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
Mr. Adam Brown – Panelist
Advanced Practice Physiotherapist and Director of Cornerstone Physiotherapy

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

Dr. Gerald Evans – Panelist
Infectious Disease Specialist and Chair of the Division of Infectious Diseases, Queen’s University
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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
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• 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

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  • Speakers Bureau/Honoraria: N/A
  • Others: N/A
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  • Relationships with financial sponsors:
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    • 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 guest’s 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 panel’s 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
Dr. Angela Cheung – Panelist
General Internist and Senior Scientist, University Health Network and KY and Betty Ho Chair of Integrative Medicine, University of Toronto

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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

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

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.2022.03.651.0
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

100+ investigators
What are their symptoms?

Non-Hospitalized Cohort -- Prospective

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


Scientific Reports 12, Article number: 11252 (2022) | Cite this article

48k Accesses | 1 Citations | 889 Altmetric | Metrics
Hi-OXsR

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

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

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
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: Meds:
  – Fluids -- Ivabradine
  – Salts -- betablockers
  – Rest -- florinef
  – Compression stockings -- midodrine

REST!!!

Do NOT Over Investigate!
Table 3. Suggested treatments of cardiac-related complications of Long COVID-19

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Possible Treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established cardiovascular disease</td>
<td>Continue with guideline-based goal-directed therapy</td>
</tr>
<tr>
<td>Myopericarditis</td>
<td>Nonsteroidal anti-inflammatory drug, colchicine</td>
</tr>
<tr>
<td>Cardiac dysautonomia (orthostatic hypotension, persistent sinus tachycardia, Postural Orthostatic Tachycardia Syndrome-like syndrome)</td>
<td>Hydration, salt supplementation, compression garments, Selective use of pharmacotherapies, including midodrine, beta blockers, ivabradine</td>
</tr>
</tbody>
</table>
Cardiac MRI
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
» Lingering symptoms
» Adaptive
» Integrative
» Medicine

- Residual virus / viral particles
- Inflammation
- Immune dysregulation
- Endothelial dysfunction
- Mitochondrial dysfunction

For more info, email: RECLAIM@uhn.ca
CANCOV

CANCOV@uhn.ca
1(866)6CANCOV
Facebook.com/CANCOV
@CANCOV1
CANCOV.net

The RECLAIM Trial

RECLAIM@uhn.ca
1(866)RECLAIM
Facebook.com/RECLAIMTrial
@ReclaimTrial
ReclaimTrial.ca
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.
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

<table>
<thead>
<tr>
<th>Long COVID Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevalence (in percentage)</strong></td>
</tr>
<tr>
<td><strong>Fatigue</strong></td>
</tr>
<tr>
<td><strong>Post-Exertional Malaise</strong></td>
</tr>
<tr>
<td><strong>Brain fog</strong></td>
</tr>
<tr>
<td><strong>All neurological sensations</strong></td>
</tr>
<tr>
<td><strong>Headaches and related symptoms</strong></td>
</tr>
<tr>
<td><strong>Memory issues</strong></td>
</tr>
<tr>
<td><strong>Insomnia</strong></td>
</tr>
<tr>
<td><strong>Muscle aches</strong></td>
</tr>
<tr>
<td><strong>Palpitations</strong></td>
</tr>
<tr>
<td><strong>Shortness of breath</strong></td>
</tr>
<tr>
<td><strong>Dizziness, balance issues</strong></td>
</tr>
<tr>
<td><strong>Speech/language issues</strong></td>
</tr>
<tr>
<td><strong>Joint pain</strong></td>
</tr>
<tr>
<td><strong>Tightness of chest</strong></td>
</tr>
<tr>
<td><strong>Tachycardia</strong></td>
</tr>
<tr>
<td><strong>Other sleeping symptoms</strong></td>
</tr>
</tbody>
</table>

Remaining symptoms after month 6 (prevalence > 30%)

(Davis et al., 2021)
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 ≥ 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 pressure is low: midodrine 5 mg orally every 4 hours,
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 (⅔ 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, Blextin (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
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
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_digs

