

COVID-19 Community of Practice for Ontario Family Physicians

Sept 16, 2022

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



Long COVID



Family & Community Medicine
UNIVERSITY OF TORONTO

Ontario College of
Family Physicians



Long Covid

Moderator: Dr. Tara Kiran

Fidani Chair, Improvement and Innovation

Department of Family and Community Medicine, University of Toronto

Panelists:

- Dr. Angela Cheung, Toronto, ON
- Dr. Jennifer Hulme, Toronto, ON
- Mr. Adam Brown, Toronto, ON
- Dr. Gerald Evans, Kingston, ON

The COVID-19 Community of Practice for Ontario Family Physicians is a one-credit-per-hour Group Learning program that has been certified for up to a total of 32 credits.

Land Acknowledgement

We acknowledge that the lands on which we are hosting this meeting include the traditional territories of many nations.

The OCFP and DFCM recognize that the many injustices experienced by the Indigenous Peoples of what we now call Canada continue to affect their health and well-being. The OCFP and DFCM respect that Indigenous people have rich cultural and traditional practices that have been known to improve health outcomes.

I invite all of us to reflect on the territories you are calling in from as we commit ourselves to gaining knowledge; forging a new, culturally safe relationship; and contributing to reconciliation.

Mushkegowuk Council declares state of emergency due to nursing shortages



Kashechewan First Nation down to only 3 nurses for 1,900 people



[Jonathan Migneault](#) · CBC News · Posted: Sep 08, 2022 4:00 AM ET | Last Updated: September 12



Changing the way we work

A community of practice for family physicians during COVID-19

At the conclusion of this series participants will be able to:

- Identify the current best practices for delivery of primary care within the context of COVID-19 and how to incorporate into practice.
- Describe point-of-care resources and tools available to guide decision making and plan of care.
- Connect with a community of family physicians to identify practical solutions for their primary care practice under current conditions.

Disclosure of Financial Support

This CPD program has received in-kind support from the Ontario College of Family Physicians and the Department of Family and Community Medicine, University of Toronto in the form of logistical and promotional support.

Potential for conflict(s) of interest:

N/A

Mitigating Potential Bias

- The Scientific Planning Committee has full control over the choice of topics/speakers.
- Content has been developed according to the standards and expectations of the Mainpro+ certification program.
- The program content was reviewed by a three-member national/scientific planning committee.

Planning Committee: Dr. Tara Kiran (DFCM), Dr. Elizabeth Muggah (OCFP); Kimberly Moran (OCFP) and Mina Viscardi-Johnson (OCFP)

Previous webinars & related resources:

<https://www.dfcm.utoronto.ca/covid-19-community-practice/past-sessions>



Dr. Angela Cheung – Panelist

General Internist and Senior Scientist, University Health Network and KY and Betty Ho Chair of Integrative Medicine, University of Toronto



Dr. Jennifer Hulme – Panelist

Emergency Physician, University Health Network



Mr. Adam Brown – Panelist

Advanced Practice Physiotherapist and Director of Cornerstone Physiotherapy



Dr. Gerald Evans – Panelist

Infectious Disease Specialist and Chair of the Division of Infectious Diseases, Queen's University



Dr. David Kaplan – Co-Host

Twitter: @davidkaplanmd

Family Physician, North York Family Health Team and Vice President, Quality, Ontario Health



Dr. Liz Muggah – Co-Host

Twitter: @OCFP_President

OCFP President, Family Physician, Bruyère Family Health Team

Speaker Disclosure

- Faculty Name: **Dr. Angela M. Cheung**
- Relationships with financial sponsors:
 - Grants/Research Support: Roche (consultant), MediciNova (providing drug for RECLAIM)
 - Speakers Bureau/Honoraria: N/A
 - Others: Canadian Agency for Drugs and Technologies in Health, COVID-19 Immunity Task Force, Public Health Agency of Canada, Chief Science Advisor's Task Force for Post COVID condition

- Faculty Name: **Dr. Jennifer Hulme**
- Relationships with financial sponsors:
 - Grants/Research Support: N/A
 - Speakers Bureau/Honoraria: N/A
 - Others: N/A

Speaker Disclosure

- Faculty Name: **Mr. Adam Brown**
- Relationships with financial sponsors:
 - Grants/Research Support: N/A
 - Speakers Bureau/Honoraria: N/A
 - Others: Cornerstone Physiotherapy, Founder

- Faculty Name: **Dr. Gerald Evans**
- Relationships with financial sponsors:
 - Grants/Research Support: N/A
 - Speakers Bureau/Honoraria: N/A
 - Others: Ontario Covid-19 Science Advisory Table

Speaker Disclosure

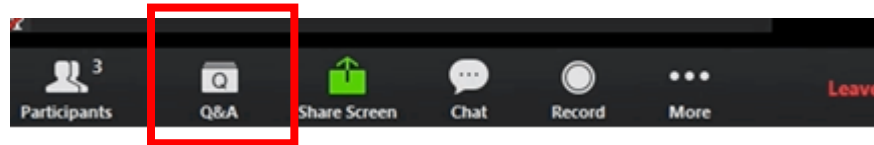
- Faculty Name: **Dr. David Kaplan**
- Relationships with financial sponsors:
 - Grants/Research Support: N/A
 - Speakers Bureau/Honoraria: Ontario College of Family Physicians
 - Others: Ontario Health (employee)

- Faculty Name: **Dr. Liz Muggah**
- Relationships with financial sponsors:
 - Grants/Research Support: N/A
 - Speakers Bureau/Honoraria: Ontario College of Family Physicians
 - Others: N/A

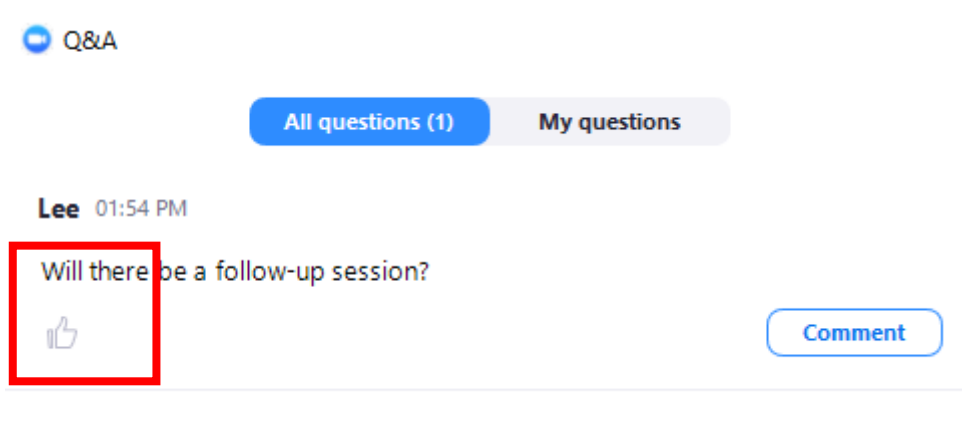
- Faculty Name: **Dr. Tara Kiran**
- Relationships with financial sponsors:
 - Grants/Research Support: St. Michael's Hospital, University of Toronto, Health Quality Ontario, Canadian Institute for Health Research, Ontario Ministry of Health, Gilead Sciences Inc (re: Hepatitis C), Staples Canada (re: Patient Engagement)
 - Speakers Bureau/Honoraria: Ontario College of Family Physicians, Ontario Medical Association, Doctors of BC, Nova Scotia Health Authority, Osgoode Hall Law School, Centre for Quality Improvement and Patient Safety, Vancouver Physician Staff Association, University of Ottawa, Ontario Health, Canadian Medical Association

How to Participate

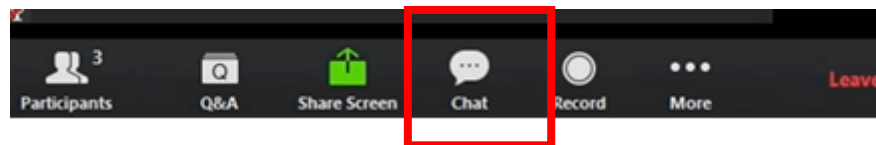
- All questions should be asked using the Q&A function at the bottom of your screen.



- Press the thumbs up button to upvote another guests questions. Upvote a question if you want to ask a similar question or want to see a guest's question go to the top and catch the panels attention.



- Please use the chat box for networking purposes only.



Today's Outline

- Long COVID
 - The science
 - The personal
 - Rehab and team

- COVID update including the new vaccine and latest on boosters



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Infectious Disease Specialist and Chair of the Division of Infectious Diseases, Queen's University

Post-COVID Condition

Angela M. Cheung, MD, PhD

Senior Physician Scientist / Professor of Medicine
University Health Network / University of Toronto

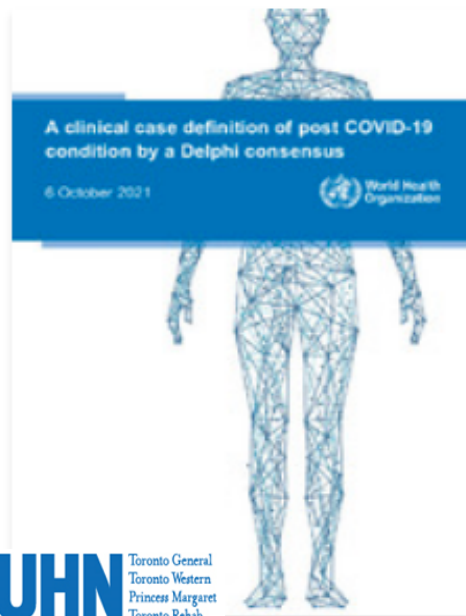
3 Take Home Messages

- 1) Post COVID Condition is a real multisystem physical condition with mental health consequences
- 2) Lots of exciting research (pathophysiology, treatments etc)
- 3) There are interventions for Long COVID symptoms



A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021

6 October 2021 | COVID-19: Clinical care



Overview

WHO has developed a clinical case definition of post COVID-19 condition by Delphi methodology that includes 12 domains, available for use in all settings. This first version was developed by patients, researchers and others, representing all WHO regions, with the understanding that the definition may change as new evidence emerges and our understanding of the consequences of COVID-19 continues to evolve.

Post COVID-19 condition occurs in individuals with a history of probable or confirmed SARS CoV-2 infection, usually 3 months from the onset of COVID-19 with symptoms and that last for at least 2 months and cannot be explained by an alternative diagnosis. Common symptoms include fatigue, shortness of breath, cognitive dysfunction but also others and generally have an impact on everyday functioning. Symptoms may be new onset following initial recovery from an acute COVID-19 episode or persist from the initial illness. Symptoms may also fluctuate or relapse over time.

- [Corrigendum](#)

CDC Announces Approval of ICD-10 Code for Post-Acute Sequelae of COVID-19

Members & Publications

[Membership](#)[PM&R Journal](#)[Member News](#)[AAPM&R News](#)[Physiatry News](#)[Members in the News](#)[Newsletters](#)

July 20, 2021

Your Academy is excited to share that on June 30, 2021, the National Center for Health Statistics (NCHS) of the Centers for Disease Control (CDC) **announced** [ICD-10 code U09.9 Post COVID-19 condition, unspecified](#) was approved for implementation effective October 1, 2021. AAPM&R has actively advocated in favor of specific ICD-10 coding for post-acute sequelae of COVID-19 as a critical step for long term patient care as well as for tracking and research purposes. Our advocacy efforts have included [a letter to the NCHS](#) as well as the recently approved [AMA House of Delegates Resolution](#).

In addition to urging the approval of code U09.9, your Academy advocated for early adoption of the code prior to the typical October 1 release. Unfortunately, the NCHS has chosen to maintain its typical code implementation schedule and the code cannot be used on claims until October 1. In the coming months prior to official implementation U09.9, the CDC has encouraged providers to use *B94.8 Sequelae of other specified infectious and parasitic diseases* as a temporary alternative to the more specific U09.9 code.

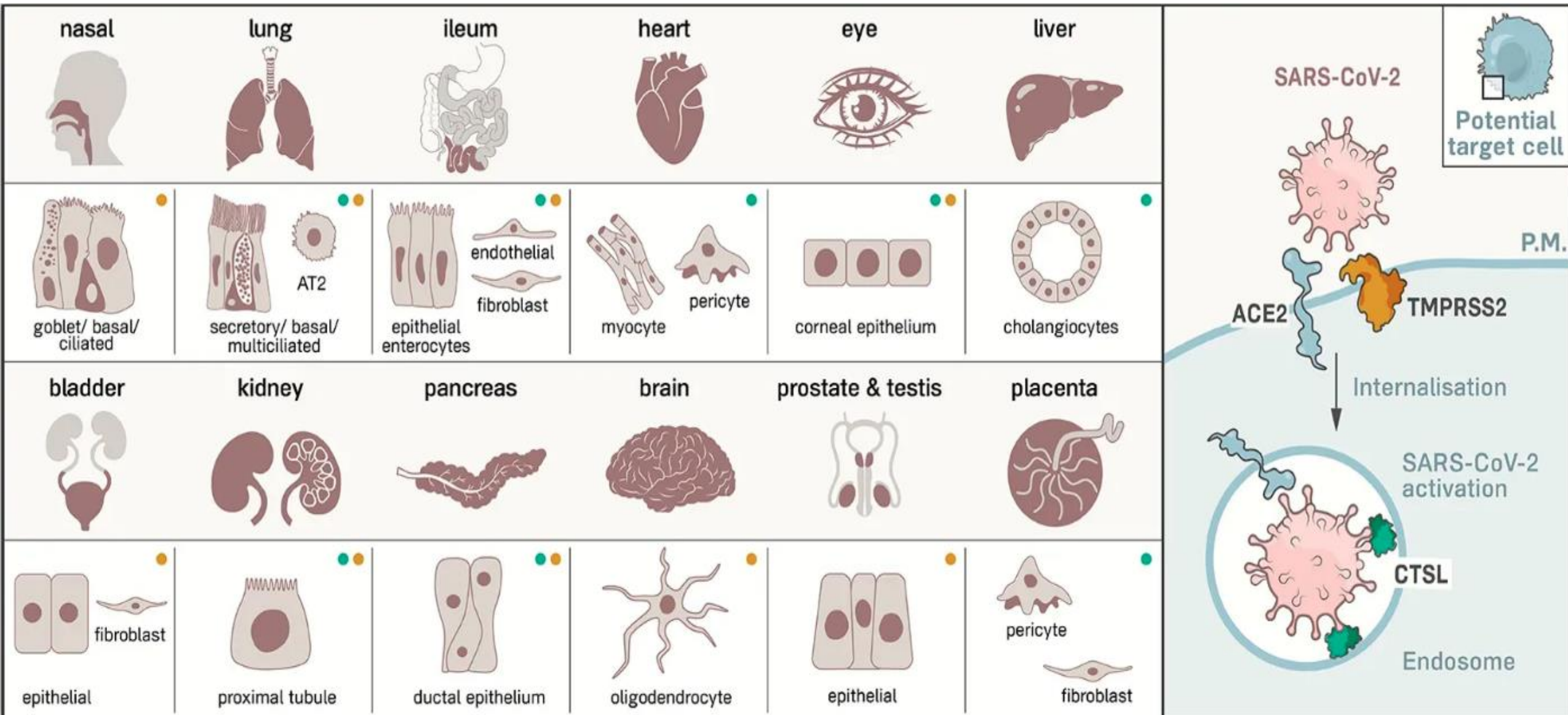
Category: [Infectious Diseases & Clinical Care](#)

Understanding the Post COVID-19 Condition (Long COVID) in Adults and the Expected Burden for Ontario

Kieran L. Quinn, Gabrielle M. Katz, Pavlos Bobos, Beate Sander, Candace D. McNaughton, Angela M. Cheung, Margaret S. Herridge, Clare L. Atzema, Karen B. Born, Christine Chan, Vincent Chien, David M. Kaplan, Jeffrey Kwong, Susan Leung, Sharmistha Mishra, Andrew M. Morris, Christopher J. Mushquash, Karen Palmer, Alexandra Rendely, Arthur S. Slutsky, Rosa Stalteri, Fahad A. Razak on behalf of the Ontario COVID-19 Science Advisory Table

Version 1.0 | <https://doi.org/10.47326/ocsat.2022.03.65.1.0>

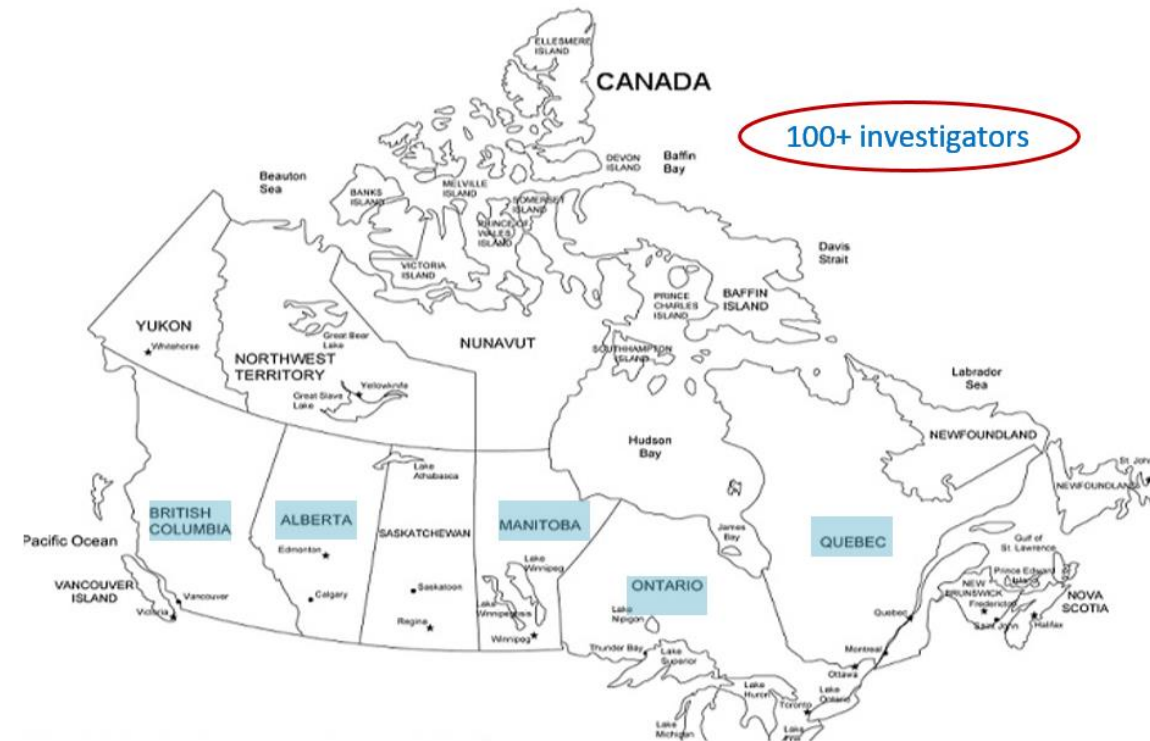
SARS-CoV-2 enters cells via the ACE2 receptor



Canadian COVID-19 Prospective Cohort Study (CANCOV)

Total enrollment: n = 2169

- Clinical (no PCR + test) Cohort: n = 459 patients
- Non-hospitalized Cohort: n = 870 patients
- Hospitalized Non-ICU Cohort: n = 346 patients;
25 caregivers
- Hospitalized ICU Cohort: n = 391 patients;
78 caregivers



What are their symptoms?



