

Welcome to the  
Division of Continuing Medical Education's  
*Post-COVID Condition*  
*Spring 2023 Webinar Series*

This event was made possible thanks to funding provided by the Saskatchewan Health Authority

# Treaty Acknowledgement

As we gather today, we want to start in a good way by acknowledging that we are on Treaty 2, 4, 5, 6, 8, and 10 Territories and the traditional territory of the Cree and Saulteaux, Assiniboine and Homeland of the Métis.

We pay our respect to the First Nation and Métis ancestors of this place and reaffirm our relationship with one another.

# Who is in the room?

- **Please pick your category or categories:**
  - A patient?
  - A family member of someone with Post-COVID Condition?
  - A healthcare provider?

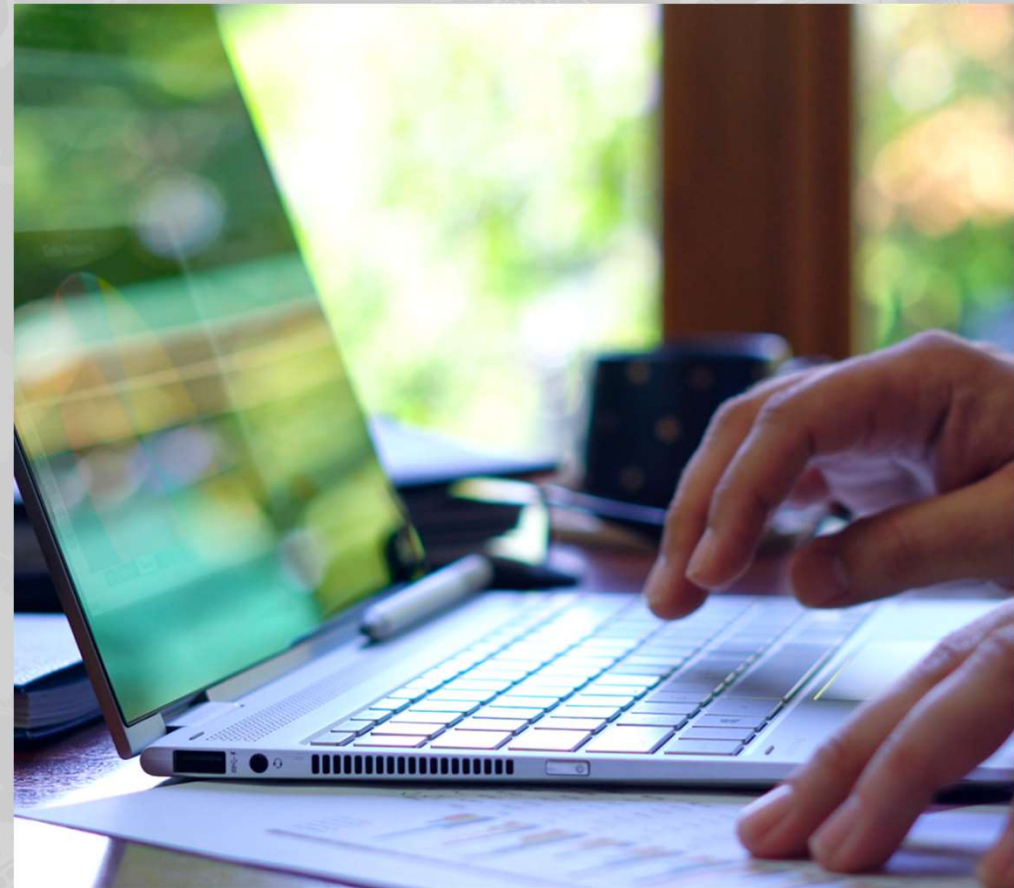
# Accreditation Credits

- **Royal College of Physicians and Surgeons of Canada:** This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification (MOC) program of the Royal College of Physicians and Surgeons of Canada and accredited by the Division of Continuing Medical Education, College of Medicine, University of Saskatchewan for up to **1.0 MOC credit hours**.
- **The College of Family Physicians of Canada:** Accredited Royal College MOC Section 1 and Section 3 credits are eligible for certified Mainpro+® credits, up to a maximum of 50 credits per five-year cycle; any additional credits are eligible as non-certified Mainpro+® credits. MOC Section 3 accredited activities can be claimed at 3 credits per hour up to the cycle maximum.
- **Other Healthcare Professionals:** Participation in this conference may be included as part of the continuing education and competence programs established by individual professional associations.



