

Changing the Way We Work

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Long COVID | Vaccine updates

Panelists: **Dr. Angela Cheung, Dr. Jennifer Hulme, Mr. Adam Brown,
Dr. Gerald Evans**

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Curated answers from CoP panelists and host to in-session questions posed by participants, based on current guidance and information available at the time. Responses may reflect the personal experiences and opinions of panelists.

LONG COVID: VACCINATION

- **Is it still the case that vaccines lower the risk of long COVID even in those who get breakthrough infections?**

From our new SAT Brief:

Overall, people infected with Omicron were less likely to experience the post COVID-19 condition compared to those infected with Delta (odds ratio (OR) 0.24 (95% CI 0.20-0.32) to 0.50 (95% CI 0.43-0.59), which also depended on the age of the person and timing of their vaccination relative to their infection. For example, the benefits of vaccination were more pronounced in people who were vaccinated more than three months before SARS-CoV-2 infection, compared to those who were vaccinated within three months of infection. However, among adults who were double vaccinated, the odds of reporting symptoms of the post COVID-19 condition after confirmed SARS-CoV-2 infection consistent with the Omicron variant were 48.2% lower than for infections with the Delta variant after adjustment for socio-demographic characteristics.

[\[https://covid19-sciencetable.ca/sciencebrief/understanding-the-post-covid-19-condition-long-covid-in-adults-and-the-expected-burden-for-ontario/\]](https://covid19-sciencetable.ca/sciencebrief/understanding-the-post-covid-19-condition-long-covid-in-adults-and-the-expected-burden-for-ontario/)

- **What is the evidence for getting a booster during long COVID?**

We are suggesting that people with long COVID (>3 months since the start of symptoms) get vaccinated or have a booster. Patients can have worsening of their long COVID symptoms immediately after the vaccination, but most folks find that the vaccination does not change their symptoms, or their symptoms improve after vaccination. Only a handful of our patients have had worsening of their long COVID symptoms longer than 2 weeks

- **Are post-COVID patients still eligible to COVID 19 vaccine?**

Yes, 6 months after last booster (or 3 months with consent). Should wait a minimum of 3 months after COVID illness.



- **Does vaccination decrease the risk of long COVID?**

It does. I will show two references one from U.S. and Israel.

- **Are there long COVID symptoms with Pfizer vaccination**

Yes, rarely vaccination can cause long COVID symptoms – same immune dysregulation.

<https://www.science.org/content/article/rare-cases-coronavirus-vaccines-may-cause-long-COVID-symptoms>

- **I have a patient who developed post-COVID illness following her third booster (including POTS). Are there other cases of this?**

Yes, vaccines do rarely cause long COVID symptoms - same immune dysregulation.

<https://www.science.org/content/article/rare-cases-coronavirus-vaccines-may-cause-long-COVID-symptoms>

- **For patients who develop arthralgias/myalgias/ongoing fatigue that they attribute to the COVID vaccine and refuse to take another dose, are there any clinics we can send these pts to?**

The VaxFax Clinic would be a great option. You can book appt online to talk about vaccines, open to anyone in ontario <https://www.shn.ca/vaxfacts/>

- **I have one patient who reports having incapacity to do his physical activity since his second dose of COVID vaccine. Has anybody else seen this?**

We have been seeing patients with vaccine side effects that seem similar to long COVID. We treat in a similar way. We are collecting bloods from these patients to try to understand better. If you patient is interested, please email CANCOV@uhn.ca

- **For a patient with long COVID, what is the best advice regarding getting the bivalent vaccine at 3 months post infection?**

Some people get “cured” and some people get much worse. I have avoided getting booster. The risk of becoming bed bound again seems too high for me personally.