Non-Hospitalized Cohort -- Prospective

	1 month	3 months	6 months	12 months
Symptoms	(n=199)	(n=141)	(n=114)	(n= 65)
Yes	140 (70.3)	76 (53.9)	63 (55.3)	24 (36.9)
No	59 (29.7)	65 (46.1)	51 (44.7)	41 (63.1)
Fatigue	65 (32.7)	31 (22.0)	22 (19.3)	13 (20.0)
Insomnia/Sleep disturbances	22 (11.1)	8 (5.7)	9 (7.9)	6 (9.2)
Dyspnea	33 (16.6)	13 (9.2)	17 (14.9)	2 (3.1)
Chest heaviness/chest pain/tightness	31 (15.6)	12 (8.5)	10 (8.8)	2 (3.1)
Cough	45 (22.6)	8 (5.7)	3 (2.6)	1 (1.5)
<u>Haemoptysis</u>	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Sputum production	13 (6.5)	1 (0.7)	0 (0.0)	1 (1.5)
Fast heart rate/palpitations	14 (7.0)	7 (5.0)	7 (6.1)	3 (4.6)
Cognitive changes	37 (18.6)	23 (16.3)	20 (17.5)	6 (9.2)
Headache	37 (18.6)	16 (11.4)	12 (10.5)	3 (4.6)
Bone or joint aches or pains	14 (7.0)	10 (7.1)	4 (3.5)	5 (7.7)
Muscle aches or pains	21 (10.6)	7 (5.0)	6 (5.3)	0 (0.0)
Diarrhea	3 (1.5)	1 (0.7)	4 (3.5)	2 (3.1)
Depression	10 (5.0)	6 (4.3)	7 (6.1)	2 (3.1)
Anxiety	19 (9.6)	9 (6.4)	10 (8.8)	2 (4.6)
Post-traumatic stress disorder	1 (0.5)	2 (1.4)	2 (1.8)	0 (0.0)

WORK
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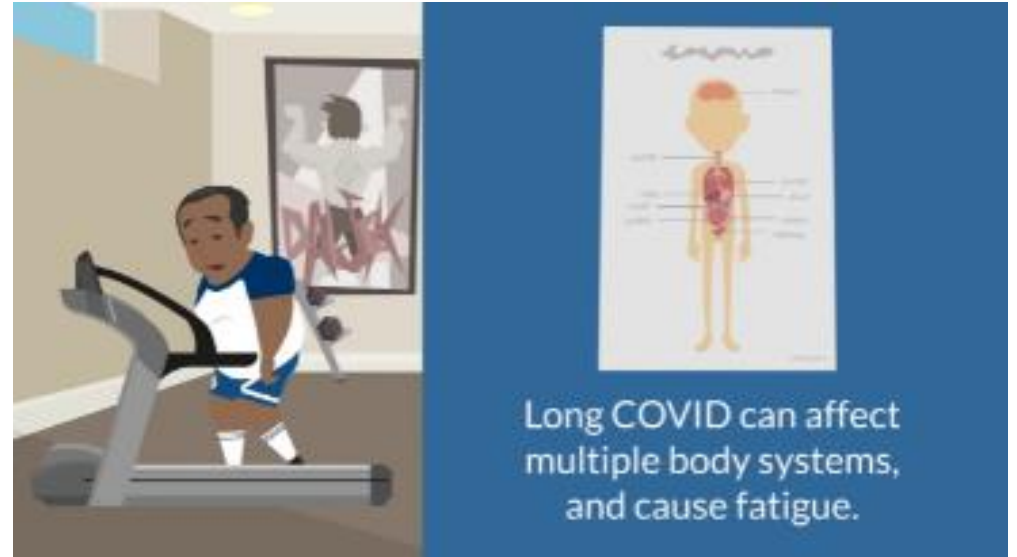
Clinically ...(for the non-ICU cohorts)



- » Hypertension, cognitive impairment, diabetes (new onset)
- » Myalgic encephalitis / chronic fatigue syndrome (MECFS)
- » Post-exertion malaise (PEM) / “relapses” / “flares” / “flare ups”
- » Dysautonomia
- » Inappropriate Sinus Tachycardia (IST)
- » Postural orthostatic tachycardia syndrome (POTS)
- » Mast cell activation syndrome
- » Tremors / myoclonus / seizure / dysbasia
- » Reactivation of other quiescent infectious diseases

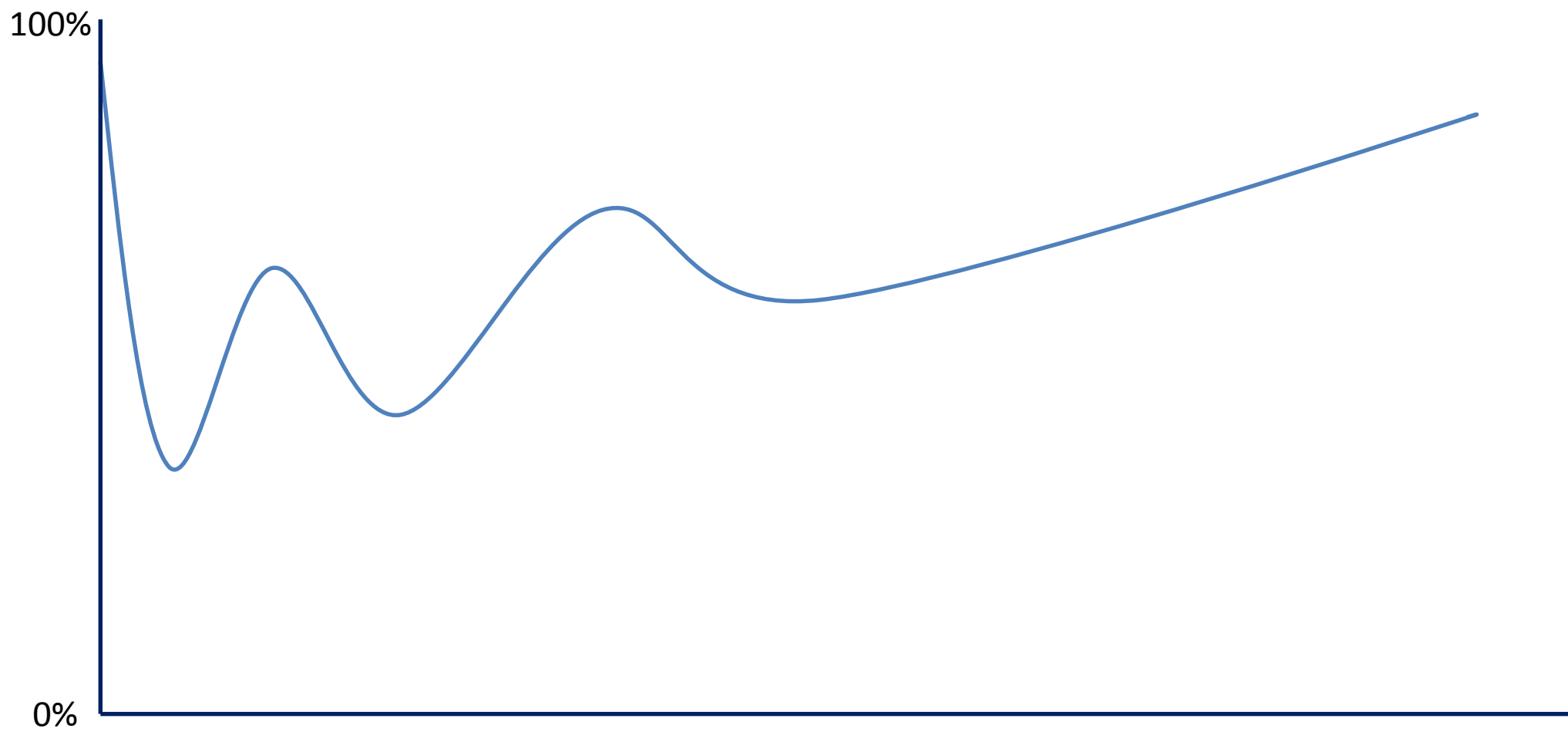
Fatigue

- » Assess: how much they are doing?
- » Treat:
 - Adequate rest
 - Adequate fluids
 - Adequate nutrition
 - Help patients adjust activities



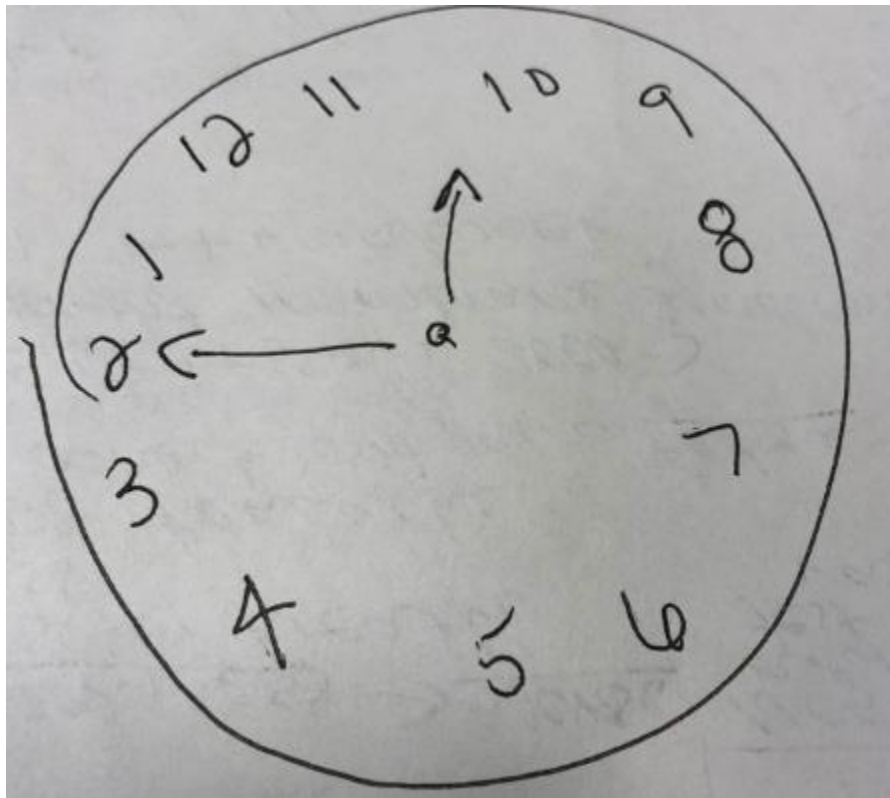
Rest and Pace

Trajectory of COVID-19



Brain Fog

» Assess



Rapid Cognitive Screen (RCS)

Name _____ Age _____

Is the patient alert? _____ Level of education _____

1. Please remember these five objects. I will ask you what they are later.
[Read each object to patient using approximately 1 second intervals.]

Apple Pen Tie House Car

Please repeat the objects for me. [If patient does not repeat all 5 objects correctly, repeat until all objects are recalled correctly or up to a maximum of 2 times.]

2. [Give patient pencil and the blank sheet with clock face.]
This is a clock face. Please put in the hour markers and the time at ten minutes to eleven o'clock.

____/2 (points) Hour markers okay
____/2 (points) Time correct

[When scoring, give full credit for all 12 numbers. If the patient puts only ticks on the circle, prompt them once to put numbers next to those ticks for full credit. Do not repeat the time. When scoring the correct time, make sure that the minute hand points at the 10 and the hour hand points at the 11.]

3. What were the five objects I asked you to remember?

____/1 (point) Apple
____/1 (point) Pen
____/1 (point) Tie
____/1 (point) House
____/1 (point) Car

4. I'm going to tell you a story. Please listen carefully because afterwards, I'm going to ask you about it.

Jill was a very successful stockbroker. She made a lot of money on the stock market. She then met Jack, a devastatingly handsome man. She married him and had three children. They lived in Chicago. She then stopped work and stayed at home to bring up her children. When they were teenagers, she went back to work. She and Jack lived happily ever after.

What state did she live in?

____/1 (point) Illinois

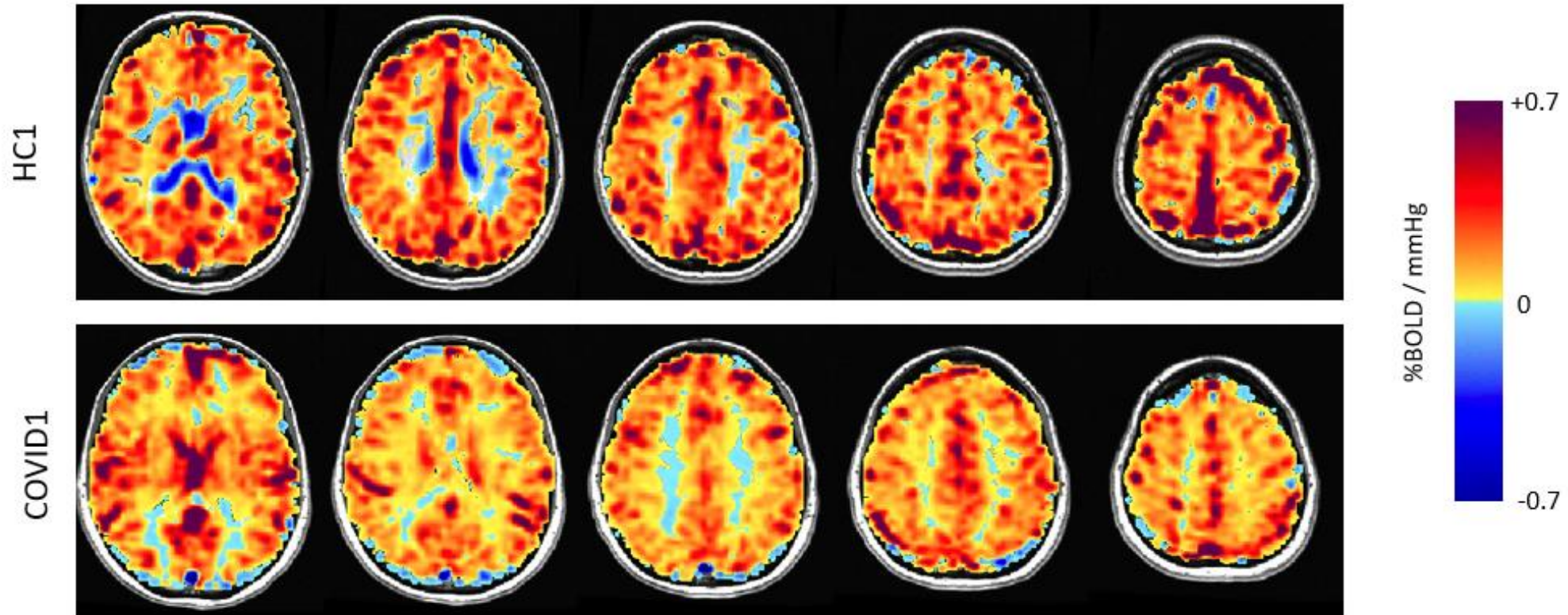
[Do not repeat the story but do make sure the patient is paying attention the first time you read it to them. Do not prompt or give hints. The answer of "Chicago" as the state she lives in gets no credit but you may prompt them once by repeating the question when "Chicago" is given as the answer.]

____ Total Score [0-10 points]

SCORING
8-10..... Normal
6-7..... Mild Cognitive Impairment
0-5..... Dementia

Brain Fog

CVR step



CVR step for one representative healthy control (HC1, 1st row) and one COVID patient (COVID1, second row). HC1 and COVID1 were chosen such that their CVR magnitude was very close to the average of the group they belonged to. The average gray matter CVR for the group of 48 HC and the group of 13 COVID patients was respectively 0.20 ± 0.03 and 0.17 ± 0.05 %/mmHg. This difference was significant ($p < 0.05$).

[nature](#) > [scientific reports](#) > [articles](#) > article

Article | [Open Access](#) | [Published: 12 July 2022](#)

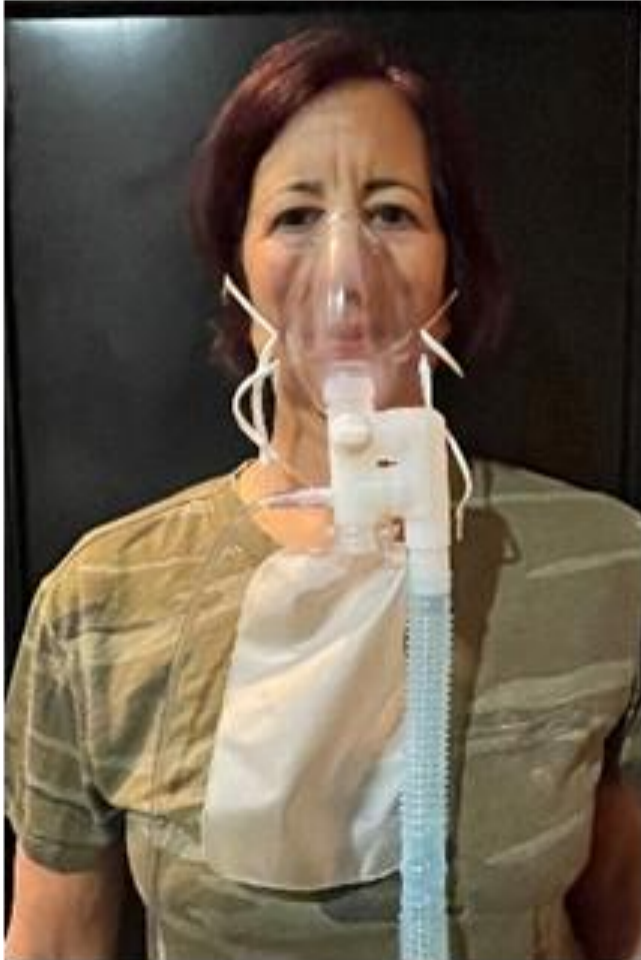
Hyperbaric oxygen therapy improves neurocognitive functions and symptoms of post-COVID condition: randomized controlled trial

[Shani Zilberman-Itskovich](#), [Merav Catalogna](#), [Efrat Sasson](#), [Karin Elman-Shina](#), [Amir Hadanny](#), [Erez Lang](#), [Shachar Finci](#), [Nir Polak](#), [Gregory Fishlev](#), [Calanit Korin](#), [Ran Shorer](#), [Yoav Parag](#), [Marina Sova](#) & [Shai Efrati](#) 

[Scientific Reports](#) **12**, Article number: 11252 (2022) | [Cite this article](#)

48k Accesses | **1** Citations | **889** Altmetric | [Metrics](#)

Hi-OX_{SR}



Phase 1

- » 4 weeks from acute infection
- » 14 days of twice daily 30min treatments
- » Followed for 1 month after

Email: CANCOV@uhn.ca

Headaches

» Assess:

- Type of headache (?migraine, tension-type)
- Examine for HTN, head and neck
- Is it relieved with ibuprofen or acetaminophen?

