autoimmune disease?

This is controversial. In Canada, our officialdom has listed autoimmune disease amongst the contraindications to vaccination. This lines them up in the same place as the anti-vaxxers and I am troubled. The Americans have not arrived at the same conclusion. Review this with your physician.

Should I receive one or two doses?

For the two vaccines now available, two doses should be administered. This is how the vaccines were developed and tested. We don't know if they will work adequately after just one administration and there are the theoretical reasons to be concerned that using just one administration per individual will render the vaccines less effective in a population. I know that Québec is currently planning on using just one dose and if you live in that province you may have little choice in the matter. If you have any choice, make sure you get the second dose of vaccines that were developed as a two dose regimen.

How and Where Do I Get The Vaccination?

This is the toughest question I must remind myself to keep it brief. These are extraordinary times and people with good intentions are doing their very best to rollout the vaccination. Months from now we will look back and decide whether or not we made the best decisions. It is puzzling to us in the healthcare community that our governments have decided to rollout vaccination programs through acute care hospitals and so far have ignored places where people have traditionally received vaccinations – in their doctors' offices or in pharmacies. If you've called your family physician's office and have been frustrated not to receive helpful information, you're not alone. As of this writing, neither I nor my physician colleagues know where and how our patients are going to be vaccinated. All I can advise is to "keep your ear to the ground" and follow-up any announcements that suggest vaccine rollout is being made available to you.

After I'm Vaccinated, Can I Ditch the Mask?

No.

Please continue to observe all precautions including masking and social distancing until you hear otherwise. The vaccine is not 100% effective and we still need to use all the preventive tools at our disposal. Remember the virus variants – we don't know for certain that the vaccines work as well for them. As well, vaccinated and unmasked individuals are going to be sending some confusing signals in the wider community.

I look forward with you to shedding the mask but for now…wear the damned mask.