# CME Credits

- **Certificates:** Will be emailed within 10 - 14 business days post-webinar to those who attend the live session
- **Evaluation:** A survey link will be shared in the chat at the end of this event. The link will also be included in the email distribution of the certificates.
- **Recordings:** This event will be recorded for future educational purposes and managed / distributed by CME



# Digital Learning Experience

- **Questions:**

- Throughout the presentation and during the Q&A period, learners can submit written questions through **Zoom's Q&A function** (anonymously, if desired) or **chat function** (addressed to "everyone")
- During the presentation, learners will be muted
- During the Q&A period following the presentation, learners can **raise their hand** and **unmute** to ask a question

- **Video:**

- Video has been enabled and is optional for learners
- Q&A period following the presentation will be opened to the gallery view

## Dr. Gary Groot MD, PhD, FRCSC, FACS

- Professor at USask College of Medicine
- Joint appointment in Departments of Surgery and Community Health & Epidemiology
- Medical Director of Clinical Quality Improvement for Saskatchewan Health Authority (SHA)
- Co-led working group on Long COVID that produced technical report in August 2021
- Report formed basis for SHA's current development of Long COVID Pathway that he co-leads as well
- NPI on two Patient Oriented Research Awards to address Long COVID
- Co-applicant on longitudinal SK study on Long COVID
- Co-PI on National CIHR funded network grant connecting 300+ researchers across the country, to understand how to diagnose and treat Long COVID, and co-lead of 1 of the 4 pillars of science in the network





# Long COVID or Post-COVID Condition: An Update for Physicians

Gary Groot MD, PhD, FRCSC, FACS

May 17, 2023



# Presenter Disclosure

**Faculty:** Gary Groot

**Relationships with financial sponsors:**

- **Grants/Research Support:** NONE
- **Speakers Bureau/Honoraria:** Sanofi Canada (unrelated to Long COVID or Post-COVID Condition)
- **Consulting Fees:** NONE
- **Patents:** NONE
- **Other:** NONE

# Mitigating Potential Bias

## Potential sources of bias have been mitigated.

- Conflict of interest forms are collected and reviewed by committee, Chair and CME office
- CPD material is peer reviewed and elevated to the Director of Accreditation, CME for further review, if required, until in compliance with the national accreditation standards
- Brands/medical equipment/etc. are equally presented with no bias and/or with a generic brand listed
- Survey results are documented, reviewed and addressed when bias is identified

# Session Learning Objectives

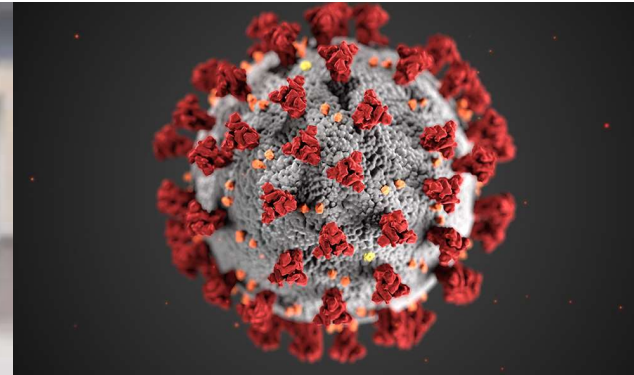
**By the end of this session, learners will be able to:**

1. Describe the challenges with defining Long COVID
2. Describe the challenges with diagnosing Long COVID
3. Distinguish between Long COVID and other conditions
4. Describe the prevalence and incidence of COVID and Post-COVID Condition
5. Describe the unique challenges of Post-COVID Condition in underserved populations





Why is a Surgical  
Oncologist talking to  
you about the Post-  
COVID Condition?