» Treat:

- Review caffeine, alcohol, THC, other meds and other triggers
- adequate rest
- gabapentin
- amitriptyline
- if migraine, consider a low dose ARB

Shortness of Breath

» Assess:

- Prior lung disease
- Examine
- (CXR, PFTs, 2D-Echo)

» Treat:

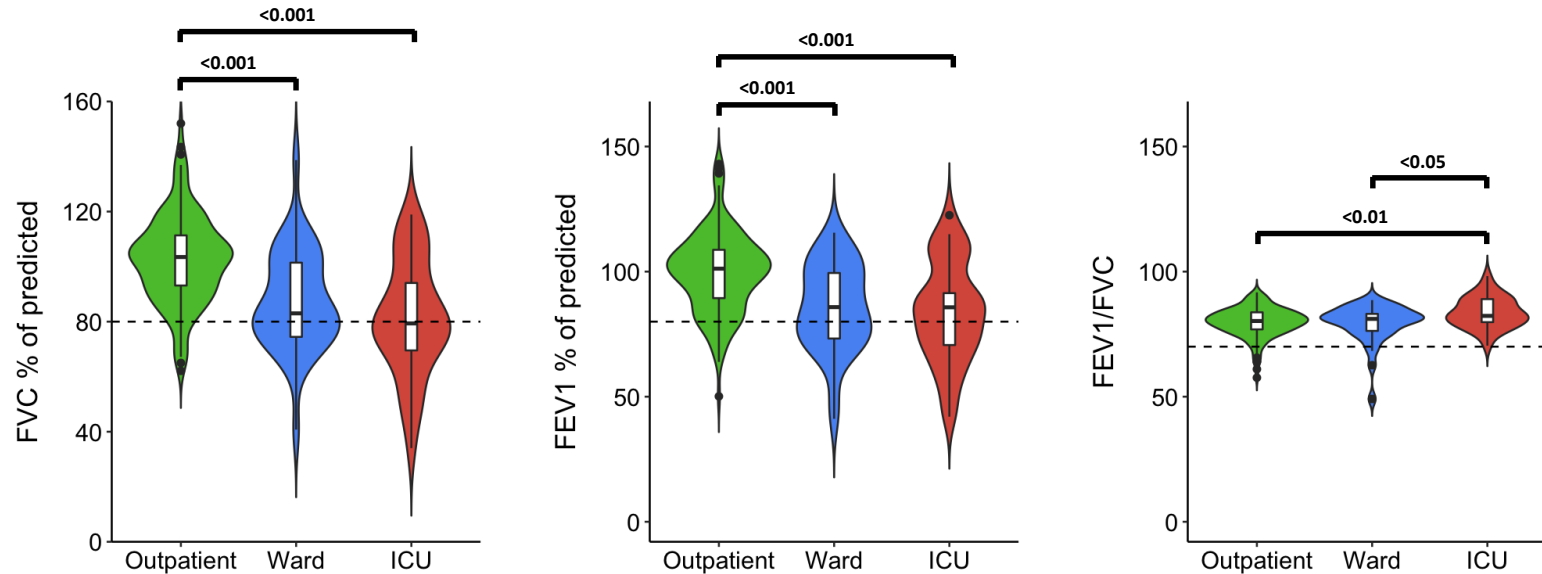
- Breathing exercises



Spirometry outcomes 6 months post-COVID-19



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Normal reference values

Quanjer et al., 2012

(Used Mixed/Other equation for all patients while waiting for Ethnicity data from CanCOV)

Outpatient=150, Ward=33, ICU=33

- A. Many patients have abnormally low FVC and FEV1, suggesting a primary restrictive defect
- B. FVC and FEV1 are significantly worse in ward and ICU patients compared to outpatients

Post-Viral Cough/Sinus Congestion

» Assess

» Treat:

– Steroid inhalers

– Steroid nasal sprays



Tachycardia/Palpitations

- » Assess:
 - Timing of symptoms
 - Orthostatic Vitals (Do they have POTS or IST?)
 - ECG, Holter

- » Treat:

- If POTS:

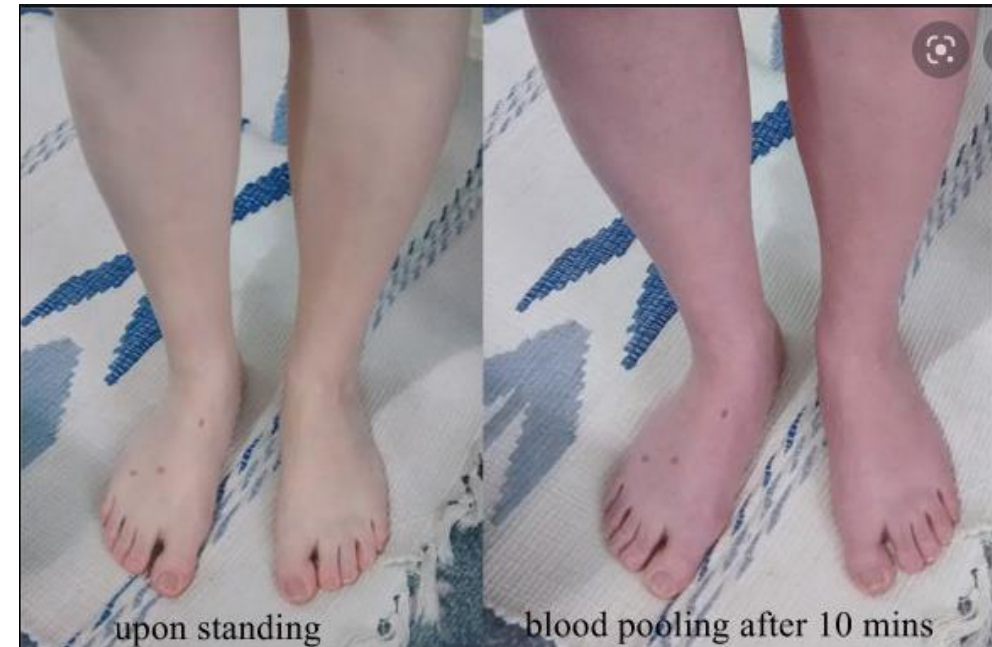
- Fluids
 - Salts
 - Rest
 - Compression stockings

- Meds:

- Ivabradine
 - betablockers
 - florinef
 - midodrine

REST!!!

Do NOT
Over
Investigate!

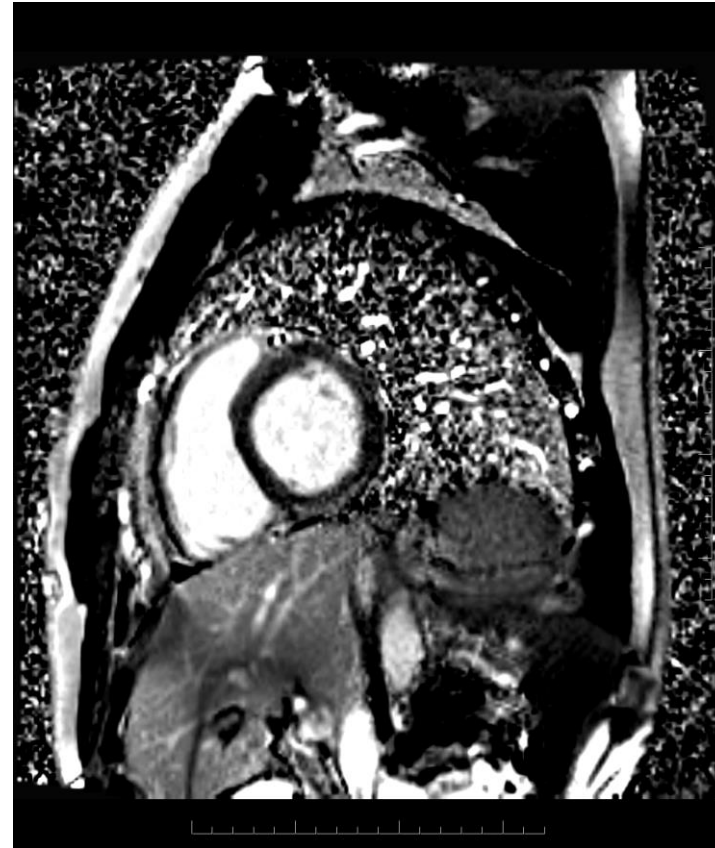
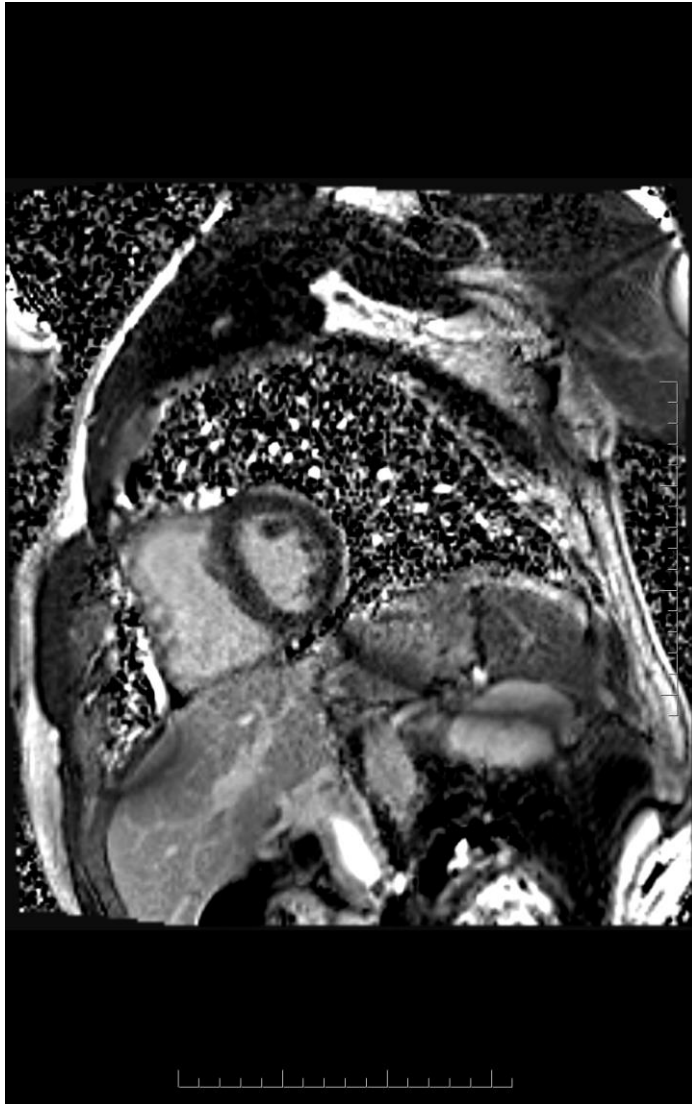


Canadian Cardiovascular Society guidance

Table 3. Suggested treatments of cardiac-related complications of Long COVID-19

Diagnosis	Possible Treatments
Established cardiovascular disease	Continue with guideline-based goal-directed therapy
Myopericarditis	Nonsteroidal anti-inflammatory drug, colchicine
Cardiac dysautonomia (orthostatic hypotension, persistent sinus tachycardia, Postural Orthostatic Tachycardia Syndrome-like syndrome)	Hydration, salt supplementation, compression garments Selective use of pharmacotherapies, including midodrine, beta blockers, ivabradine

Cardiac MRI



WORK
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Summary

- 1) Post COVID Condition is a real multisystem physical condition with mental health consequences
- 2) Lots of exciting research (pathophysiology, treatments etc)
- 3) There are interventions for Long COVID symptoms

The RECLAIM platform RCT for Long COVID

- » REcovering from
- » COVID-19
 - ❖ Residual virus / viral particles
 - ❖ Inflammation
 - ❖ Immune dysregulation
 - ❖ Endothelial dysfunction
 - ❖ Mitochondrial dysfunction
- » Lingering symptoms
- » Adaptive
- » Integrative
- » Medicine



G. Raymond Chang
Complex Medicine Teaching Clinic



The RECLAIM Trial



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Facebook.com/CANCOV



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CANCOV.net



RECLAIM@uhn.ca



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ReclaimTrial.ca



Opinion

May 26, 2022 by Jennifer Hulme

Long COVID – a public health crisis taking out women at the height of their lives

21 Comments

Share on:



After getting vaccinated, I was no longer afraid of COVID-19. I am an emergency physician at a downtown academic hospital in Toronto. Acute infection with COVID now likely would be no more than a cold or flu for me.

AUTHORS



Jennifer Hulme
Contributor

Jennifer Hulme is an emergency physician and health systems researcher in Toronto.

Learning objectives: what long haulers want you to know

1. Appreciate the breadth and severity of long COVID symptoms
2. Know how to screen for and treat POTS in family practice
3. Have an approach to prescribed medications and supplements that *may* be helpful to your patients.
4. Know where to send your patients for information on resting and pacing, breathing exercises, fasting

Your colleagues are biting the dust

April 1: COVID infection.

April 18: Long COVID

May 11 COVID clinic: sat 96%, elevated BP, HR 110 walking, restrictive pattern on PFTs. Plan to rest and pace, off work.

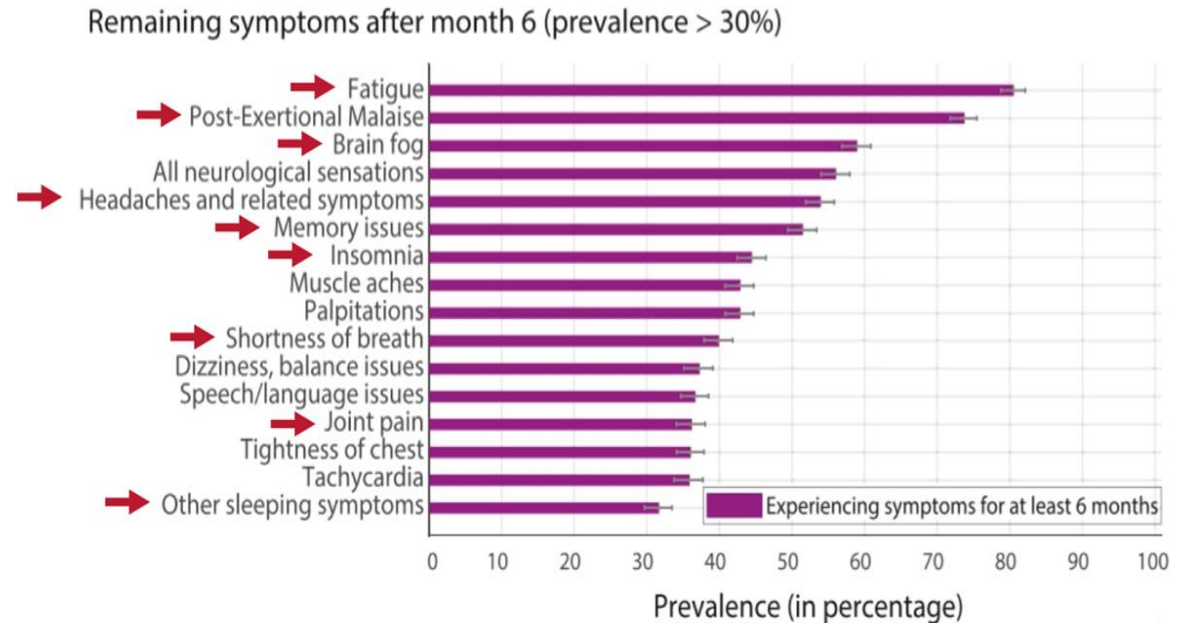
End of May: Low dose naltrexone.

June: SSRI

Late June: Long COVID physio dx POTS

July: Paxlovid → SNHL and tinnitus → ENT / family physician → HBOT July-August

Long COVID Symptoms



(Davis et al., 2021)



University of Colorado
Anschutz Medical Campus

UW Medicine
SCHOOL OF MEDICINE



Diagnosis and management of postural orthostatic tachycardia syndrome

Satish R. Raj, Artur Fedorowski and Robert S. Sheldon

CMAJ March 14, 2022 194 (10) E378-E385; DOI: <https://doi.org/10.1503/cmaj.211373>

Diagnostic criteria for postural orthostatic tachycardia syndrome

All of the following criteria must be met:

- Sustained heart rate increase of ≥ 30 beats/min (or ≥ 40 beats/min if patient is aged 12–19 yr) within 10 minutes of upright posture.
- Absence of significant orthostatic hypotension (magnitude of blood pressure drop $\geq 20/10$ mm Hg).
- Very frequent symptoms of orthostatic intolerance that are worse while upright, with rapid improvement upon return to a supine position. Symptoms vary between individuals, but often include lightheadedness, palpitations, tremulousness, generalized weakness, blurred vision and fatigue.
- Symptom duration ≥ 3 months.

Suggested initial approach to treatment of patient with postural orthostatic tachycardia syndrome

- Nonpharmacological treatments
 - All started at initial visit
 - Water 3 L/d
 - Salt 5 mL/d (2 tsp/d)
 - Waist-high compression garments
- Pharmacological treatments
 - May start at initial visit if symptoms are severe
 - If standing heart rate very high: propranolol 10–20 mg, 4 times per day
 - If standing heart rate very high and β -blocker is contraindicated: ivabradine 5 mg 2 times per day
 - If standing heart rate is not too high and blood

What can you try to help your patients recover?