LONG COVID: SYMPTOMS

- **I have a Hx of viral encephalitis @ 20 y/o and started having seizures @ 39. I'm 42 now and my seizure frequency has increased since my 2nd bout with COVID this past March 2022 (3 Sz since then, (April, May, August) last Sz before that was Oct 2021 and Jan 2020. Even with increased keppra dosing and now clobazam. Is this because of COVID then? I'm still functional but forgetful and still feel weaker than baseline and less energy.**

It is possible. We have seen seizures in patients with long COVID – even in patients without a positive PCR test. That patient was in a full household who tested positive for antibodies but he did not test positive.



- **What about those that have breathlessness but PFTs are normal? Any role for breathing exercises here?**

ABSOLUTELY. Don't wait for PFTs. It's not very helpful – you know what you will see – low normal with restrictive pattern in most.

- **Any evidence that Paxlovid can prevent long COVID?**

A Paxlovid–long-COVID trial would be tough, but I know folks at Stanford and UCSF are looking at it. Not easy to study.

- **In the primary care setting, how much investigation is appropriate for symptoms like shortness of breath, headache, fatigue?**

Guidance from Ontario Health, including assessment, management and follow-up/monitoring post-COVID-19 condition: https://www.ontariohealth.ca/sites/ontariohealth/files/2021-12/PostCOVIDConditionsClinicalGuidance_EN.pdf

- **I see similar post-exertional and post-viral fatigue in fibromyalgia, post polio syndrome, and some other viral or possibly viral pictures. Any connection?**

YES, the pathophysiology is shared with other post viral syndromes but it's the incidence that is alarming.

- **Is new hypertension part of the post COVID condition? I thought I heard that mentioned earlier?**

Yes – endothelial dysfunction and microclotting → HTN

- **I have a 70-year-old male client who has been experiencing non-exertional, non-positional, and non-pleuritic CP since a couple of weeks post COVID. Cardiac/resp investigations all unremarkable. He did extra bw through a naturopath who was concerned about his elevated Spike CoV2 Total AB > 25000; was advised by the naturopath to get a cardiac MRI. Patient fully immunized. I have advised him to discuss this with his cardiologist. Patient blames the vaccines. How can we help this patient?**

The upper limit of detection for Total antibody to Spike on the Roche assay is 2500. We have lots of folks with high titres without those symptoms. Cardiac MRI will not really guide management. Would suggest that we treat the same way that we treat long COVID. We have been seeing patients with these symptoms from vaccines. They are the minority, but we are collecting bloods to try to understand them better. If your patient is interested, email us at CANCOV@uhn.ca

- **Is the risk of long COVID lower in kids?**

In most studies looking at this, yes, the risk is lower. Difficult to be certain due to definition issues between children and adults.



LONG COVID: TREATMENTS

- **Any particular SSRI? | Any SSRI that works better?**

No! Trintellix is being studied but all of them seem to work, if one doesn't, try another. Fluvoxamine was used to decrease mortality in COVID infection. Trintellix is being studied now for long COVID. But citalopram etc are fine!

- **Can someone comment on the many possible "off label" supplements/ medications that are being recommended for the various aspects of long COVID**

I covered most of the meds and supplements that people are taking, that I am taking, including ASA, streptokinase and other fibrinolytic enzymes, antihistamines, anti-inflammatories like statins, turmeric, things that promote cell turnover like fasting, resveratrol.

- **Are there any specific recommendations for younger people with long COVID? I've had many 12-to-20-year-old patients with persistent fatigue. I've been trying to support them with notes around accommodations for school when they can't get things completed due to fatigue, but is there anything more specific to help them?**

I'm not a pediatrician, but I think we can use some of these self-management techniques of resting and pacing, breathing exercises etc. I find that asking folks to lie down for 15 mins a few times spread out during the day is helpful. I also suggest folks to lie flat but with their feet totally up against the wall (so a L-shape at right angle) and this is more easily done in younger people.

- **As physicians, what is the most important advice we can give our patients to a) prevent long COVID b) treat long COVID**

Prevention: rest post COVID, don't exercise, ASA, Niacin (flushing) and antihistamines.