Pacing and Fatigue
https://www.youtube.com/watch?v=5ux5rwDQT8U

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/
Patient Resources for Self-Management

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

- University Health Network: [COVID-19 Resources for Patients and Families](https://sway.office.com/ftjlGXmmpt0WLTox?ref=email)
- Ottawa Hospital: Post-COVID Rehabilitation Self-Management: [https://sway.office.com/ftjlGXmmpt0WLTox?ref=email](https://sway.office.com/ftjlGXmmpt0WLTox?ref=email)
- [COVID Long-Haulers Canada](https://www.covidlonghaul.ca) (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](#)
The Ontario eConsult Service, accessed on the OTNhub, 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.

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

Send an eConsult today

- 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

http://www.otnhub.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.
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

Alpha
30,632

Early Delta
42,863

Late Delta
959

Omicron #1
140,523

Omicron #2
36,016

Omicron #3
19,394
Ontario Active COVID-19 Cases

Omicron #2 (BA.2)

Omicron #3 (BA.5)

0 5,000 10,000 15,000 20,000 25,000 30,000 35,000 40,000


Ontario Active COVID-19 Cases

Ontario

SE Ontario

7,133

19,163

12,082
Ontario 7-Day Running Average of New Cases/Day

- 3,591 on 6-May
- 647 on 27-May
- 1,701 on 5-Aug
- 1,135 on 16-Sep
Effective Reproduction Number R(t) in Ontario

All Variants Combined

(After Dec 23, 2021, R(t) Cannot be Estimated Accurately)
Ontario COVID-19 Hospital Occupancy by Bed Type

- ICU
- Ward
COVID-19 Surrogate Markers of Community Prevalence

- Outbreak numbers
- Test positivity
- Wastewater detection
Weekly confirmed COVID-19 outbreaks in Ontario - September 5, 2021 to September 3, 2022

- Long-term care homes
- Retirement homes
- Hospitals
- Congregate living
Ontario Provincial Test Positivity

[Graph showing the trend of Ontario Provincial Test Positivity from April 22 to September 22. The graph includes a line representing the test positivity rate with a peak at 12.2%.]

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

Province-Wide COVID-19 Wastewater Signal

- Incomplete Data, Provisional Estimates
- Complete Data

Standardized Concentration of SARS-CoV-2 Gene Copies

Sampling Date
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 🔗
Ontario Variant Watch

Figure 1. Percentage of COVID-19 cases by the most prevalent lineages and week, representative surveillance, Ontario, August 29, 2021 to August 27, 2022
COVID-19 Bivalent Vaccines

• Moderna
  • mRNA 1273.214 has ancestral & BA.1 mix - Approved in Canada
  • mRNA 1273.222 has ancestral & BA.4/5 mix - Not Approved

• Pfizer-BioNTech
  • Comirnaty® has ancestral & BA.4/5 mix - Not Approved

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

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

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

Chalkias et al. *Research Square* 2022, doi: 10.21203/rs.3.rs-1555201/v1; in press *Nat Med*
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
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

**Lung**

**Nasal turbinates**

Bivalent vaccines better protect from BA.5 infection in lungs

<table>
<thead>
<tr>
<th>PBS</th>
<th>mRNA-1273</th>
<th>mRNA-1273.214</th>
<th>mRNA-1273.222</th>
</tr>
</thead>
</table>

ns – not significant

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

**** $p < 0.0001$

Control = PBS primary series & booster

PBS = 1273 primary series + PBS booster

Scheaffer et al, manuscript under preparation
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

- BA.1
- BA.4/5

BA.4/BA.5 response lower compared to BA.1

<table>
<thead>
<tr>
<th>Vaccine Type</th>
<th>BNT162b2 30 µg</th>
<th>Bivalent OMI BA.1 30 µg</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>17</td>
<td>13</td>
</tr>
<tr>
<td>FFRNT&lt;sub&gt;50&lt;/sub&gt;</td>
<td>425.7</td>
<td>226.3</td>
</tr>
<tr>
<td>LOD</td>
<td>110.9</td>
<td>771.3</td>
</tr>
</tbody>
</table>