Pacing/Post exertional symptoms: [self management](#) resources, support from [LC physio](#)

Inflammation/antioxidants: SSRIs (sigma-1 receptor agonists, dec. IL-6), NAC 600 mg, statin 5-10 mg vs red yeast rice 300 mg, Low Dose Naltrexone <4.5mg/day and Low Dose Aripiprazole (ie 0.25mg /day), [diet](#), cryotherapy

Micro-clotting/ endothelial damage, SFN: ASA 81 mg, natto/strepto/lumbrokinase, [resveratrol](#), [HBOT](#)

Dysautonomia (2/3 of LC): salt/fluid, compression stockings, beta blocker / ivabradine, [breathing training](#) and [Qigong](#), small amount of recumbent exercise.

Mast cell activation syndrome: Quercetin 500 mg, Blexitin (H1), Famotidine (H2), [low histamine diet](#)

Promote autophagy ([viral persistence](#) vs debris): [fasting](#), probiotics, vit D 2000 IU, Lysine 1 g daily

Mitochondrial dysfunction: Niacin (flush) 50 mg - boost cellular NAD+; B complex; CoQ-10



Family physician support for brain fog, mood, HA, insomnia

- **Strong evidence** for SSRI for any mood changes post-covid.
- Anxiety and depression post-COVID complications is **real**, and treatable. Prevalence of **new onset anxiety and depression post COVID is high, 10-30%**
- Long covid associated with **profound neuroinflammation**
- Anecdotes of complete resolution of **brain fog** with SSRI
- **Treat Insomnia and headaches:** Magnesium, melatonin, amitriptyline 25 mg QHS, botox
- **Support groups:** **Body Politic COVID19 support group**, **blogs**, recoverfromlongcovid.com

REUTERS® World Business Legal Markets Breakingviews Technology Investigation

September 9, 2022
10:04 AM GMT-4
Last Updated 6 days ago


Future of Health

Long COVID's link to suicide: scientists warn of hidden crisis

By Julie Steenhuisen and Jennifer Rigby

8 minute read

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Nic

00:21 / 04:33

CC



The Long Covid Rehab Challenge

In the presence of post-exertional malaise, POTS and other forms of dysautonomia it's very difficult for patients to moderate activity without getting stuck in a crash/recovery cycle.

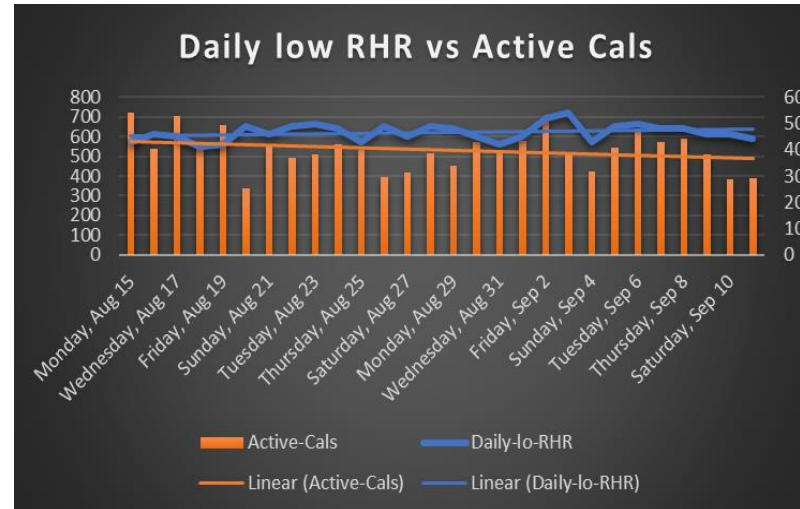
Two behaviour patterns (1) crash/recovery cycle (2) Total shutdown of activity. Neither lead to improvement.

Cornerstone Physiotherapy's Solution

Objective Measurement
(symptoms, biometric data and activity)



Data Analysis and Monitoring



Telehealth Access
(anyone in Ontario)



Wearable tech Advantage

- Monitors response to intervention
- Enables precise prescription and incremental progression
 - Quantifies change over time
- Big Disadvantage - Requires financial resources for private physio

Lessons from 2 Years of Long Covid Rehab

DO

- ▶ Identify POTS, PEM and other forms of dysautonomia
- ▶ Validate severity of fatigue
- ▶ Refer to long covid specific physio program (when possible)
- ▶ Educate on recovery habits (nutrition, hydration, sleep, alcohol, smoking)
- ▶ Advocate for accessing funding for treatment (LTD, employers etc)
- ▶ Provide self-management resources

DON'T

- ▶ Push through fatigue - It WILL get worse
- ▶ Treat as though patient is simply deconditioned
- ▶ “Chase” pain, fatigue and weakness with an MSK framework

What Should Rehab Look Like?

1. Identify syndrome/symptom patterns (POTS, other Dysautonomia, ME/CFS).
2. Stabilize symptoms by reducing activity and developing good recovery habits.
3. Tailor intervention to the symptom patterns from (1)
 - ▶ Physical, cognitive or orthostatic pacing
 - ▶ Appropriate structured exercise
 - ▶ Autonomic training
 - ▶ Pain management strategies where appropriate
 - ▶ INCREMENTAL progression while monitoring response
4. Change only one parameter at a time. (total activity, cognitive load, exercise frequency, duration, intensity, modality, position etc.)

Patient Facing Resources

General Info

<https://cornerstonephysio.com/resources/long-covid/>

Dyspnea

<https://www.youtube.com/watch?v=5ux5rwDQT8U>

Sleep

https://youtu.be/7K9BAO_dlgS

Pacing and Fatigue

<https://youtu.be/j8McWrSUVAU>

<https://cornerstonephysio.com/resources/controlling-long-covid-symptoms-with-pacing/>

Anosmia (info and treatment)

<https://cornerstonephysio.com/resources/covid-loss-of-sense-of-smell/>

Long Covid and Dizziness

<https://cornerstonephysio.com/resources/long-covid-dizziness/>

POTS

<https://cornerstonephysio.com/resources/pots-postural-orthostatic-tachycardia-syndrome/>

Brain Fog

<https://cornerstonephysio.com/resources/long-covid-brain-fog/>



www.cornerstonephysio.com

Ph: (416) 595-5353

Fax: (416) 595-5354

Patient Resources for Self-Management

Recovery resources, fact sheets and videos about Post-COVID Condition symptom management:

- BC Health Authority: <http://www.phsa.ca/health-info/post-covid-19-care-recovery>
**** Fact sheets available in multiple languages*
- University Health Network: [COVID-19 Resources for Patients and Families](#)
- Ottawa Hospital: Post-COVID Rehabilitation Self-Management: <https://sway.office.com/ftjIGXmmpt0WLT0x?ref=email>
- World Health Organization (WHO): [Support for rehabilitation: self-management after COVID-19-related illness](#)
- [COVID Long-Haulers Canada](#) (Patient support and advocacy group)

Outpatient Post-COVID Condition rehabilitation programs in Ontario

North Ontario

- Health Sciences North – [Community Care & Rehabilitation](#)
- St. Joseph's Care Group (Thunder Bay) – [Post-COVID-19 Outpatient Clinic](#)

West Ontario

- Halton Healthcare: [Post COVID-19 Syndrome Clinic](#)
- Hamilton Health Sciences Centre – [Regional Rehabilitation Centre](#)
- Hôtel-Dieu Grace Healthcare – [COVID Recovery Program](#)
- [Hotel Dieu Shaver Health and Rehabilitation Centre](#)
- [St. Joseph's Health Care London](#) – Post-acute COVID-19 Program

East Ontario

- [Providence Care Hospital \(Kingston\)](#)
- The Ottawa Hospital – [Rehabilitation Centre](#)

South Ontario

- [Runnymede Healthcare Centre](#)
- Sinai Health System – [Hennick Bridgepoint Hospital](#)
- Toronto Grace Health Centre: [Pulmonary Rehabilitation Clinic](#)
- UHN – [Toronto Rehabilitation Institute \(TRI\)](#)
- Unity Health Toronto – Providence Healthcare: [Outpatient Post-COVID Condition Rehabilitation Program](#)

eConsult

<http://www.otnhub.ca/>



Access to COVID-19 and Post-COVID Condition Advice through eConsult

The Ontario eConsult Service, accessed on the OTNhub and a part of the **Ontario eServices Program**, is a secure web-based tool, that allows physicians and nurse practitioners timely access to specialist advice.

The **Ontario eConsult Service, accessed on the OTNhub.ca**, offers easy and timely access to specialist advice, including questions related to COVID-19 and Post COVID-Conditions.

The following specialties are **now available** through the **BASE™ Managed Specialty option** through the **COVID-19** and **Public Health specialty categories**:

- COVID-19 Infectious Diseases
- COVID-19 Vaccine - Public Health
- COVID-19 Vaccine - Allergy/Immunology
- COVID-19 and Respiriology
- COVID-19 and Autoimmune Disorders
- COVID-19 and Pregnancy
- Post-COVID Condition – Chronic Fatigue Syndrome, Environmental Health Group
- Post-COVID Condition – Internal Medicine
- Post-COVID Condition – Neurology
- Post-COVID Condition - Respiratory Recovery Group
- Post-COVID Condition – Physical Medicine & Rehabilitation

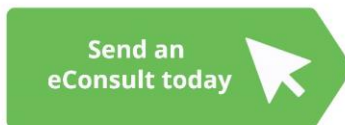
The COVID-19 specialties are the only groups that allow for population-based, non-patient specific clinical questions, in addition to the ability to ask patient-specific eConsult questions.



Check out our guide on sending **Vaccine Allergy questions**

"Even more valuable to have this service during the COVID-19 pandemic and restrictions to regular clinic visits!"

- eConsult user and Primary Care Provider



- Need a refresher on how to submit an eConsult? Watch our [video](#) or contact us at eConsultCOE@toh.ca for support.
- To sign up for eConsult, visit www.otnhub.ca or complete our [Intake Form](#) and a member from our team will assist you.

For more information visit www.eConsultOntario.ca or contact us eConsultCOE@toh.ca.

How to support patients completing disability applications

1. Identify the relevant disability support programs. The [Prosper Benefits Wayfinder](#) produces an individualized list of income supports. [Steps to Justice](#) provides guides to income assistance.

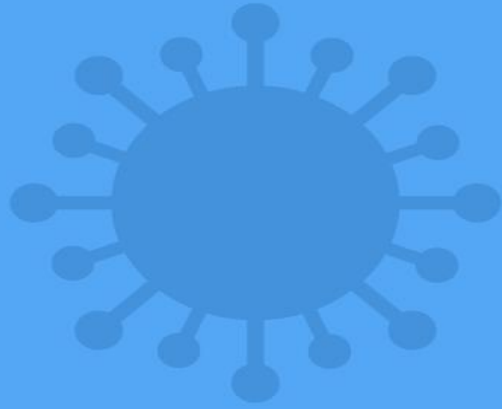
Key programs include:

- a) If missing work: [EI Sickness](#)
 - b) If has private insurance: Short and long term disability
 - c) If there was workplace transmission: [WSIB](#)
 - d) If has a history of workplace contributions: [CPP Disability](#)
 - e) If living at low income: [Ontario Disability Support Program](#) or [Ontario Works](#)
2. Conduct a thorough assessment of symptoms and functional impairments:
 - disability support programs generally look toward impact on day to day life and function as opposed to medical proof of diagnosis.
 3. Engage other supports for complicated cases or where a patient has been denied disability or other income support benefits:
 - a) Community support agencies can guide patients toward benefit programs and help with applications. Search [2-1-1 Ontario](#) for local resources.
 - b) [Legal Aid Ontario](#), [Community Legal Clinics](#), and [Specialty Clinics](#) can help with information and appeals.



COVID-19 Update

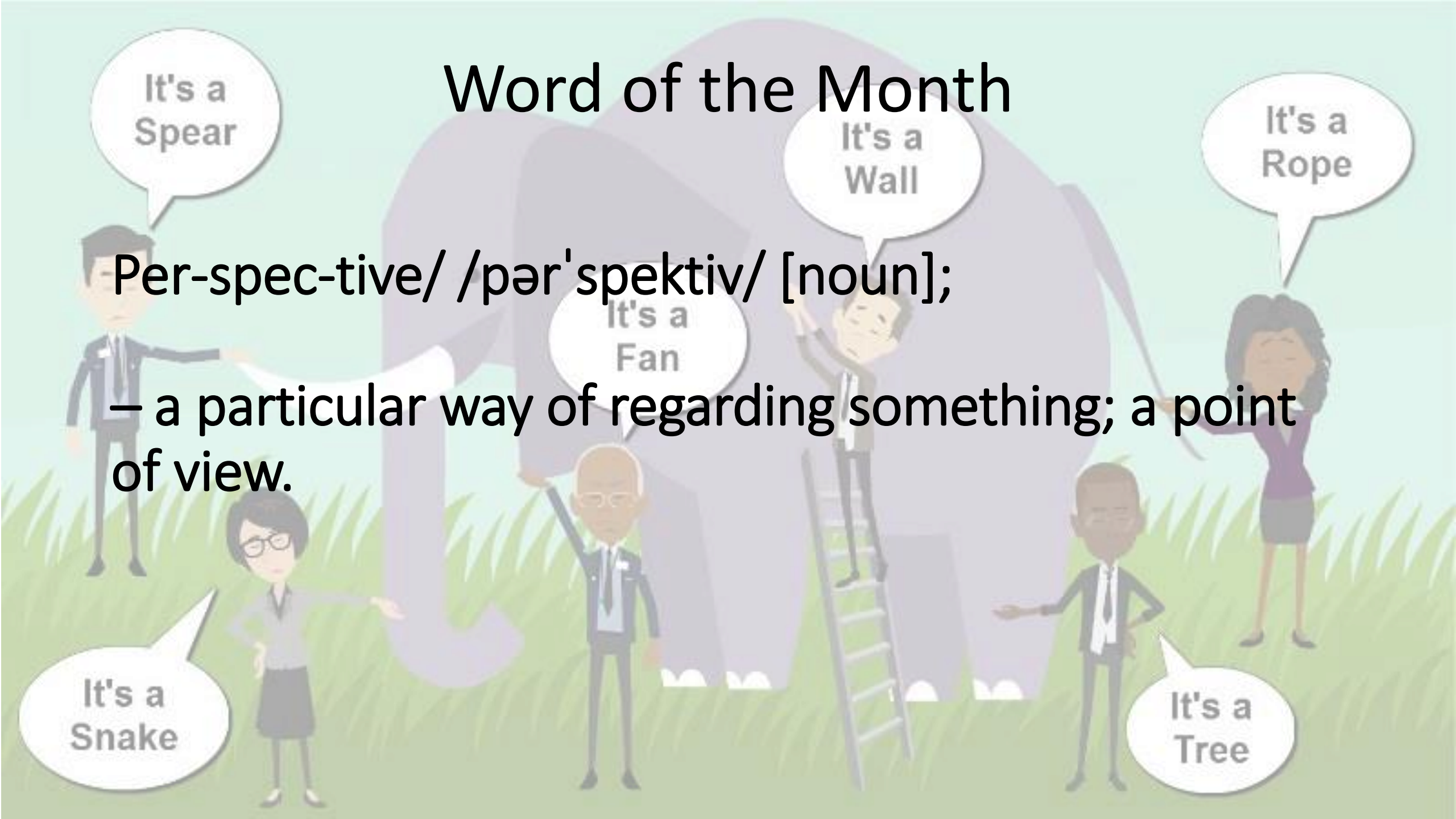
September 15, 2022



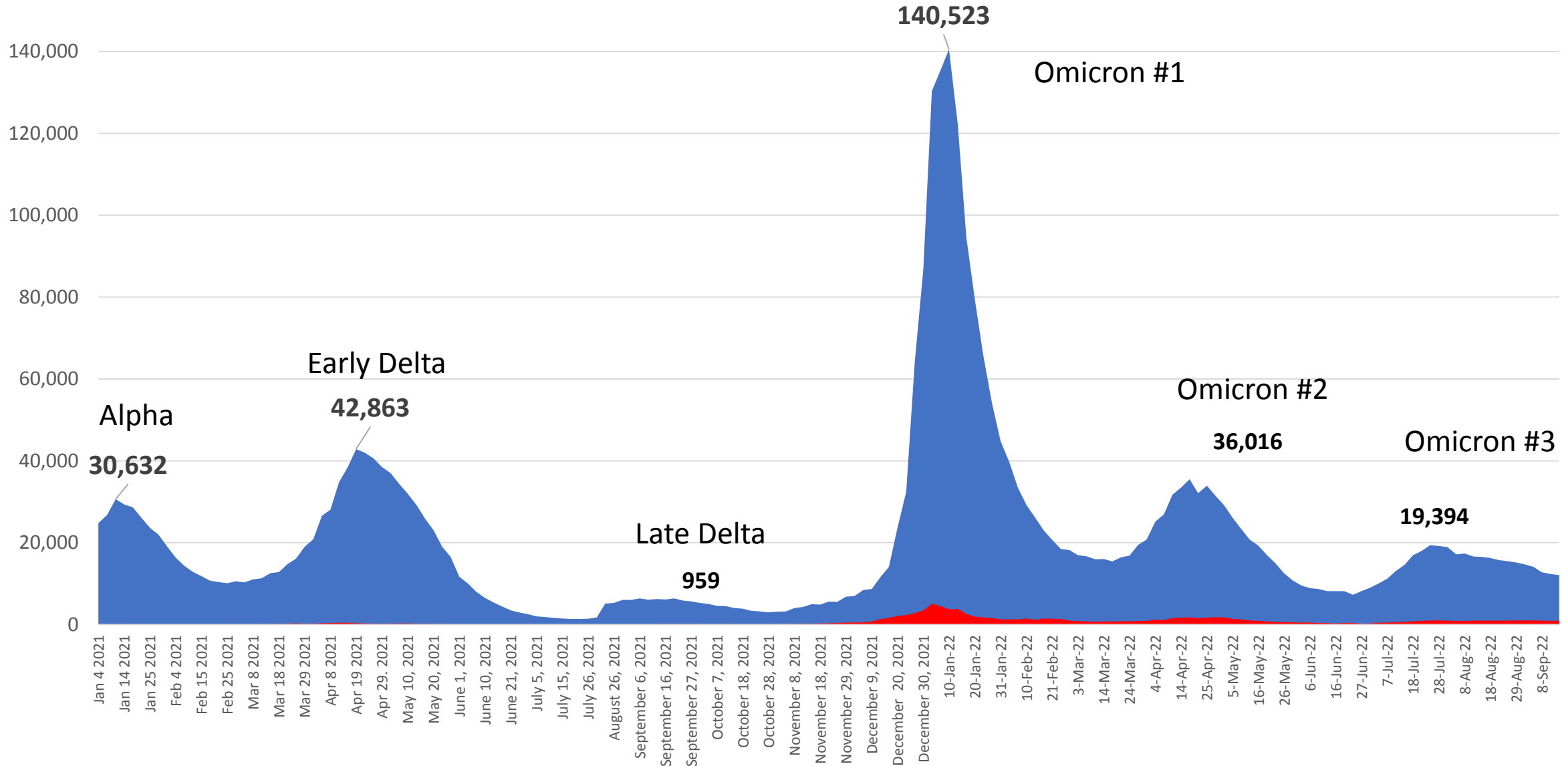
Word of the Month

Per-spec-tive/ /pər'spektiv/ [noun];