- **Do we have any lung or brain imaging for people who have had mild COVID since Omicron? Early imaging suggested abnormal imaging even in people who had not been hospitalized. Adults and kids?**

Yes, we have had imaging with folks with mild COVID with long COVID, consistent with what I showed (all the data I showed this morning is on non-hospitalized patients) --Slowness of the brain to respond.

- **Can you please comment on which symptoms of long COVID naltrexone helps with? i.e. if people have brain fog and breathlessness should we be Rx'ing it?**

Any symptoms of neuroinflammation: headache, brain fog. There is weak evidence in ME/CFS; combine with aripiprazole in the dose I posted. If no effect, move on! It's expensive.

- **By definition, long COVID is after 3 months; so, is it appropriate to start naltrexone, SSRIs etc. in a patient 2 weeks after COVID infection, as our speaker has?**

I personally don't love watching people suffer for 3 months and then start treatment. I started treatment 2 months post symptoms. In some countries they use 2 months. I wouldn't allow someone to languish – high risk of suicide etc.

- **Any evidence for Ritalin for brain fog?**

No, and many describe it as having a train trying to move but a tree is in the way.

- **If we're trying some of these interventions with patients, how long to see some benefit to know if they're helping?**

I meet with my family MD every 2-3 weeks to try and see what is working during acute phase

- **What is mast cell activation syndrome?**

Article: Mast cell activation symptoms are prevalent in Long-COVID:

<https://pubmed.ncbi.nlm.nih.gov/34563706/>

- **Is low inflammation [lectin free] keto nutrition helpful as a diet approach which produces autophagy & mitochondrial activity, similar to fasting extended & intermittent?**

Some people benefit from keto for sure – combine with intermittent fasting and prolonged fasting.

- **Is long COVID more common in earlier variants vs Omicron ... since Omicron causes milder symptoms?**

Yes. There is a decrease in post-COVID condition incidence with Omicron.

- **During the roller-coaster of post-COVID exacerbations, do these patients test positive again? I've some positive RATs in a row with negative PCR test and cannot explain why to them.**

Yes, many people continue to test positive on RATs for months. Viral persistence theory likely a factor in some people. We find virus in the gut of newborns 10 weeks after their moms had COVID while pregnant!

- **Should we start those with new HTN [hypertension] post COVID on low doses ASA in addition to the HTN medications?**

I would, and I'm on ASA. My HTN is completely resolved post HBOT [hyperbaric oxygen therapy].

LONG COVID: CLINICS

- **Is there a long COVID clinic in Ottawa?**

Yes, at the TOH – rehab hospital 613-737-8899 ext. 75080. [Website: <https://www.ottawahospital.on.ca/en/clinical-services/deptpgrmcs/departments/rehabilitation-centre/>]

- **I have tried to refer patients to long COVID clinics and the wait time is crushing if they are accepted at all. This information is helpful.**

It's a family medicine play for sure. I think we can do this!



- **Where can one access long COVID physio in the GTA? Is there a list?**

I only know of Cornerstone Physio – available virtually throughout Ontario.

<https://cornerstonephysio.com/> [Consider doing an online search for clinics in your area and note that physiotherapy is a private, paid service in many cases.]

LONG COVID: ASSESSMENT | DISABILITY SUPPORTS

- **Any advice on how to best complete disability forms that will successfully advocate for patient getting financial support during their disability?**

Yes, include any objective findings (as difficult as this is, as some people don't have any) and FUNCTIONAL limitations as described by the patient.

- **What's the best tool to quantify functional abilities aside from adL? OT assessments are costly and there is a long delay to access.**

See Ontario Health long COVID guidance:

https://www.ontariohealth.ca/sites/ontariohealth/files/2021-12/PostCOVIDConditionsClinicalGuidance_EN.pdf. You can use the Post-COVID-19 Functional Status (PCFS) Scale: a tool to measure functional status over time after COVID-19. Here it is <https://osf.io/5n4g3>

- **How do insurance companies view this? The problem is trying to get any compensation or disability benefits for patients.**

They are viewing this with worry. Most people with long COVID are unable to work or work full time 6-12 months later. But I did get covered after a lot of paperwork.