## COVID-19 Evidence Support Team (CEST) aka Think Tank

- Evidence Support Team was initially established within Clinical Excellence to support the development of the COVID pathway with evidence but quickly evolved to support the EOC as well and now the PHICC
- Oversight committee includes representation from Clinical Excellence, Digital Health, Academics and Learning, College of Medicine, HQC and Ministry of Health
- Streams of work were created to conduct rapid reviews using a standard process and a single repository (PH, ID, laboratory, epidemiology/modelling, long term care, vulnerable populations) linking academics/clinical experts with Librarians and researchers
- Over 100 reviews to date





# Long COVID

Priorities for health system response in  
Saskatchewan

August 16, 2021

Long COVID Working Group



# What is Post-COVID Condition

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 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 (see [Table 3](#) and [Annex 2](#)) which 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. A separate definition may be applicable for children.

## Challenges in defining Long COVID: Striking differences across literature, Electronic Health Records, and patient-reported information (Pre-print)

[Halie M Rando](#), [Tellen D Bennett](#), [James Brian Byrd](#), [Carolyn Bramante](#), [Tiffany J Callahan](#), [Christopher G Chute](#), [Hannah E Davis](#), [Rachel Deer](#), [Joel Gagnier](#), [Farrukh M Korashy](#), [Feifan Liu](#), [Julie A McMurry](#), [Richard A Moffitt](#), [Emily R Pfaff](#), [Justin T Reese](#), [Rose Relevo](#), [Peter N Robinson](#), [Joel H Saltz](#), [Anthony Solomonides](#), [Anupam Sule](#), [Umit Topaloglu](#), [Melissa A Haendel](#)

PMID: **33791733**

PMCID: [PMC8010765](#)

DOI: [10.1101/2021.03.20.21253896](#)