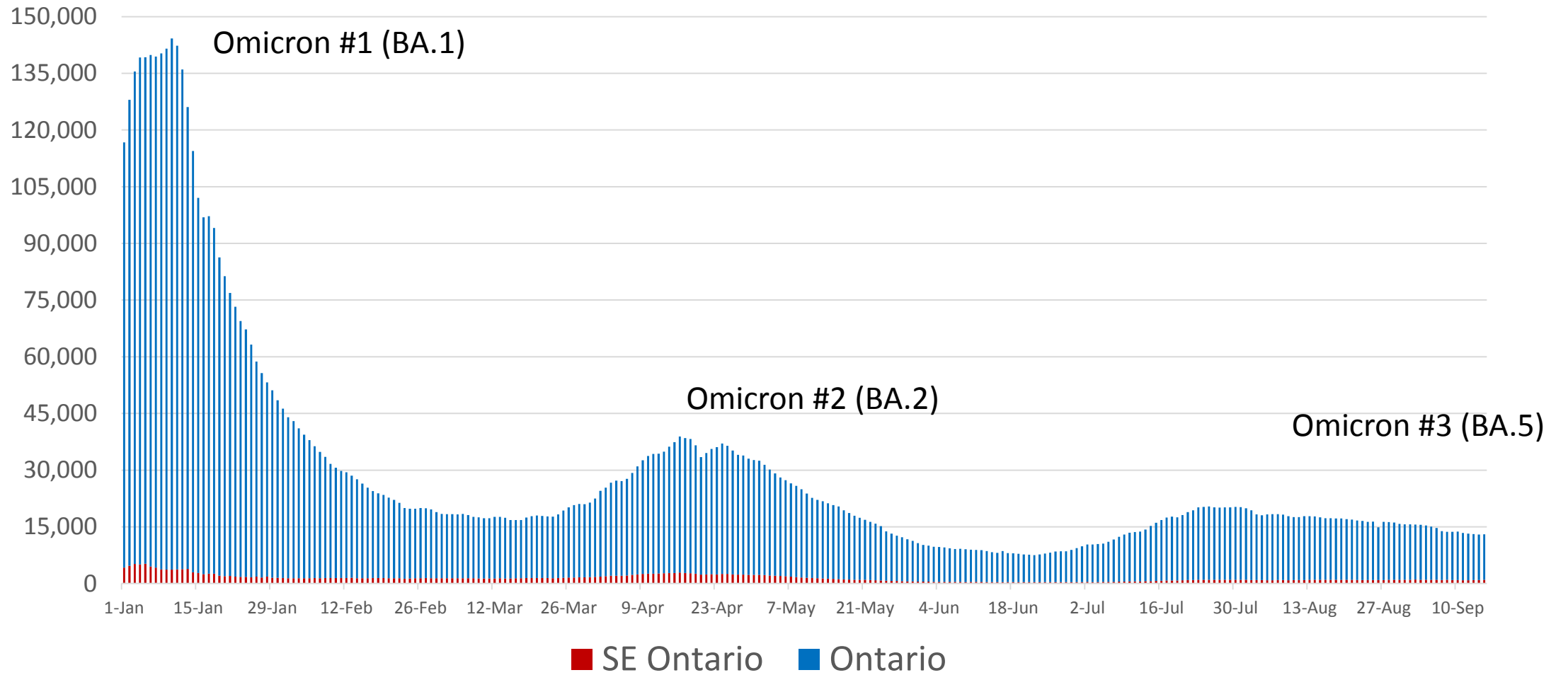
– a particular way of regarding something; a point of view.



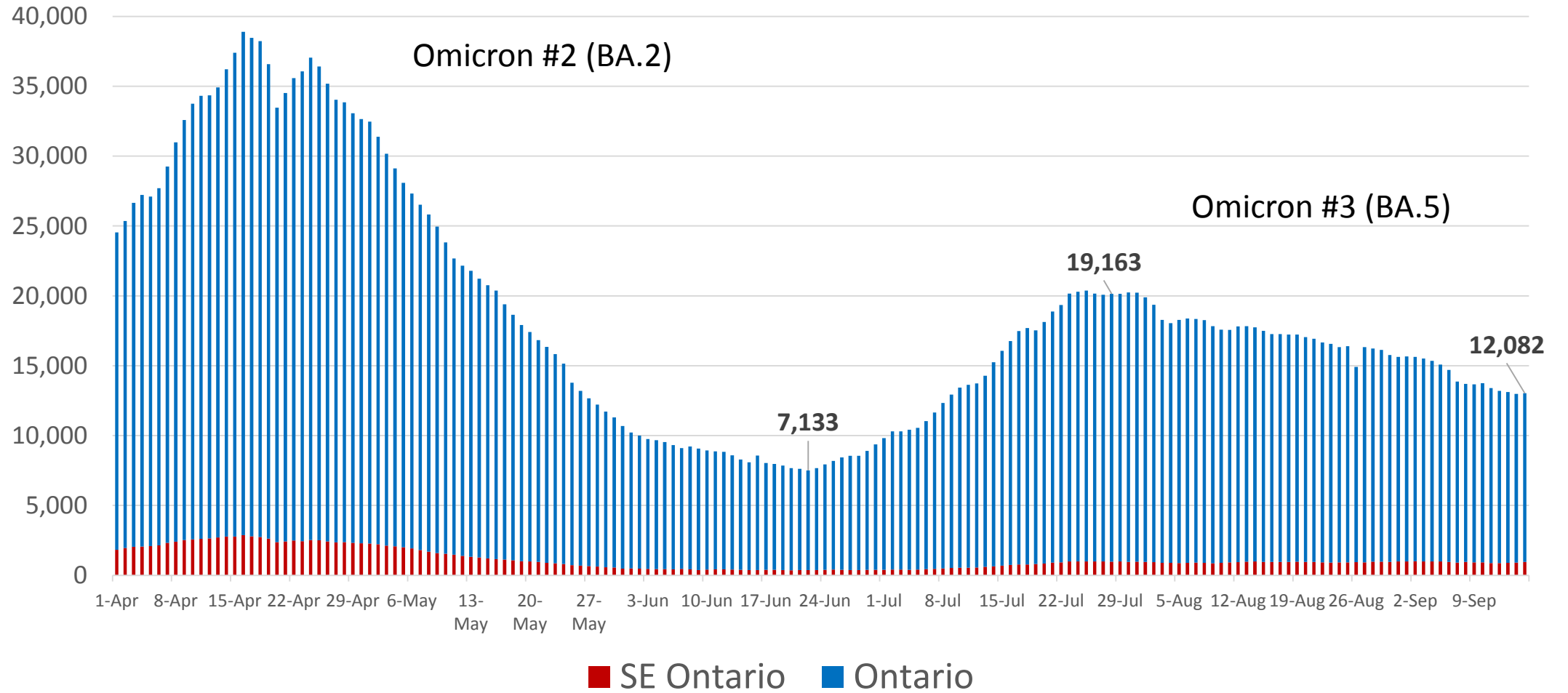
Ontario Active COVID-19 Cases - Jan 2021 - present



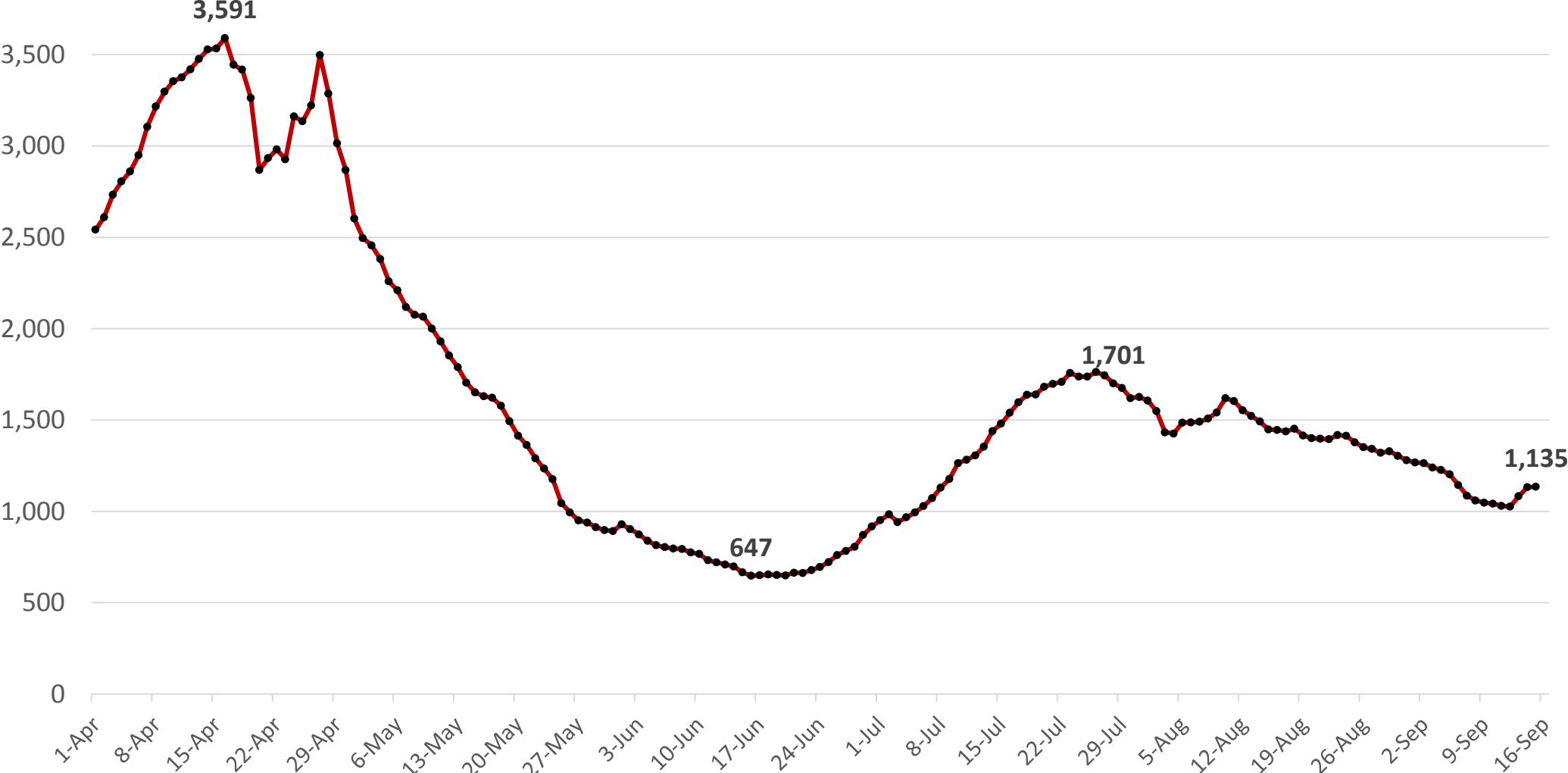
Ontario Active COVID-19 Cases



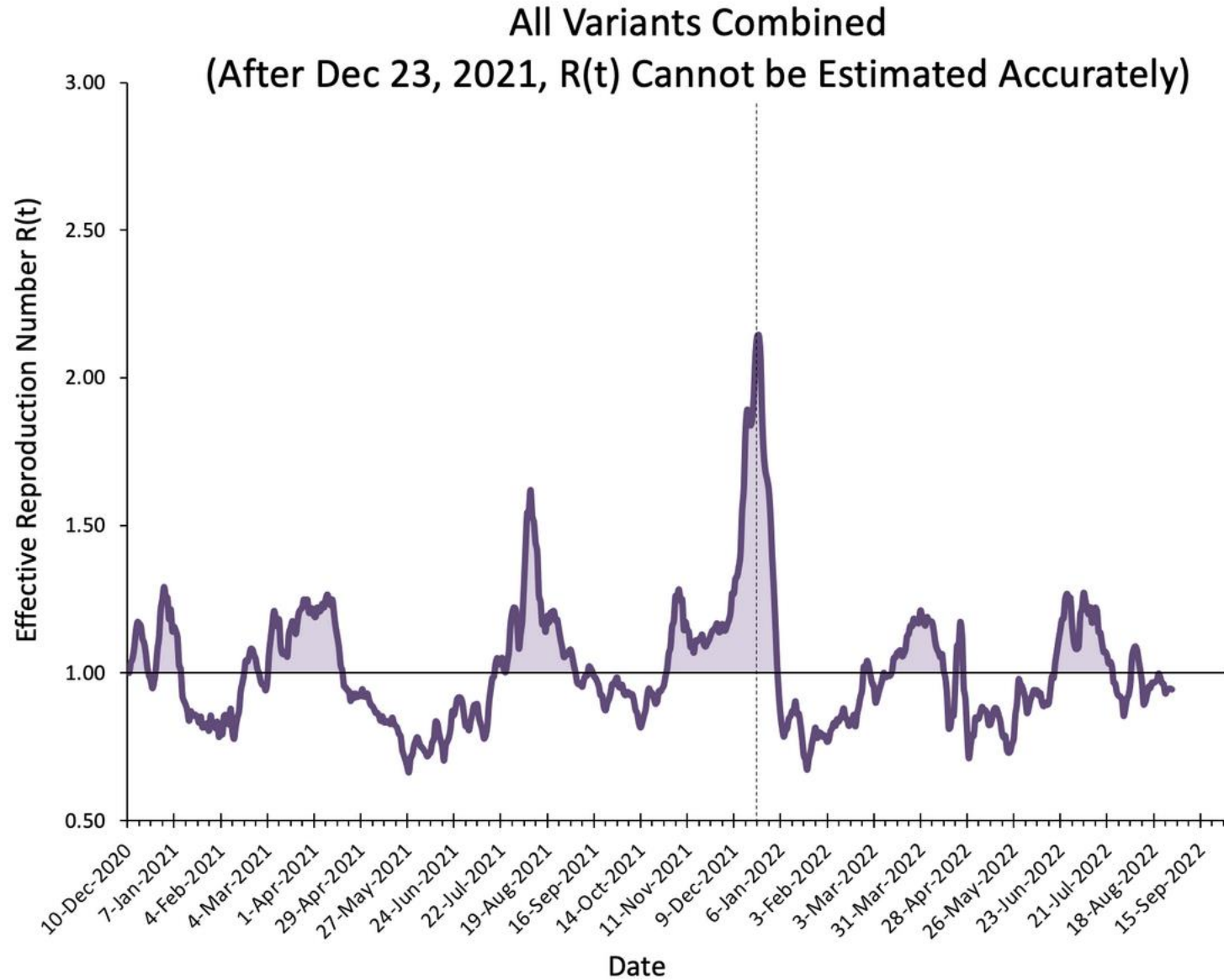
Ontario Active COVID-19 Cases



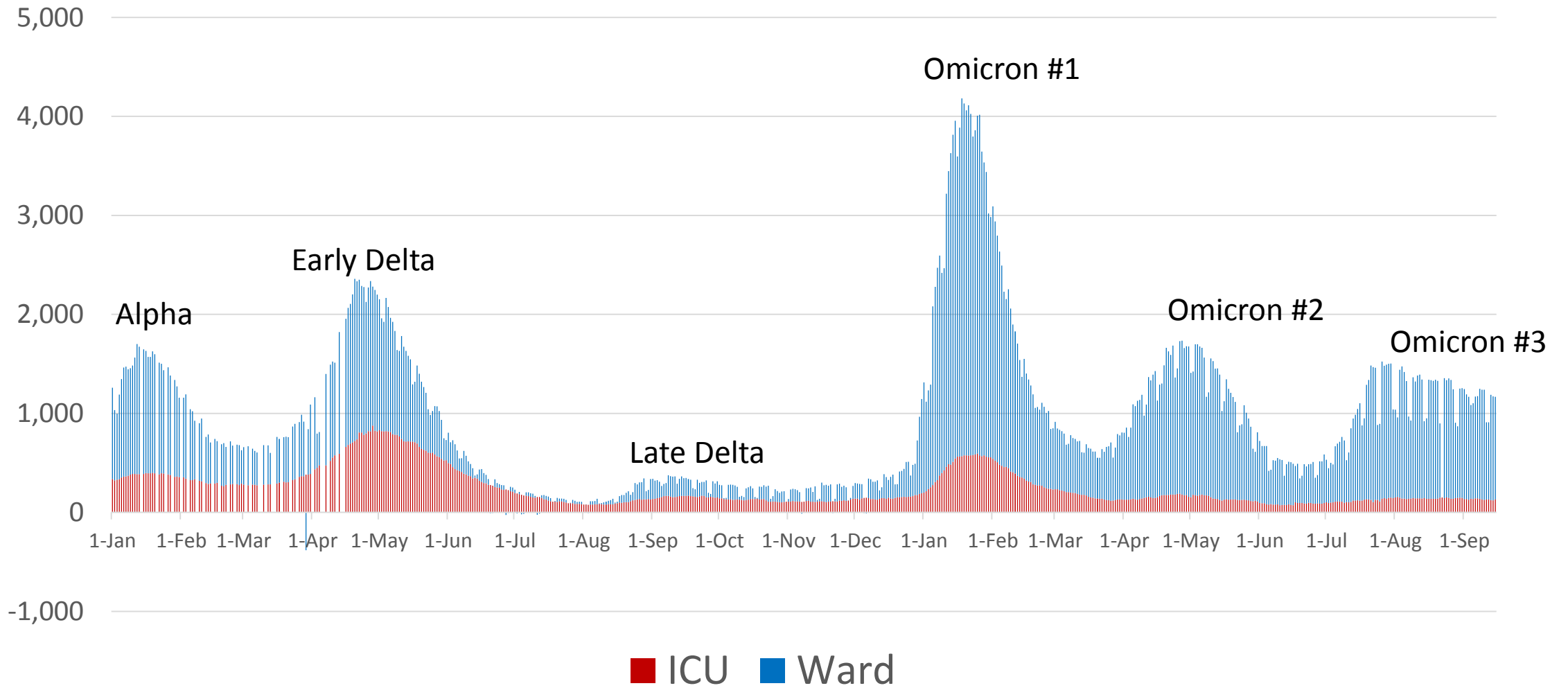
Ontario 7-Day Running Average of New Cases/Day