- **As a physician with long COVID, brain fog, fatigue etc., is the CPSO contacted from our insurance and will they be complicating your life, when you go back to practicing?**

I reported to the CPSO that my ability to practice was affected, but they haven't contacted me. Now that my cognition is okay, I'm safe to practice. I just can't handle ED shifts and nights. We need representatives from CPSO for this discussion.

BIVALENT | BOOSTER VACCINES

- **There is a shortage of the bivalent COVID vaccine in some health units. What advice would you give moderately vulnerable patients whether to get the regular booster or wait for the bivalent one?**

The province just added 40,000 more appointments.

[See MOH news release, Sept. 25: From Sept. 26, all adults aged 18 and over are eligible to receive the bivalent booster dose: <https://news.ontario.ca/en/release/1002315/ontarians-18-eligible-for-bivalent-booster-starting-tomorrow>]



- **Is there any update on bivalent vaccine approval and availability for the 5-to-11-year-olds as a booster?**

Moderna is only approved for 18+. We would need to wait for a Pfizer approval.

- **Question for Gerald [Dr. Evans]: What do we tell patients who ask us if they should go to the US for the bivalent BA4/5 as opposed to getting the BA1 vaccine here in Canada? Is there a significant incremental benefit?**

Based on limited data from surrogate marker studies, there is very little incremental benefit from use of the bivalent Moderna 222 vaccine (BA.4/5) c/w the Moderna 214 vaccine (BA.1). I'll show some data in my slides. The use of the Pfizer-BioNTech BA.4/5 bivalent appears better c/w their BA.1 bivalent. At present, only the Moderna 214 bivalent vaccine is approved in Canada.

- **Are there reports of facial pain as a side effect from the new bivalent vaccine?**

Some people have had substantial cervical lymphadenopathy post vaccine.

- **Can the bivalent vaccine be used for the primary series? It does look like a half dose compared to the original vaccine. | Can a person receive the bivalent vaccine if they haven't had previous COVID vaccines?**

[The bivalent vaccine is authorized only as a booster dose: <https://www.ontario.ca/page/covid-19-vaccines#who-can-get-vaccinated>. The 50mcg Moderna bivalent uses the same dosage as the 50mcg as the 50mcg Moderna monovalent vaccine. The formulation contains equal parts (25mcg each) of mRNA encoding ofr the original SARS-CoV2 virus and the Omicron BA.1 variant.]

- **How soon after COVID infection can I get the bivalent vaccine? | What is the interval x the bivalent vaccine after infection**

6 months seems in the latest data to give the best immunogenicity if you have had COVID but you can give w/in 3 months (84 days)

- **Why did we get the inferior bivalent vaccine?**

CDC directed Moderna to use BA4/5 and didn't require trials. Canada didn't. [Applications for vaccine approvals are submitted by vaccine producers separately in the U.S. and Canada.]

- **I had my vaccination last July 17th. When should I as a healthcare worker have the Omicron specific vaccine? What about general public?**

6 months from your last booster OR 3 months with your consent (as per Health Canada). [Ontario is recommending vulnerable individuals, including those who are healthcare workers, get their bivalent booster as soon as they are eligible, i.e., at an interval of 3 months.]

- **Any data on increased risk of myo/pericarditis in young males 18-30 with the Moderna bivalent vaccine?**

No signal seen but low numbers of human subjects.



- **Can you comment on clinical markers vs antibodies re vaccine efficacy, previous natural infection etc.**

I always prefer clinical outcomes versus surrogate markers like NAbs, etc. There are fewer clinical outcomes with the bivalents c/w original vaccines.