Free PMC article



## Personal journey with long COVID

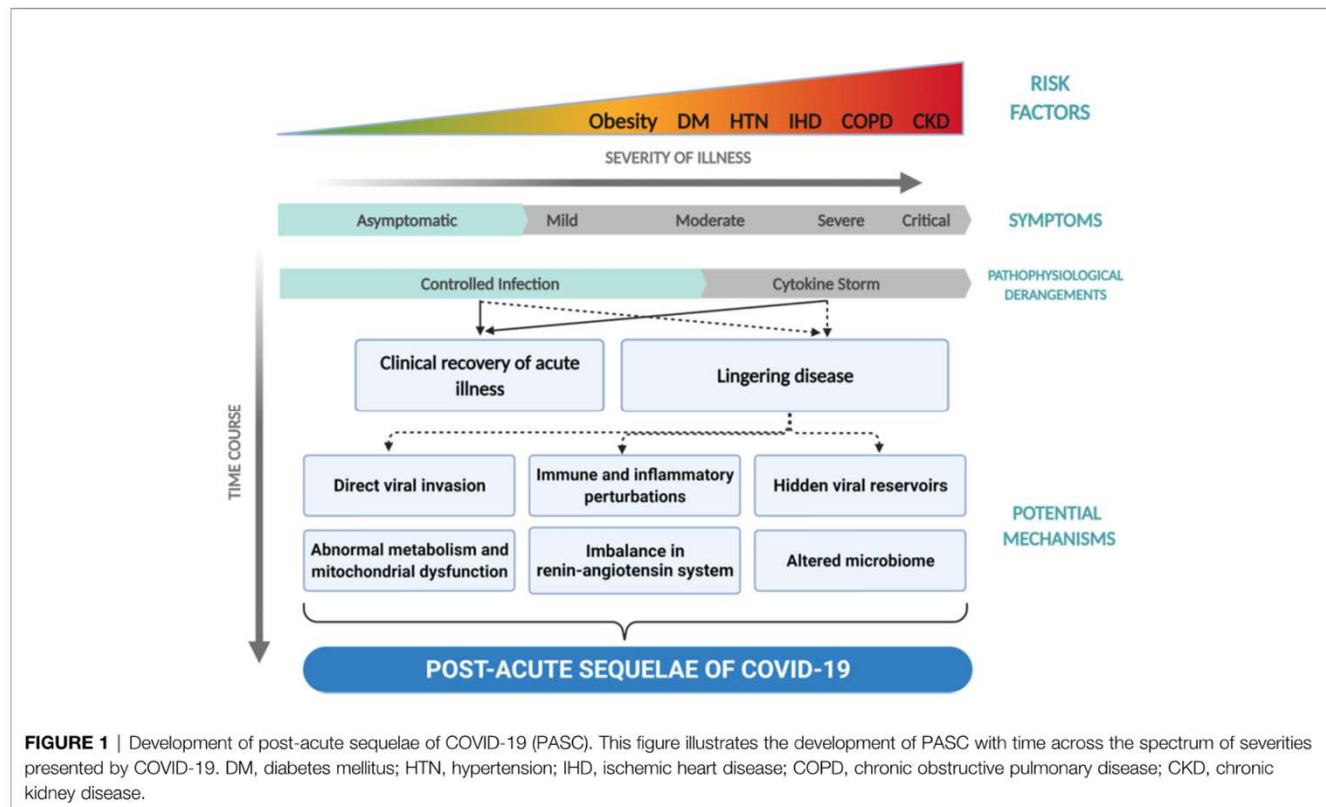
*"I continue to experience muscle aches, fatigue, my heart races, breathing increases with minimal exertion. On two occasions, I watched as bruises appeared on my hands. Tinnitus has increased, taste and smell is minimal. I have only recently been able to faintly smell bleach. I have noticed changes with my digestive system. I believe my communication and cognitive skills are diminished, memory and retention is a challenge which has impacted my efficiency at work. My poor motivation and fatigue has made me question whether I am depressed. Simple tasks of emptying the dishwasher or washing my hair seems like a chore. I push through, but feeling this way is foreign to me. I wonder how hard to push myself or am I still in recovery and I need more rest? Throughout my life, I have always had low blood sugar, recent blood tests show high blood sugar, my blood pressure is higher and my thyroid test shows changes. My body feels like it is in fight, flight and freeze mode at all times. Mindfulness, meditation, exercise, massage, distracting myself with music, spending time in nature does not change my body state"*