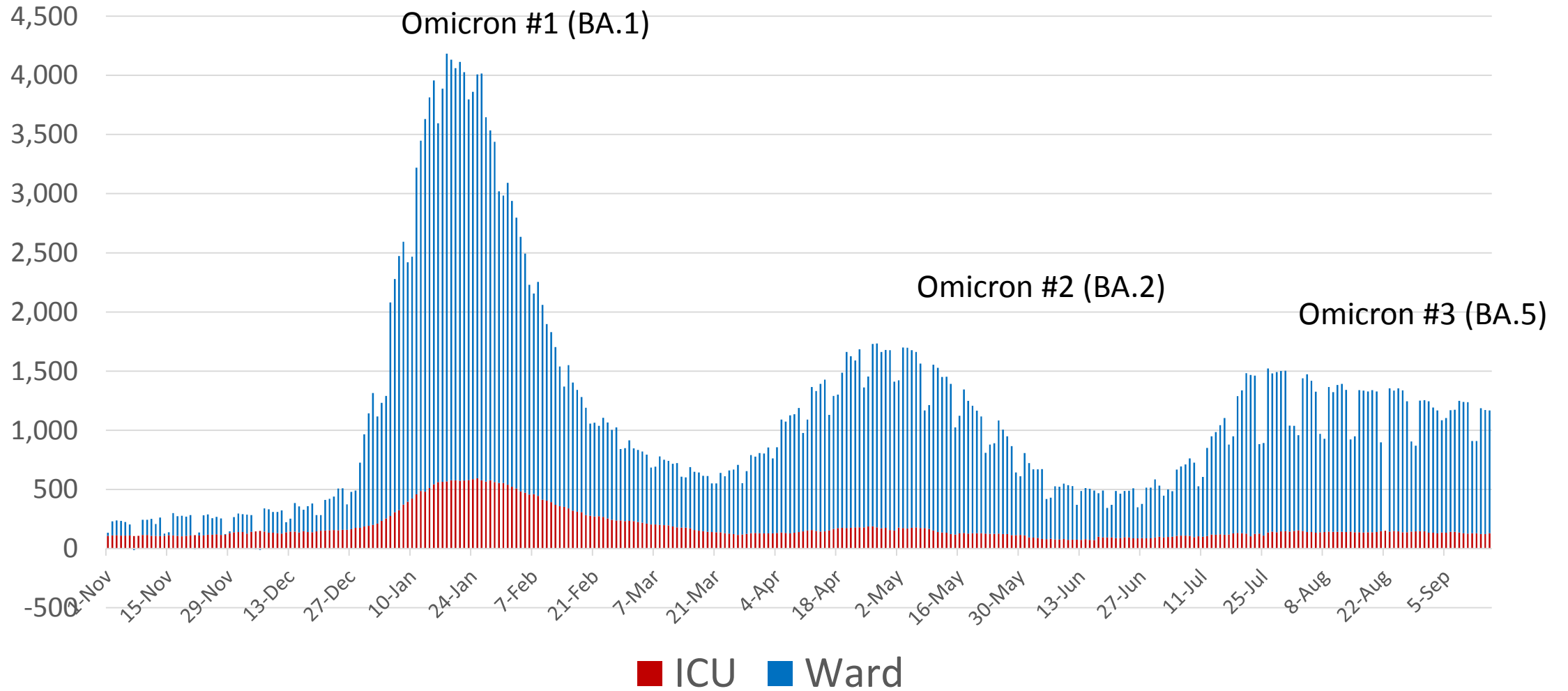
Effective Reproduction Number $R(t)$ in Ontario



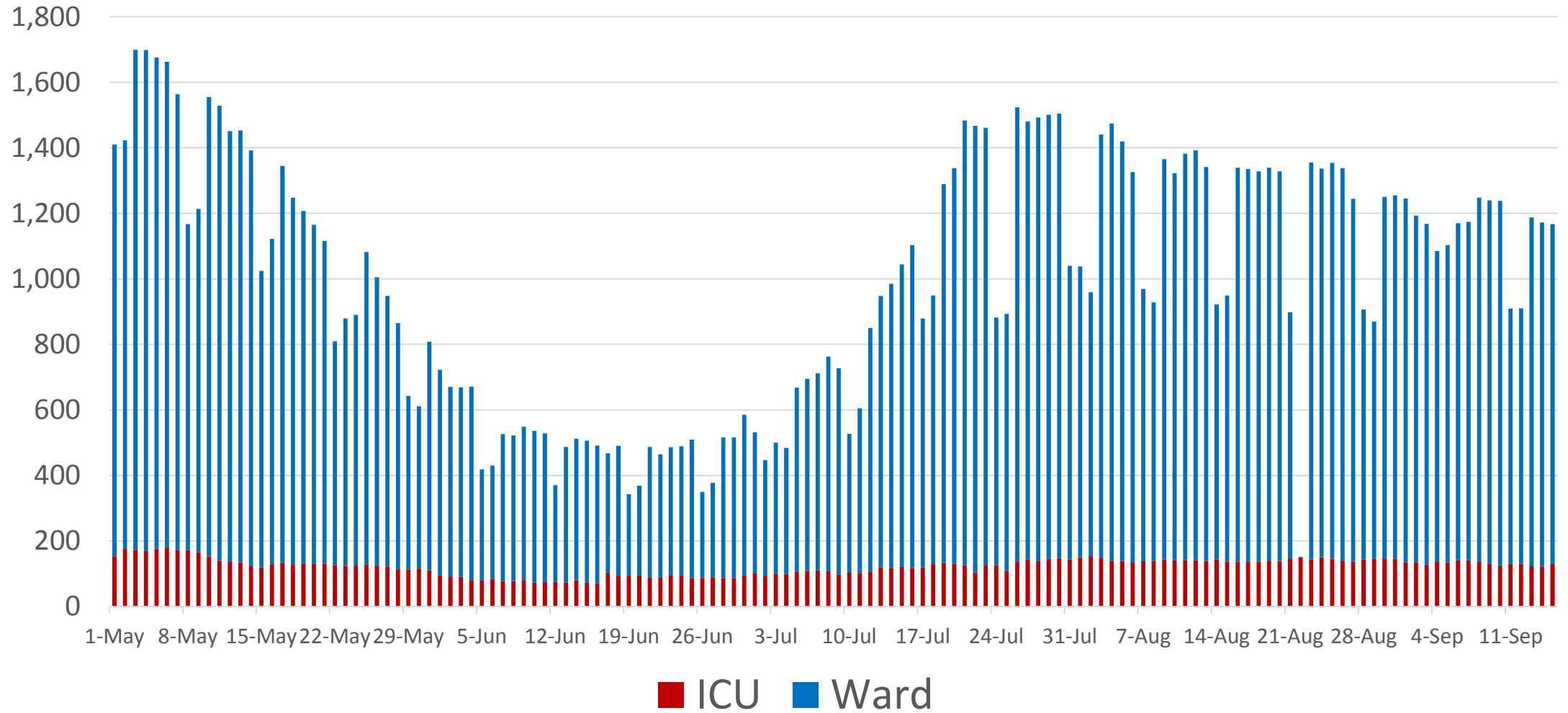
Ontario COVID-19 Hospital Occupancy by Bed Type



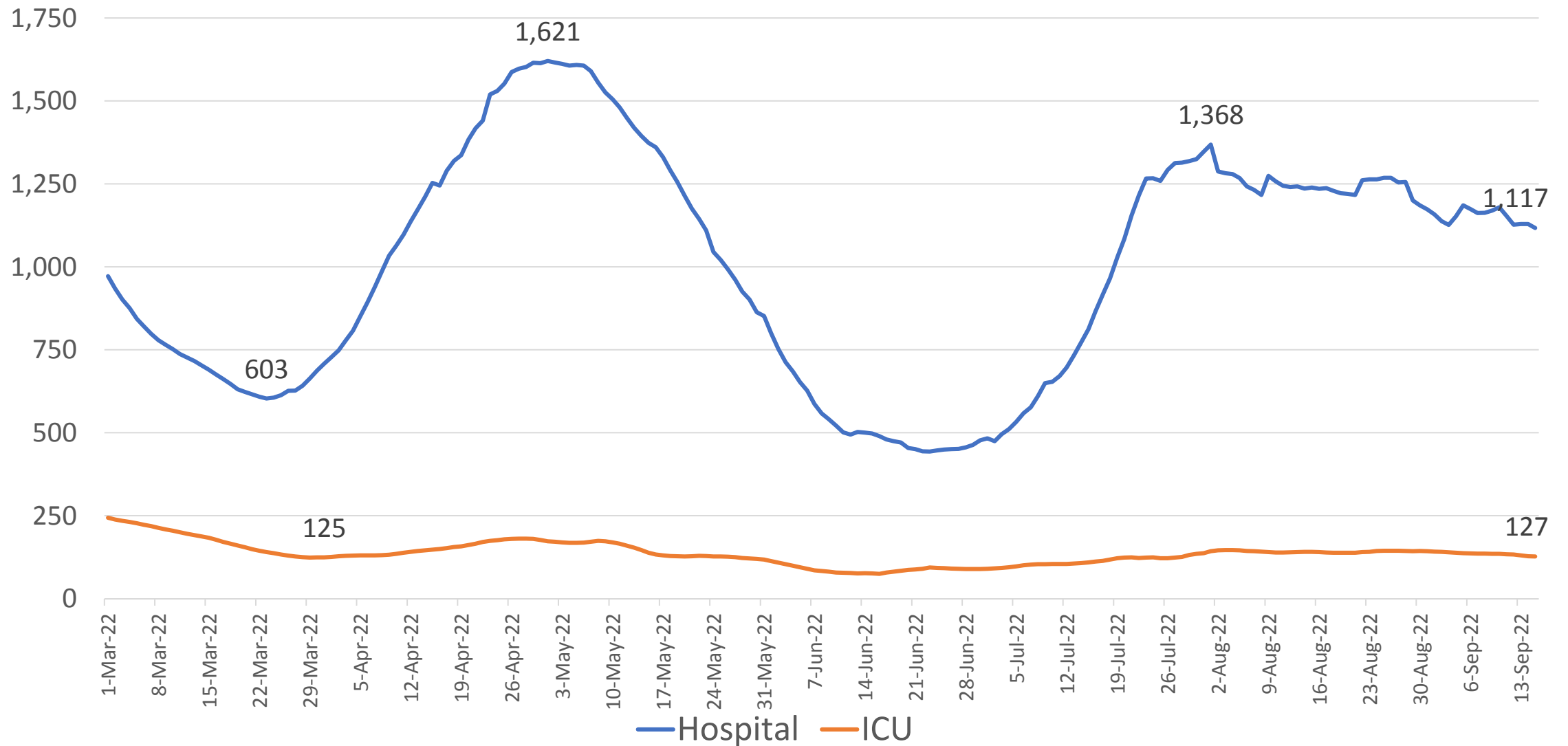
Ontario COVID-19 Hospital Occupancy by Bed Type