FFRNT<sub>50</sub>, fluorescent foci reduction neutralization test; LOD, Limit of Detection
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

<table>
<thead>
<tr>
<th>Reaction</th>
<th>Pfizer-BioNTech (n = 61 390)</th>
<th>Moderna (n = 30 633)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any injection site reaction</td>
<td>1.10 (1.08-1.12)</td>
<td>1.05 (1.02-1.08)</td>
</tr>
<tr>
<td>Any systemic reaction</td>
<td>1.08 (1.06-1.10)</td>
<td>1.11 (1.08-1.14)</td>
</tr>
<tr>
<td>Any health impact(^c)</td>
<td>0.99 (0.97-1.02)</td>
<td>1.05 (1.02-1.08)</td>
</tr>
<tr>
<td>Unable to perform normal daily activities</td>
<td>0.99 (0.97-1.01)</td>
<td>1.04 (1.01-1.07)</td>
</tr>
<tr>
<td>Unable to work or attend school</td>
<td>1.04 (1.01-1.07)</td>
<td>1.08 (1.04-1.12)</td>
</tr>
<tr>
<td>Needed medical care</td>
<td>0.92 (0.84-1.01)</td>
<td>0.94 (0.83-1.07)</td>
</tr>
</tbody>
</table>

## Vaccination and Long COVID

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

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Total, No.</th>
<th>Vaccine + COVID-19 No. (Incident Rate)</th>
<th>No-Vaccine + COVID-19</th>
<th>28-Day Risk (Rates per 1000)</th>
<th>Attributable Risk (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>50,450</td>
<td>171 (6.78)</td>
<td>522 (20.69)</td>
<td>0.33 (0.28–0.39)</td>
<td>–13.91 (–15.94 to –11.89)</td>
</tr>
<tr>
<td>New conditions since COVID-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>25,862</td>
<td>176 (13.52)</td>
<td>384 (29.90)</td>
<td>0.45 (0.38–0.54)</td>
<td>–16.38 (–19.93 to –12.83)</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>38,762</td>
<td>116 (5.98)</td>
<td>269 (13.88)</td>
<td>0.43 (0.35–0.54)</td>
<td>–7.90 (–9.87 to –5.93)</td>
</tr>
<tr>
<td>Thyroid disease</td>
<td>43,481</td>
<td>82 (3.90)</td>
<td>193 (8.80)</td>
<td>0.43 (0.33–0.56)</td>
<td>–5.00 (–6.48 to –3.51)</td>
</tr>
<tr>
<td>Heart disease</td>
<td>33,836</td>
<td>253 (15.41)</td>
<td>543 (31.17)</td>
<td>0.49 (0.43–0.57)</td>
<td>–15.76 (–18.96 to 12.57)</td>
</tr>
<tr>
<td>Malignant neoplasm</td>
<td>42,705</td>
<td>84 (3.95)</td>
<td>260 (12.14)</td>
<td>0.32 (0.25–0.42)</td>
<td>–8.20 (–9.89 to –6.60)</td>
</tr>
<tr>
<td>Thrombosis</td>
<td>43,486</td>
<td>137 (6.36)</td>
<td>332 (15.14)</td>
<td>0.42 (0.34–0.51)</td>
<td>–8.78 (–10.72 to –6.85)</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>49,289</td>
<td>16 (0.65)</td>
<td>32 (1.30)</td>
<td>0.50 (0.28–0.91)</td>
<td>–0.65 (–1.20 to –0.09)</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>32,307</td>
<td>231 (14.77)</td>
<td>604 (36.23)</td>
<td>0.41 (0.35–0.47)</td>
<td>–21.45 (–24.86 to –18.05)</td>
</tr>
<tr>
<td>New symptoms since COVID-19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory symptoms</td>
<td>50,450</td>
<td>2263 (89.71)</td>
<td>3219 (127.61)</td>
<td>0.70 (0.67–0.74)</td>
<td>–37.90 (–43.32 to –32.48)</td>
</tr>
<tr>
<td>Headache</td>
<td>50,450</td>
<td>460 (17.84)</td>
<td>804 (31.87)</td>
<td>0.56 (0.50–0.63)</td>
<td>–14.03 (–16.75 to –11.32)</td>
</tr>
<tr>
<td>Fatigue</td>
<td>50,450</td>
<td>1138 (45.14)</td>
<td>1750 (69.38)</td>
<td>0.65 (0.61–0.70)</td>
<td>–24.26 (–28.31 to –20.21)</td>
</tr>
<tr>
<td>Body ache</td>
<td>50,450</td>
<td>235 (9.32)</td>
<td>480 (19.03)</td>
<td>0.50 (0.42–0.57)</td>
<td>–9.71 (–11.77 to –7.65)</td>
</tr>
<tr>
<td>Diarrhea or constipation</td>
<td>50,450</td>
<td>857 (33.97)</td>
<td>1424 (56.45)</td>
<td>0.60 (0.55–0.65)</td>
<td>–22.48 (–26.10 to –18.86)</td>
</tr>
</tbody>
</table>