- **For Dr. Evans: how to understand the modelling study referenced in the @Nature briefing that found only very moderate excess benefit (peak 8%) from the BA.1 Moderna vaccine over OG vaccine against symptomatic or severe illness?**

Very little difference in protective immunity as suggested in the model, which I put in the bottom-line slide. However, likely an improvement in short-term sterilizing immunity based on NAb levels.

- **For immune compromised, can they get the bivalent vaccine at 2 months after their last booster?**

[Individuals in vulnerable populations are recommended to get the bivalent as soon as possible after the minimum three-month interval from their previous dose.]

- **If the vaccine protection is most robust for 3-4 months, should we delay a bit?**

Sterilizing immunity (prevention of infection) is short-lived, but protective immunity (prevention of severe disease) is longer in duration (years). Always difficult to “time” things right, as we don’t know when viral prevalence is going to rise.

- **For young kids that aren’t eligible for the bivalent vaccine, should they get the regular booster approved for them now or wait for approval of the bivalent, presumably coming down the line?**

Yes, they should receive at least 3 doses of vaccine as this is the immunologic “sweet spot” for these vaccines.

OTHER

- **Given the decrease in PCR testing, how accurate are the number of cases?**

Not good at all. We are underestimating. That's why we are looking at wastewater signals.

- **How are we accounting for testing limitations (restrictions, non reporting) for those daily caseloads now (for Dr. Evans)?**

Very poorly. Assume 10:1 ratio.

- **What is the false negative rate for RAT & PCR**

40% false-negative on RATs.

- **Could you figure out how often new variants of COVID-19 would emerge?**

Variants typically arise in proportion to the numbers of infections seen worldwide. If we reduce infections the emergence of variants will be reduced.



- **Are our experts still wearing masks in public? What about going to gym, suggestions about group events?**

I do. Gyms, bars, nightclubs are the most common social sites to see transmission.

- **Is the COVID pandemic finally ending?**

Not if 5-20 percent of people develop long COVID, sadly.

- **Will the Science Table website and articles stay up indefinitely?**

The website is being archived and accessible for the next few months. PHO now controls access.

- **Thank you so much this has all been incredibly helpful – but also now trying to access all this for our patients is going to be the worst.**

You aren't alone – reach out to econsult, and check out the summarized resources we've pulled together at the OCFP [<https://www.ontariofamilyphysicians.ca/tools-resources/covid-19-resources/long-covid>.] And yes, we need to forecast for what this means for our work in primary care where this support will come from.

These additional questions were answered live during the session. To view responses, please refer to the [session recording](#).

- Please comment on the different types of booster doses available and coming and how we should direct patients i.e., get Moderna spike vaccine now or wait for Pfizer with BA5 variant protection?
- Is it still the case that vaccines lower the risk of long COVID even in those who get breakthrough infections?
- Can someone comment on the many possible "off label" supplements/medications that are being recommended for the various aspects of Long COVID
- Can you pls remind us how many days recommended to wait pre/post COVID vaccines in 1/ peds 2/ adults for : routine vaccines, flu shots, prolia, TB test etc.? Thanks
- A pt said that the Bivalent vaccine in the USA is made for BA4 or BA5 strains of omicron. Apparently, the bivalent in Canada is made for earlier strains. Is this factual? Is there any benefit to getting the vaccine in the USA (for pts who frequent the USA)?
- My understanding is that Pfizer submitted the request for approval of their B4/5 targeted vaccine on Sept 2 to Health Canada. Any intel on when we can expect approval?
- Is there a SSRI better than other in the treatment of long COVID?
- Should people wait for a potential ba5 bivalent rather than ba1 and is there an estimate of when it might be available?
- For those of us who have so far somehow managed to escape COVID, and have no Omicron protection, is it better to get the bivalent vaccine at the three-month mark as opposed to the recommended six months post most recent shot?
- How to you balance the recommendation re: waiting 6 months with being in a high-risk setting? When should you wait and when should you immunize early (e.g. 3 months)