Ontario COVID-19 Hospital Occupancy by Bed Type



Smoothed (7-Day) Running Average Ontario COVID-19 Hospital & ICU Occupancy



COVID-19 Surrogate Markers of Community Prevalence



Outbreak numbers



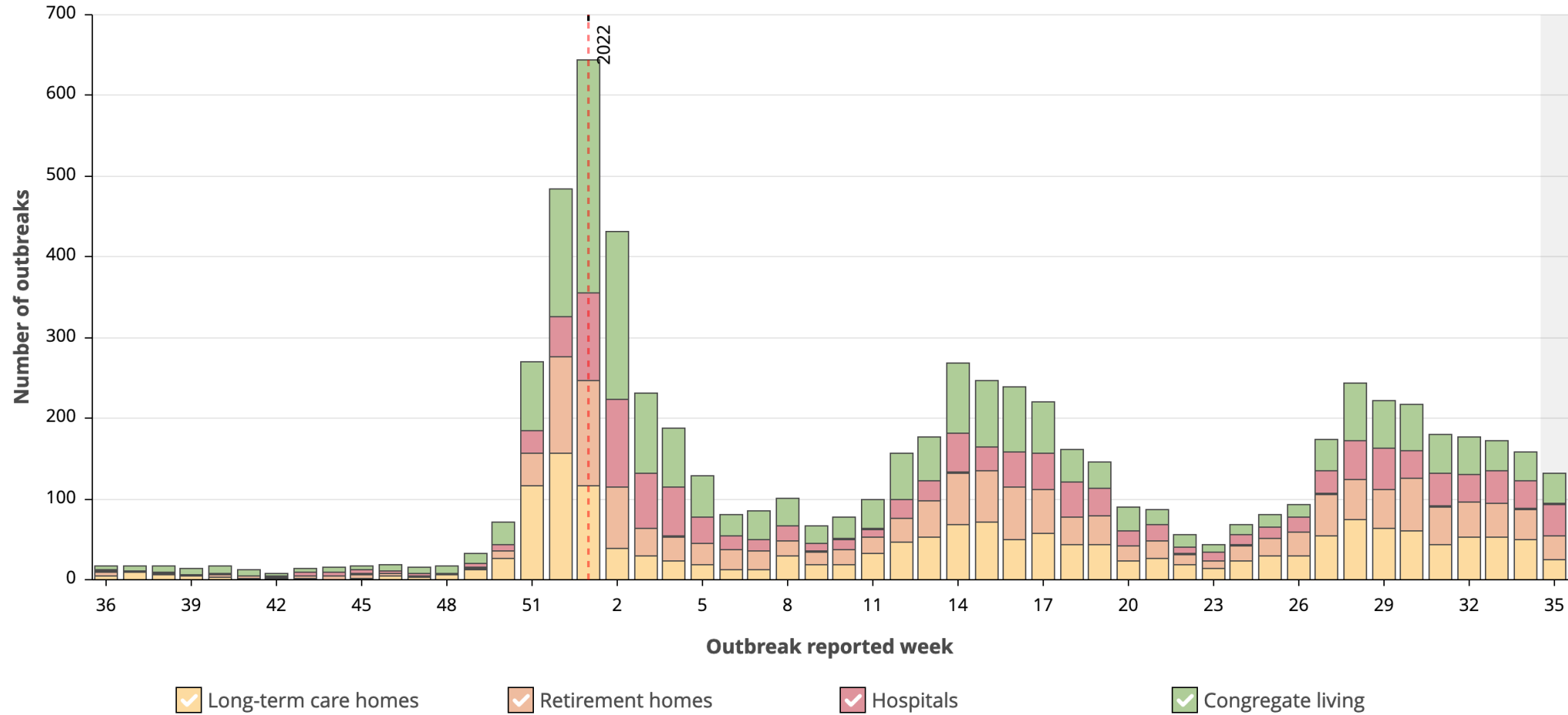
Test positivity



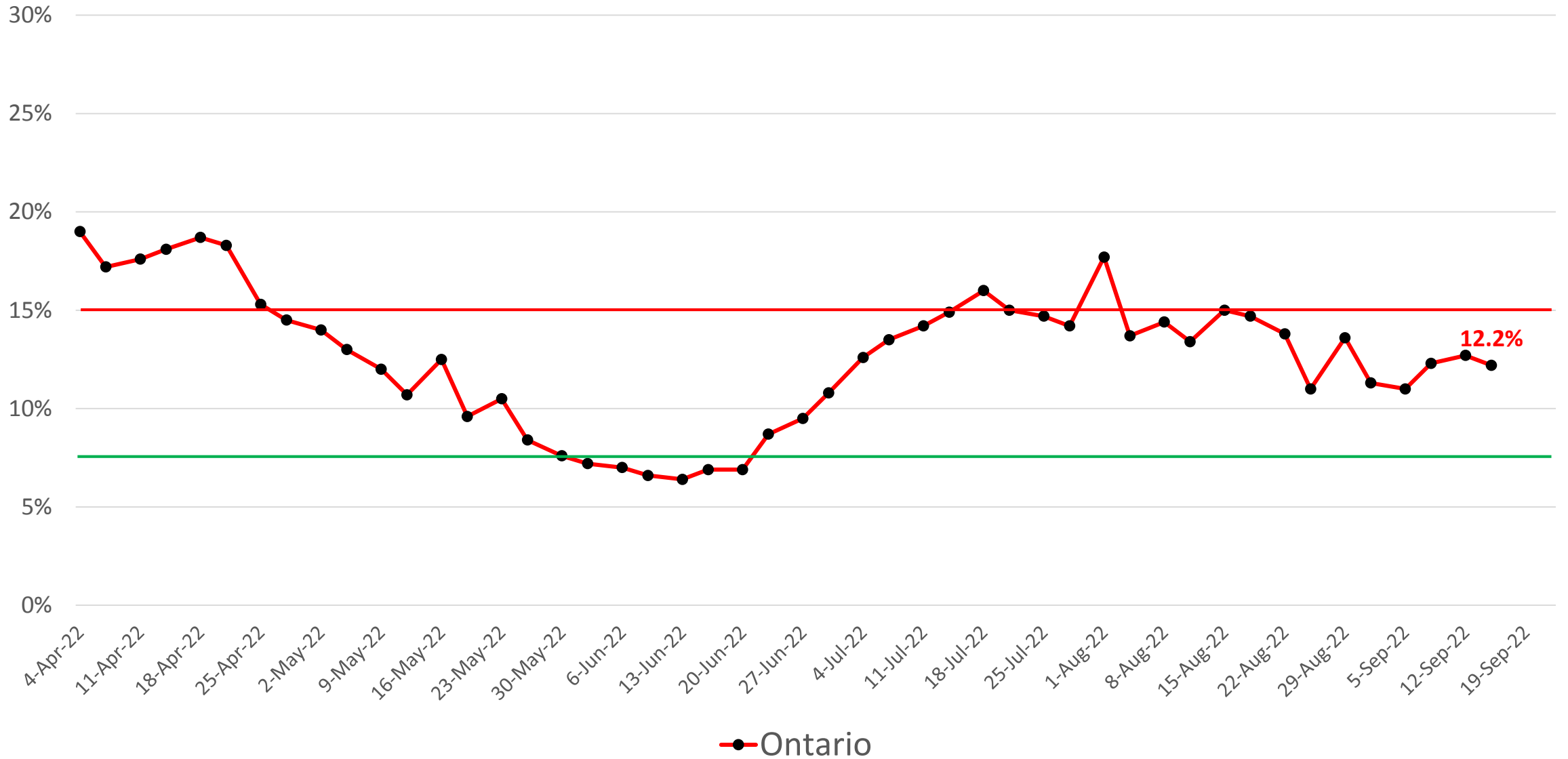
Wastewater detection

Ontario

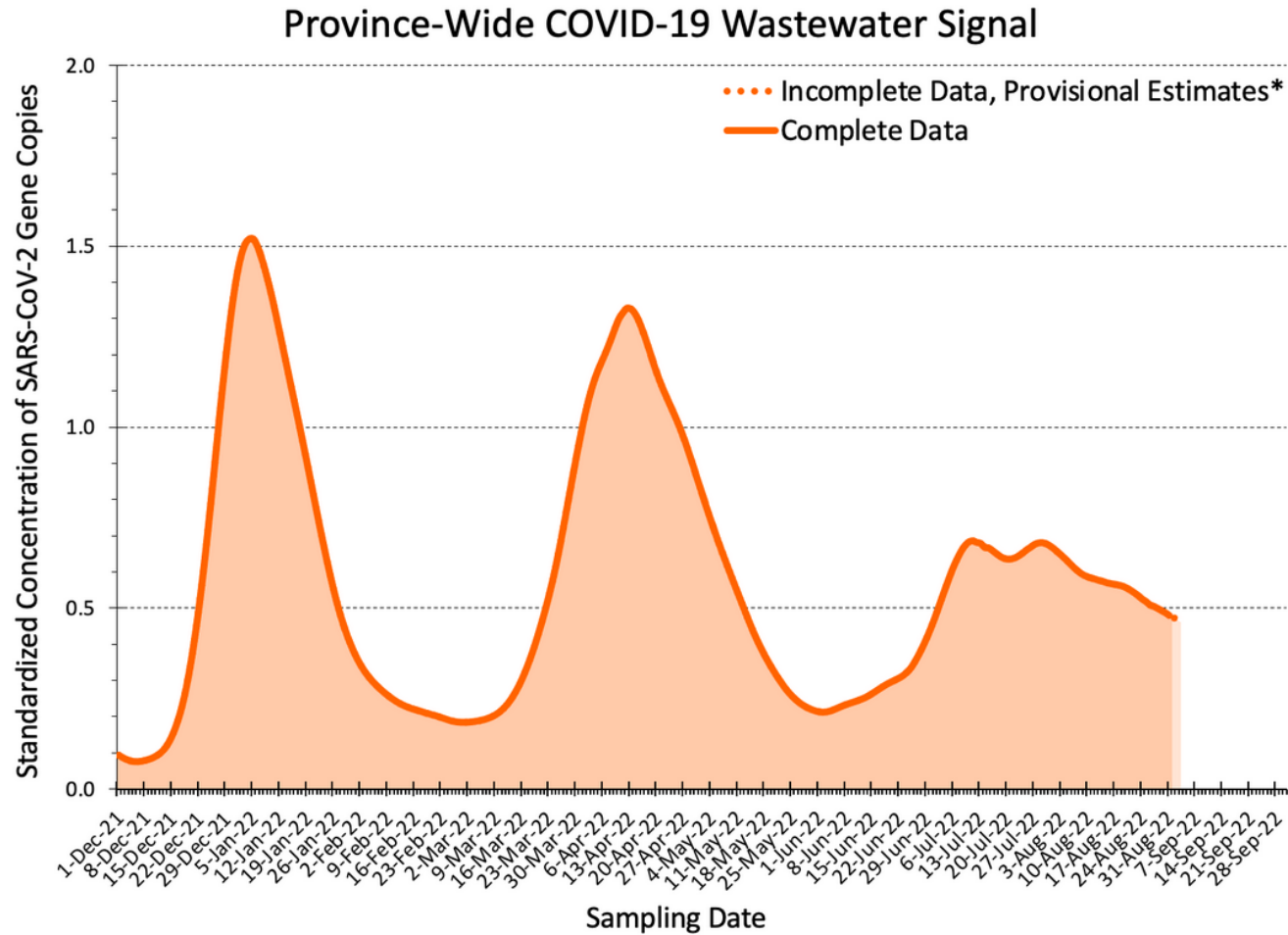
Weekly confirmed COVID-19 outbreaks in Ontario - September 5, 2021 to September 3, 2022



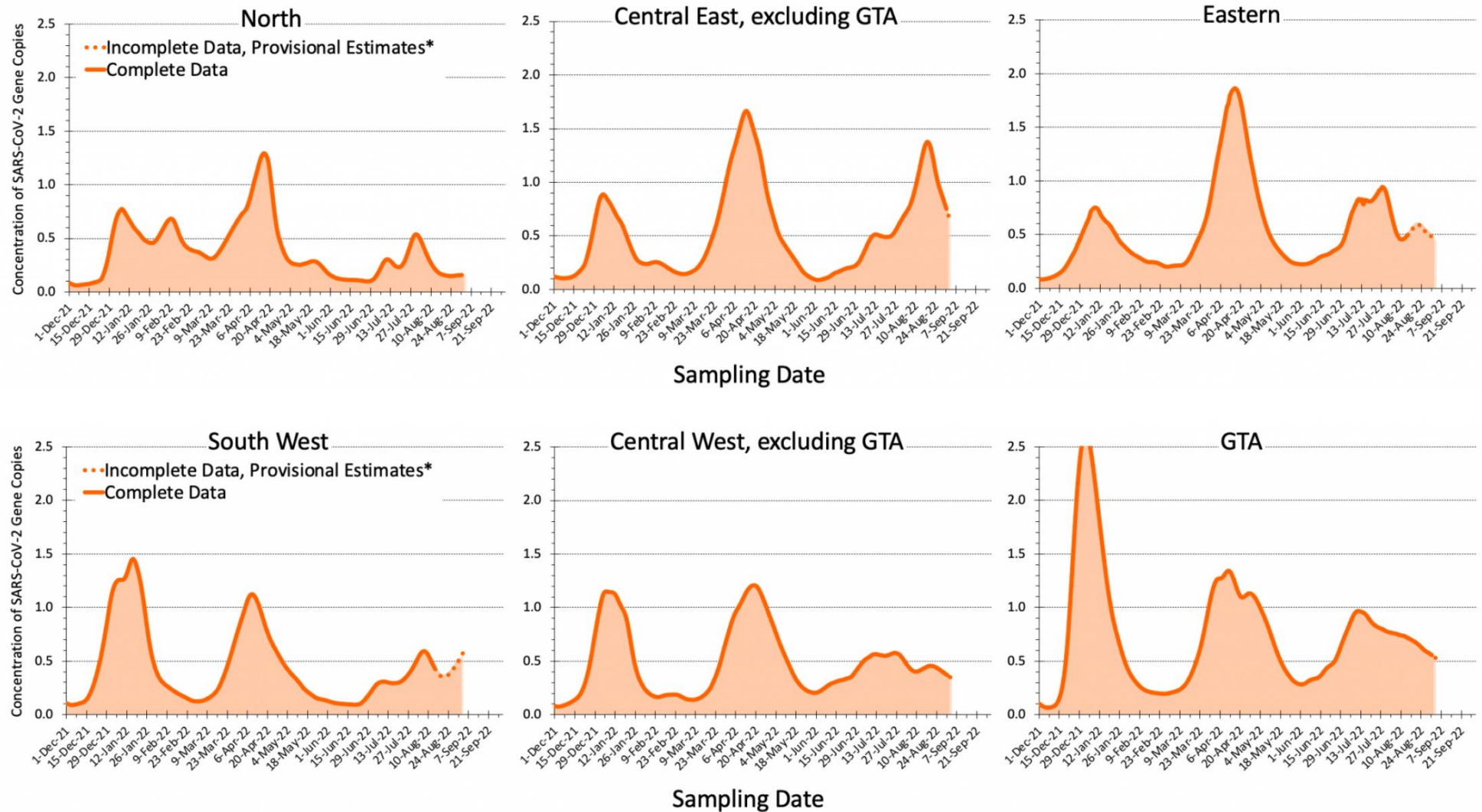
Ontario Provincial Test Positivity



SARS-CoV-2 RNA in Ontario Wastewater – September 8, 2022



SARS-CoV-2 RNA in Ontario Wastewater – September 8, 2022



Current Status of SE Ontario Markers of COVID-19 – September 15, 2022



Outbreak numbers



Test positivity



Wastewater detection



COVID-19 Bivalent Vaccines

- Moderna
 - mRNA 1273.214 has ancestral & BA.1 mix
 - mRNA 1273.222 has ancestral & BA.4/5 mix
 - Pfizer-BioNTech
 - Comirnaty® has ancestral & BA.4/5 mix
 - Others in very early development
- **Approved in Canada**
- **Not Approved**
- **Not Approved**



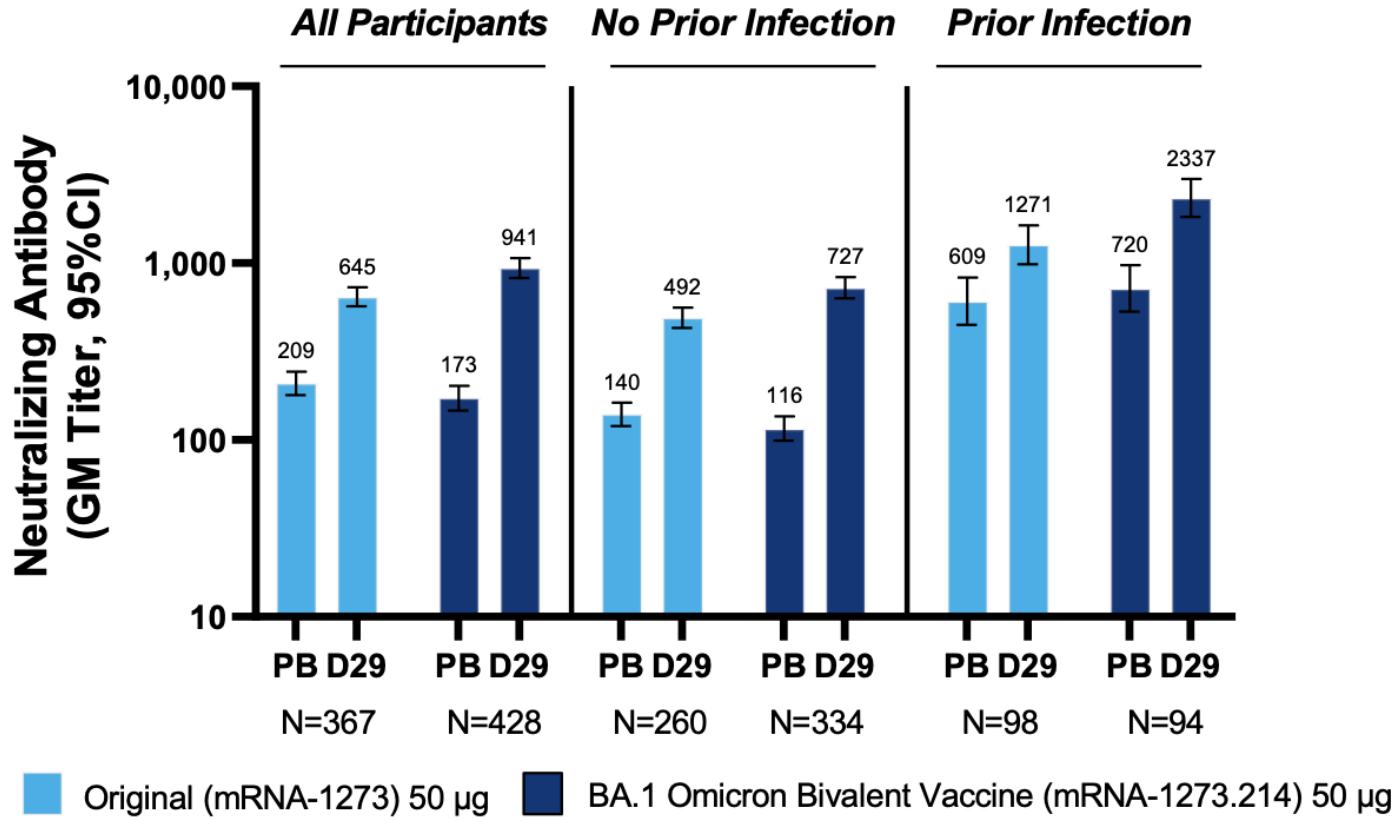
Clinical Studies with Moderna COVID-19 Investigational Bivalent Vaccine Candidates in Adults (≥ 18 Years of Age)

Bivalent Vaccine	Study (Part)	Dose	N	Median Follow-up
Beta (mRNA-1273.211)	205 (A)	3 rd (1 st booster)	300	245 days
BA.1 Omicron (mRNA-1273.214)	205 (G)	4 th (2 nd booster)	437	43 days
BA.4/BA.5 Omicron (mRNA- 1273.222)	205 (H)	4 th (2 nd booster)	512	Ongoing
Total			1249	

- All participants previous received a primary series of mRNA-1273 (100 μ g); participants in Parts G & H also previously received a 3rd dose (50 μ g) of mRNA-1273
- Part G enrolled Mar 8-23, 2022; Part H enrolled Aug 10-23, 2022

Moderna Bivalent mRNA1273.214

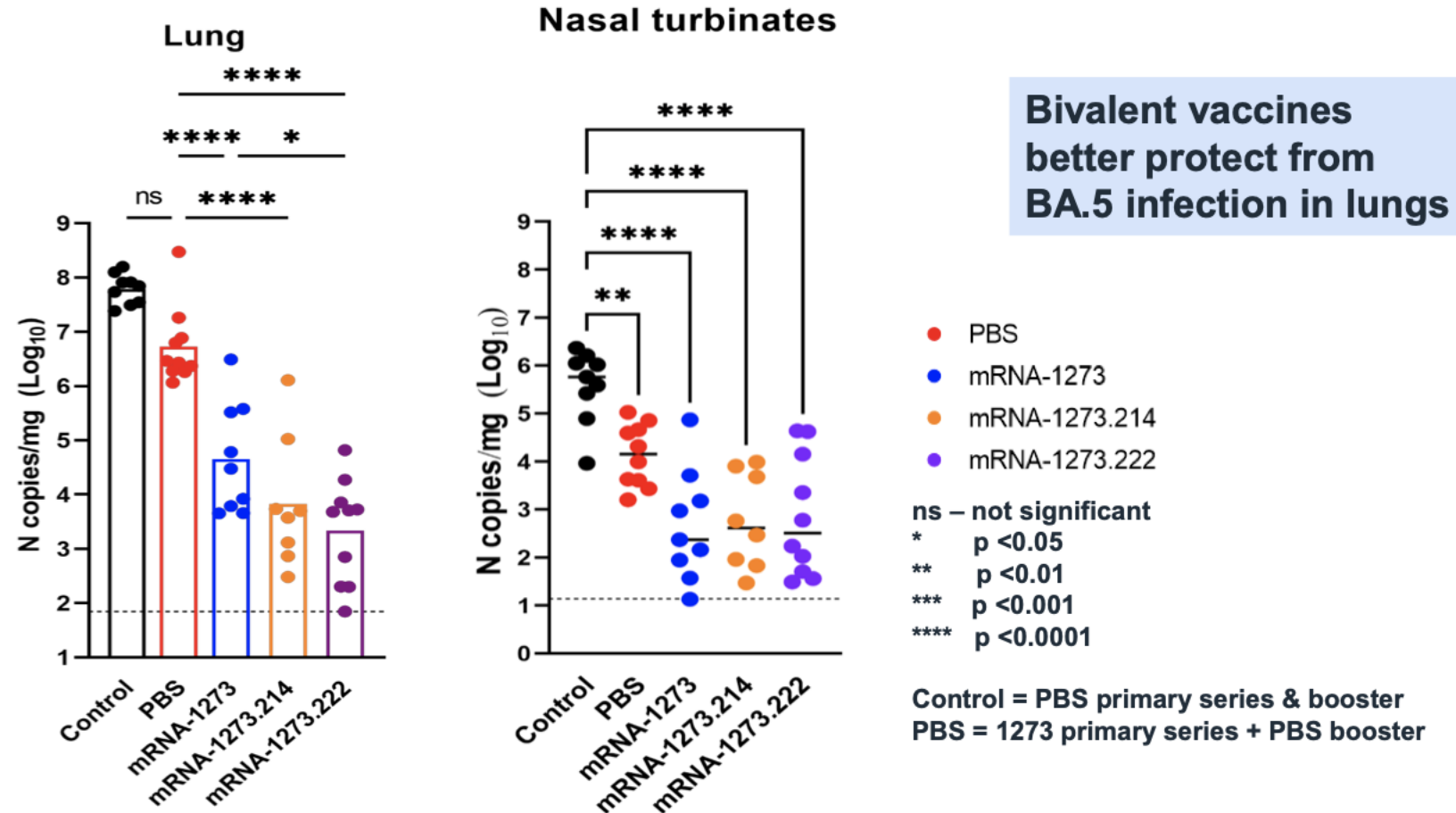
4th Dose (2nd Booster) with BA.1 Omicron Bivalent Booster (mRNA-1273.214) Resulted in Higher Neutralizing Antibody Titers against Omicron BA.4 & BA.5 than mRNA-1273 in Adults



Pre-booster (PB), Day 29 post-boost (D29)

Increased Protection from BA.5 Challenge after Booster Dose of BA.4/BA.5 & BA.1 Omicron Vaccines (mRNA-1273.214 & mRNA-1273.222) in Mice