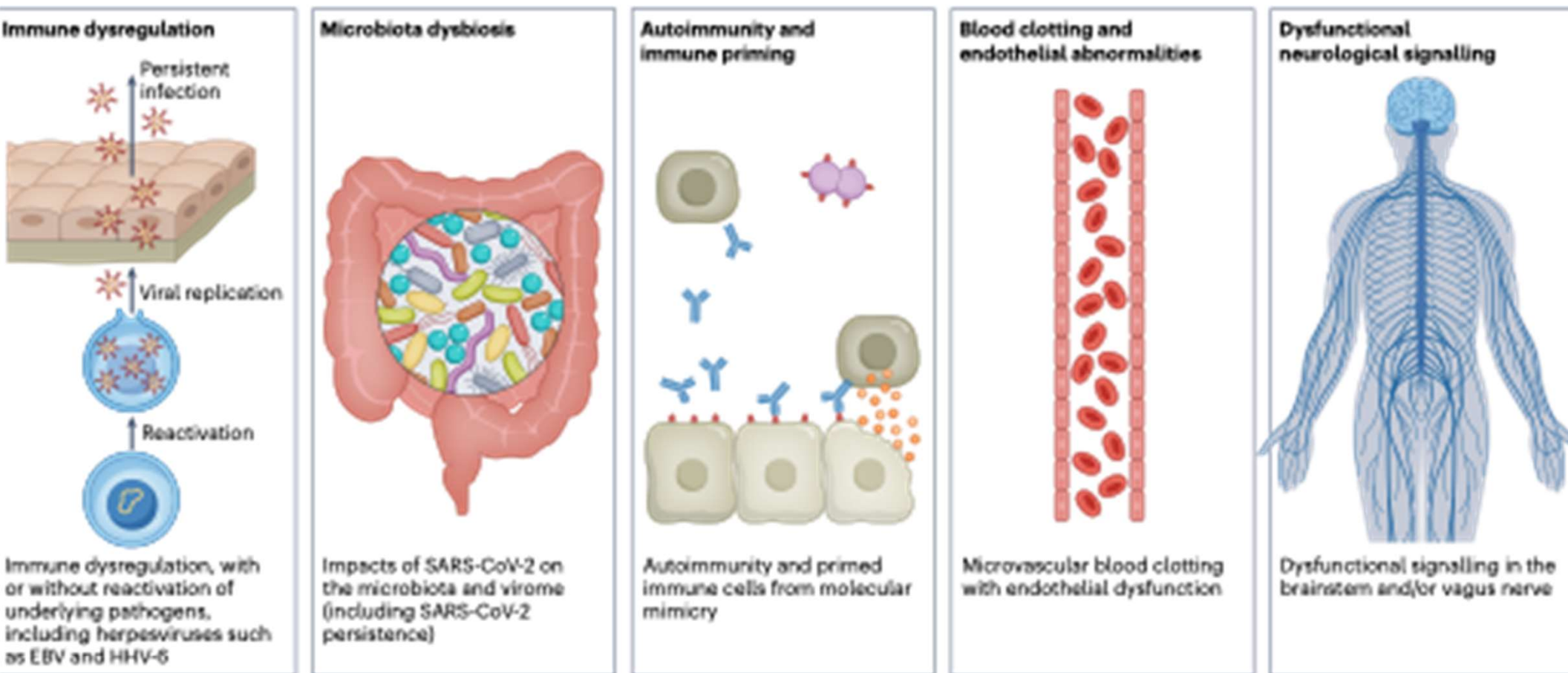
*Long COVID Survivor*

# Unraveling the Mystery Surrounding Post-Acute Sequelae of COVID-19

Rakhee K. Ramakrishnan<sup>1,2</sup>, Tarek Kashour<sup>3</sup>, Qutayba Hamid<sup>1,4</sup>, Rabih Halwani<sup>1,2,5\*</sup> and Imad M. Tleyjeh<sup>6,7,8,9\*</sup>