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

Source: SN Zisis et al Open Forum Infect Dis 2022 [https://doi.org/10.1093/ofid/ofac228](https://doi.org/10.1093/ofid/ofac228)
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.

Source: P Koudi et al npj Vaccines (2022) 7:101; [https://doi.org/10.1038/s41541-022-00526-5](https://doi.org/10.1038/s41541-022-00526-5)
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):**

**MOH COVID-19 Vaccines webpage:** https://www.ontario.ca/page/covid-19-vaccines#Bivalent-vaccines
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
### COVID-19 vaccine doses for people who **have a weakened immune system**

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

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

<table>
<thead>
<tr>
<th>Age</th>
<th>Initial doses</th>
<th>First booster</th>
<th>Second booster</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st dose</td>
<td>2nd dose</td>
<td>3rd dose</td>
</tr>
<tr>
<td>6 months - 11</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>12 - 17</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>18+ and First Nations, Inuit or Métis or live with someone who is First Nations, Inuit, or Métis</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>18 - 59</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>60+</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Severe Acute Hepatitis in Children of Unknown Etiology

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

Practice | Five things to know about ...

Severe acute hepatitis of unknown cause in children

1. Public health agencies worldwide have raised concern over cases of severe acute hepatitis of unknown cause in children. As of June 9, 2022, 159 cases have been reported to the World Health Organization (WHO), including 21 in Canada. However, this represents an increase from baseline rates of uncertain. The cause is also unclear; however, it may be triggered by SARS-CoV-2 or an autoimmune reaction.

2. Presentation ranges from mild symptoms to acute liver failure.

3. The WHO defines a probable case as a child (age ≥ 16 yr) with acute hepatitis with an apparent alanine aminotransferase (ALT) level of more than 500 IU/L, excluding cases caused by hepatitis A 16 10 or other explanations.

4. Patients with an ALT level exceeding 500 IU/L or an INR of 1 5 or higher require referral. Input from a pediatric gastroenterologist may be obtained to prioritize investigations. Provide anticipatory guidance and discuss management including avoidance of acetaminophen and antibiotics. Consider immediate consultation with a gastroenterologist.

5. Next, children recover fully with supportive care, although liver transplantation has been reported in a few cases. This is the first report of severe acute hepatitis of unknown cause in children.
Thank you!

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
Questions?

Webinar recording and curated Q&A will be posted soon
https://www.dfcm.utoronto.ca/covid-19-community-practice/past-sessions

Our next Community of Practice: October 7, 2022

Contact us:  ocfpcme@ocfp.on.ca

Visit:  https://www.ontariofamilyphysicians.ca/tools-resources/covid-19-resources

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.

Post session survey will be emailed to you. Mainpro+ credits will be entered for you with the information you provided during registration.