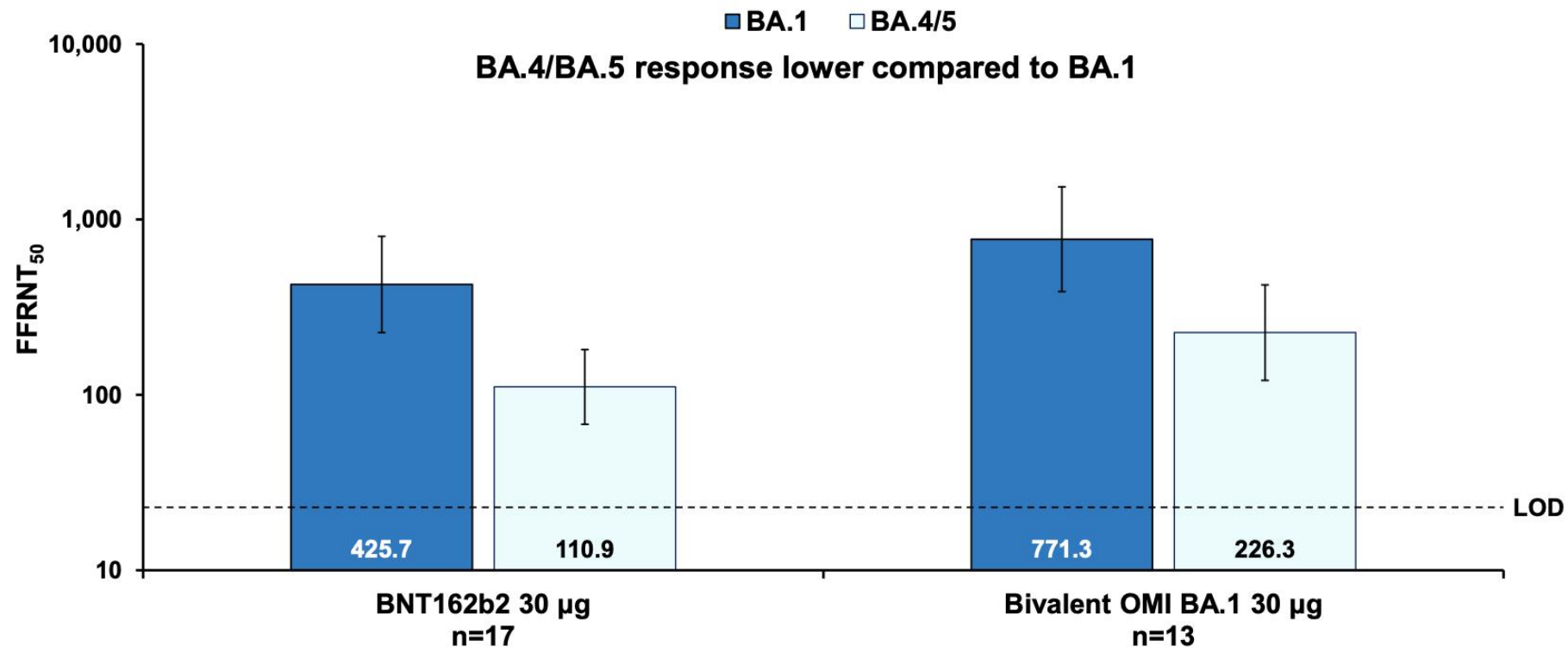
- Mice challenged with 10^4 PFU of BA.5 virus 4 weeks after booster dose



Pfizer-BioNTech Bivalent OMI BA.1

Bivalent Omicron BA.1-modified Variant Vaccine Candidate as 4th Dose Elicits Improved Omicron BA.1 Neutralization Response; BA.4/BA.5 Neutralized to Lesser Extent
>55y Participants Sentinel Cohort, 30 and 60 µg Dose

Participants WITHOUT Evidence of Infection up to 1 Month After First Study Vaccination



FFRNT, fluorescent foci reduction neutralization test; LOD, Limit of Detection

CC-14

Bivalent Vaccines – Bottom Line

- Are being studied in humans, not just mice
- No increase in adverse effects or reactogenicity in subjects
- Show improved levels of neutralizing antibodies versus all Omicron variants
- Likely to provide better protection (sterilizing immunity) against Omicron infection for 3-4 months c/w original vaccine
- Protective immunity equivalent to vaccine with ancestral SARS-CoV-2

Ontario Eligibility for Bivalent COVID-19 Vaccine

- As of Sept 12
 - Individuals aged ≥ 70 years;
 - Residents of LTC homes, retirement homes, Elder Care Lodges and individuals living in other congregate settings that provide assisted-living and health services e.g., Integrated Care Hub
 - First Nation, Inuit and Métis individuals and their non-Indigenous household members aged ≥ 18 years;
 - Moderately to severely immunocompromised individuals aged ≥ 12 years;
 - Pregnant individuals aged ≥ 18 years
 - Health care workers aged ≥ 18 years
- As of Sept 27
 - All adults ≥ 18 years of age

Simultaneous Administration of Influenza & COVID-19 Vaccination

Table 4. Reactions and Health Impacts Reported in v-safe Respondents

Reaction	Simultaneous influenza and COVID-19 mRNA booster vaccine received, aOR (95% CI) ^{a,b} (N = 92 023)	
	Pfizer-BioNTech (n = 61 390)	Moderna (n = 30 633)
Any injection site reaction	1.10 (1.08-1.12)	1.05 (1.02-1.08)
Any systemic reaction	1.08 (1.06-1.10)	1.11 (1.08-1.14)
Any health impact ^c	0.99 (0.97-1.02)	1.05 (1.02-1.08)
Unable to perform normal daily activities	0.99 (0.97-1.01)	1.04 (1.01-1.07)
Unable to work or attend school	1.04 (1.01- 1.07)	1.08 (1.04-1.12)
Needed medical care	0.92 (0.84-1.01)	0.94 (0.83-1.07)

Vaccination and Long COVID

Table 2. Postacute Sequelae of Coronavirus Disease 2019 Mortality and Morbidity Risk at 28 Days: Vaccine Versus No Vaccine

Outcomes	Total, No.	28-Day Risk (Rates per 1000)			
		Vaccine + COVID-19 No. (Incident Rate)	No-Vaccine + COVID-19	Relative Risk (95% CI)	Attributable Risk (95% CI)
Mortality	50 450	171 (6.78)	522 (20.69)	0.33 (.28–.39)	–13.91 (–15.94 to –11.89)
New conditions since COVID-19					
Hypertension	25 862	176 (13.52)	384 (29.90)	0.45 (.38–.54)	–16.38 (–19.93 to –12.83)
Diabetes mellitus	38 762	116 (5.98)	269 (13.88)	0.43 (.35–.54)	–7.90 (–9.87 to –5.93)
Thyroid disease	43 481	82 (3.80)	193 (8.80)	0.43 (.33–.56)	–5.00 (–6.48 to –3.51)
Heart disease	33 836	253 (15.41)	543 (31.17)	0.49 (.43–.57)	–15.76 (–18.96 to 12.57)
Malignant neoplasm	42 705	84 (3.95)	260 (12.14)	0.32 (.25–.42)	–8.20 (–9.89 to –6.50)
Thrombosis	43 486	137 (6.36)	332 (15.14)	0.42 (.34–.51)	–8.78 (–10.72 to –6.85)
Rheumatoid arthritis	49 289	16 (0.65)	32 (1.30)	0.50 (.28–.91)	–0.65 (–1.20 to –.09)
Mental disorders	32 307	231 (14.77)	604 (36.23)	0.41 (.35–.47)	–21.45 (–24.86 to –18.05)
New symptoms since COVID-19					
Respiratory symptoms	50 450	2263 (89.71)	3219 (127.61)	0.70 (.67–.74)	–37.90 (–43.32 to –32.48)
Headache	50 450	450 (17.84)	804 (31.87)	0.56 (.50–.63)	–14.03 (–16.75 to –11.32)
Fatigue	50 450	1138 (45.14)	1750 (69.38)	0.65 (.61–.70)	–24.26 (–28.31 to –20.21)
Body ache	50 450	235 (9.32)	480 (19.03)	0.50 (.42–.57)	–9.71 (–11.77 to –7.65)
Diarrhea or constipation	50 450	857 (33.97)	1424 (56.45)	0.60 (.55–.65)	–22.48 (–26.10 to –18.86)

Abbreviations: CI, confidence interval; COVID-19, coronavirus disease 2019.

Vaccination and Post-COVID Syndrome

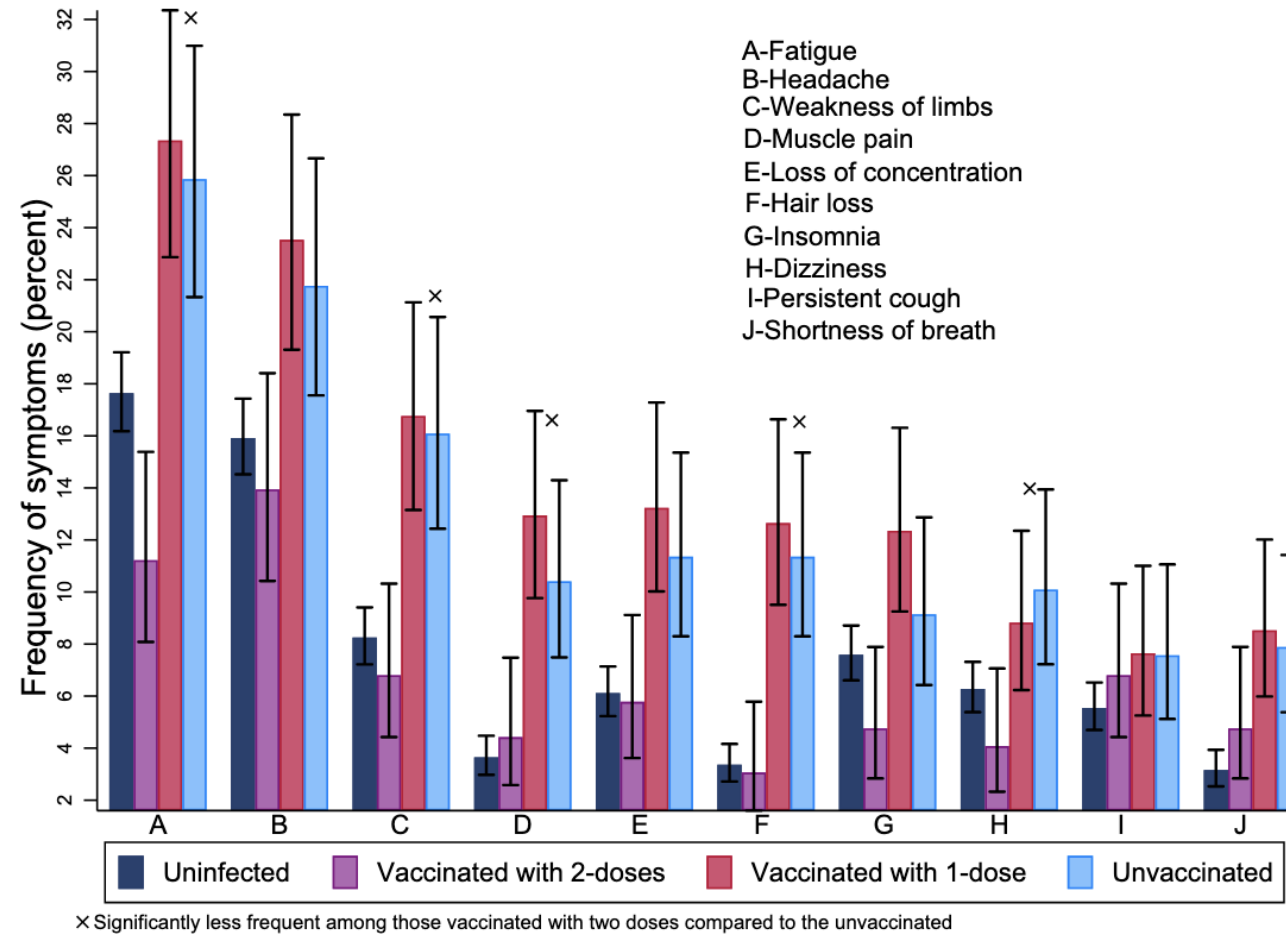


Fig. 1 Frequency of most reported symptoms among the uninfected, the infected and unvaccinated, and the infected and vaccinated with 1 or 2 vaccine doses. Error bars represent 95% confidence intervals.

Bivalent COVID-19 Booster Dose Eligibility

- Anyone 18+ can now **book appointment** for Sept. 26 or later
- **Before Sept. 26**, offered only to **most vulnerable populations**, including:
 - ✓ individuals aged 70 and over;
 - ✓ residents of LTC, retirement homes, Elder Care Lodges and individuals living in other congregate settings that provide assisted-living and health services;
 - ✓ First Nation, Inuit and Métis individuals and their non-Indigenous household members aged 18 and over;
 - ✓ moderately to severely immunocompromised individuals aged 12 and over;
 - ✓ pregnant individuals aged 18 and over; and
 - ✓ health care workers aged 18 and over.
- Must have completed primary series
- Eligible regardless of how many boosters already received
- Recommended interval from previous dose – six months; minimum interval – three months

MOH COVID-19 Vaccine Guidance (Sept. 9, 2022):

https://www.health.gov.on.ca/en/pro/programs/publichealth/coronavirus/docs/vaccine/COVID-19_vaccine_administration.pdf

MOH COVID-19 Vaccines webpage: <https://www.ontario.ca/page/covid-19-vaccines#Bivalent-vaccines>

VaxFacts

For members of Black Communities



Our VaxFacts Clinic is partnering with the Black Physicians' Association of Ontario to provide a dedicated service for members of Black communities who would like to discuss vaccines with a trusted healthcare provider also from the Black community. **Our doctors are ready to talk, listen and help you get the facts.**

REQUEST A PHONE CONSULTATION
with a Black Physician at the VaxFacts Clinic

shn.ca/VaxFacts | 416-438-2911 ext. 5738



VaxFacts for Parents



COVID-19 vaccines are now available for kids aged 6 months and up — and our VaxFacts Clinic is here to connect you with qualified doctors who understand that you may have questions or concerns, or just want to learn more.

They are ready to talk, listen and help you get the facts.

Schedule a one-to-one phone conversation
so you can make an informed decision.

BOOK AN APPOINTMENT ONLINE

CALL TO MAKE AN APPOINTMENT

shn.ca/VaxFacts | 416-438-2911 ext. 5738



VaxFacts

Speak with a
VaxFacts Clinic
physician about
more topics!



Our trusted doctors are here to talk, listen and answer your questions about more VaxFacts services:



MONKEYPOX
And other
infectious diseases



**COVID-19 VACCINES
& TREATMENTS**
Such as boosters,
Evusheld and Paxlovid



AND MORE
Such as childhood
vaccines, flu vaccines and
preventative counselling



Schedule a one-to-one phone conversation.
BOOK ONLINE OR GIVE US A CALL.

shn.ca/VaxFacts | 416-438-2911 ext. 5738



Ontario College of
Family Physicians



ConfusedAboutCOVID.ca

CONFUSED ABOUT COVID? FAMILY DOCTORS ANSWER YOUR QUESTIONS.

COVID-19 vaccine doses for people who have a weakened immune system**

Age	Initial doses			First booster	Second booster
	1st dose	2nd dose	3rd dose	4th dose	5th dose
6 months - 11	✓	✓	✓		
12 - 17	✓	✓	✓	✓	✓
18+ and First Nations, Inuit or Métis or live with someone who is First Nations, Inuit, or Metis	✓	✓	✓	✓	✓
18 - 59	✓	✓	✓	✓	✓
60+	✓	✓	✓	✓	✓

CONFUSED ABOUT COVID? FAMILY DOCTORS ANSWER YOUR QUESTIONS.

COVID-19 vaccine doses for people who do not have a weakened immune system**

Age	Initial doses		First booster	Second booster
	1st dose	2nd dose	3rd dose	4th dose
6 months - 11	✓	✓		
12 - 17	✓	✓	✓	
18+ and First Nations, Inuit or Métis or live with someone who is First Nations, Inuit, or Métis	✓	✓	✓	✓
18 - 59	✓	✓	✓	✓
60+	✓	✓	✓	✓

Category: [Infectious Diseases & Clinical Care](#)

Severe Acute Hepatitis in Children of Unknown Etiology

Vicky Ng*, Michelle Science*, Jordan Feld, Hemant Shah, Ari Bitnun, Laura Bourns, Aaron Campigotto, Eyal Cohen, Jonathan Gubbay, Carolina Jimenez-Rivera, Julia Orkin, Fahad Razak, Andrea Saunders, Blayne Sayed, Marina Salvadori, Barbara Yaffe, Austin Zygmunt, Upton Allen, on behalf of the Ontario COVID-19 Science Advisory Table

*Equal contribution

Version 1.0 | <https://doi.org/10.47326/ocsa.2022.03.63.10>

3,918 views | 375 downloads | Published: June 28, 2022



<https://covid19-sciencetable.ca/sciencebrief/severe-acute-hepatitis-in-children-of-unknown-etiology/>

Practice | Five things to know about ...

Severe acute hepatitis of unknown cause in children

Michelle Science MD MSc, Aaron Campigotto MD, Vicky L. Ng MD

■ Cite as: *CMAJ* 2022 August 15;194:E1089. doi: 10.1503/cmaj.220956

1 Public health agencies worldwide have raised concern over cases of severe acute hepatitis of unknown cause in children

As of July 8, 2022, 1010 probable cases have been reported to the World Health Organization (WHO),¹ including 21 in Canada.² Whether this represents an increase from baseline remains uncertain. The cause is also unclear; however, it may be triggered by SARS-CoV-2 or adenovirus infection.³

2 Presentation varies from mild symptoms to acute liver failure

Children may present with signs or symptoms that are specific (e.g., jaundice, scleral icterus, dark urine, pale stools, hepatic encephalopathy), nonspecific (e.g., nausea, vomiting, loss of appetite) or systemic (e.g., myalgia, lethargy, fever).⁴

3 The WHO defines a probable case as a child (age ≤ 16 yr) with acute hepatitis with an aspartate aminotransferase (AST) or alanine aminotransferase (ALT) level of more than 500 IU/L, excluding cases caused by hepatitis A–E or other explanations

First-line investigations include complete blood count, markers of liver cell injury (AST, ALT, alkaline phosphatase, γ-glutamyltransferase) and liver function (conjugated bilirubin, albumin, international normalized ratio [INR]). Probable cases should be tested for SARS-CoV-2 (polymerase chain reaction and antibody testing) and adenovirus infection.⁴ Differential diagnoses include infectious (hepatotropic and nonhepatotropic viruses) and non-infectious (drug-induced liver injury, autoimmune, metabolic) conditions.⁵

4 Children with an ALT level of more than 500 IU/L or an INR of 1.5 or higher require referral

Input from a pediatric gastroenterologist should be obtained to prioritize investigations, provide anticipatory guidance and discuss management (including use of vitamin K and acetaminophen).⁴ Rarely, children may progress to aplastic anemia, which requires consultation with a hematologist. Clinicians should immediately consult a pediatric liver transplantation program for children with suspected encephalopathy, or with an INR above 2.0 that is not corrected with a single dose of intravenous vitamin K (0.3 mg/kg, maximum daily dosage 10 mg).

5 Most children recover fully with supportive care, although liver transplantation has been reported

In the United States, hepatitis-associated emergency department visits, hospital admissions and transplantations have not increased compared with pre-COVID-19 pandemic levels.⁶ However, at least 46 children have required transplantation and 22 have died since Oct. 1, 2021.¹

References

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Thank you!



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