Frontiers in Immunology

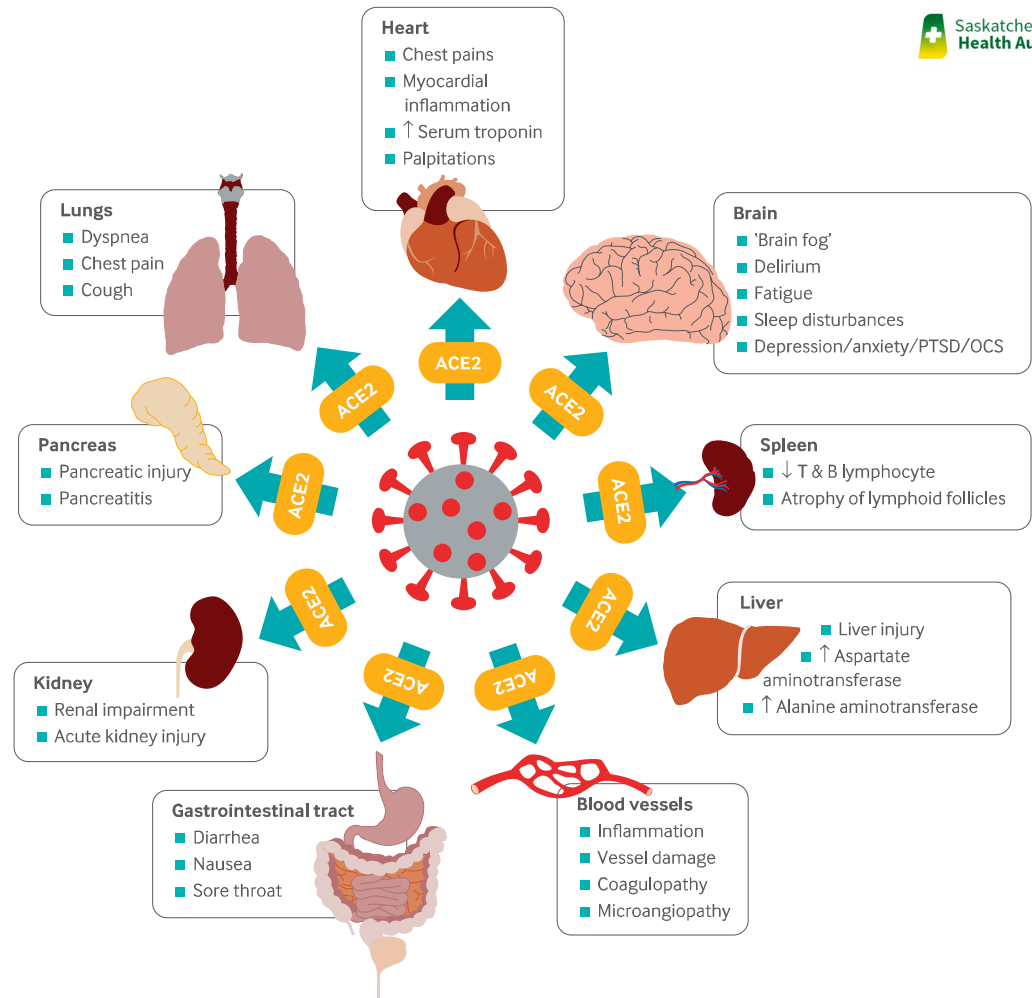




**Fig. 3 | Hypothesized mechanisms of long COVID pathogenesis.** There are several hypothesized mechanisms for long COVID pathogenesis, including immune dysregulation, microbiota disruption, autoimmunity, clotting

and endothelial abnormality, and dysfunctional neurological signalling. EBV, Epstein-Barr virus; HHV-6, human herpesvirus 6; SARS-CoV-2, severe acute respiratory syndrome coronavirus 2.

# COVID-19 can exert long-term effects on a wide range of tissues



Crook et al, BMJ. 2021;374:n1648

Fig 1 | Multi-organ complications of covid-19 and long covid. The SARS-CoV-2 virus gains entry into the cells of multiple organs via the ACE2 receptor. Once these cells have been invaded, the virus can cause a multitude of damage ultimately leading to numerous persistent symptoms, some of which are outlined here



## Is PCC the same as Chronic Fatigue Syndrome or myalgic encephalitis?

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- 50% of PCC patients experience chronic fatigue
- PCC patients have a wider array of symptoms, so it probably is not the same disease



# Canadian COVID Statistics (Government of Canada March 2023)

- Total number = 4,609,227
- Total deaths = 51,624
- Percentage of the population to have received at least 2 doses of vaccine = 80.7

## How big a problem is LC?

- 14.8% of Canadians who contracted SARS-CoV-2 developed Long COVID.
- 47.3% of Canadians who developed Long COVID still had symptoms after 1 year.
- In 21.3% of people who developed Long COVID the symptoms were bad enough to impact their life on a daily basis.
- Long COVID is less commonly seen in vaccinated people.
- Long COVID is less commonly seen with the omicron variant.

Statistics Canada

## What are the most common symptoms associated with PCC?

- fatigue, tiredness or loss of energy (72.1%)
- coughing (39.3%)
- shortness of breath or difficulty breathing (38.5%)
- difficulty thinking or problem solving (32.9%)
- general weakness (30.9%)
- Postural orthostatic tachycardia syndrome (up to 60%)

Statistics Canada



# Who gets the Post-COVID Condition?

- Women > Men
- Vulnerable Populations

Statistics Canada

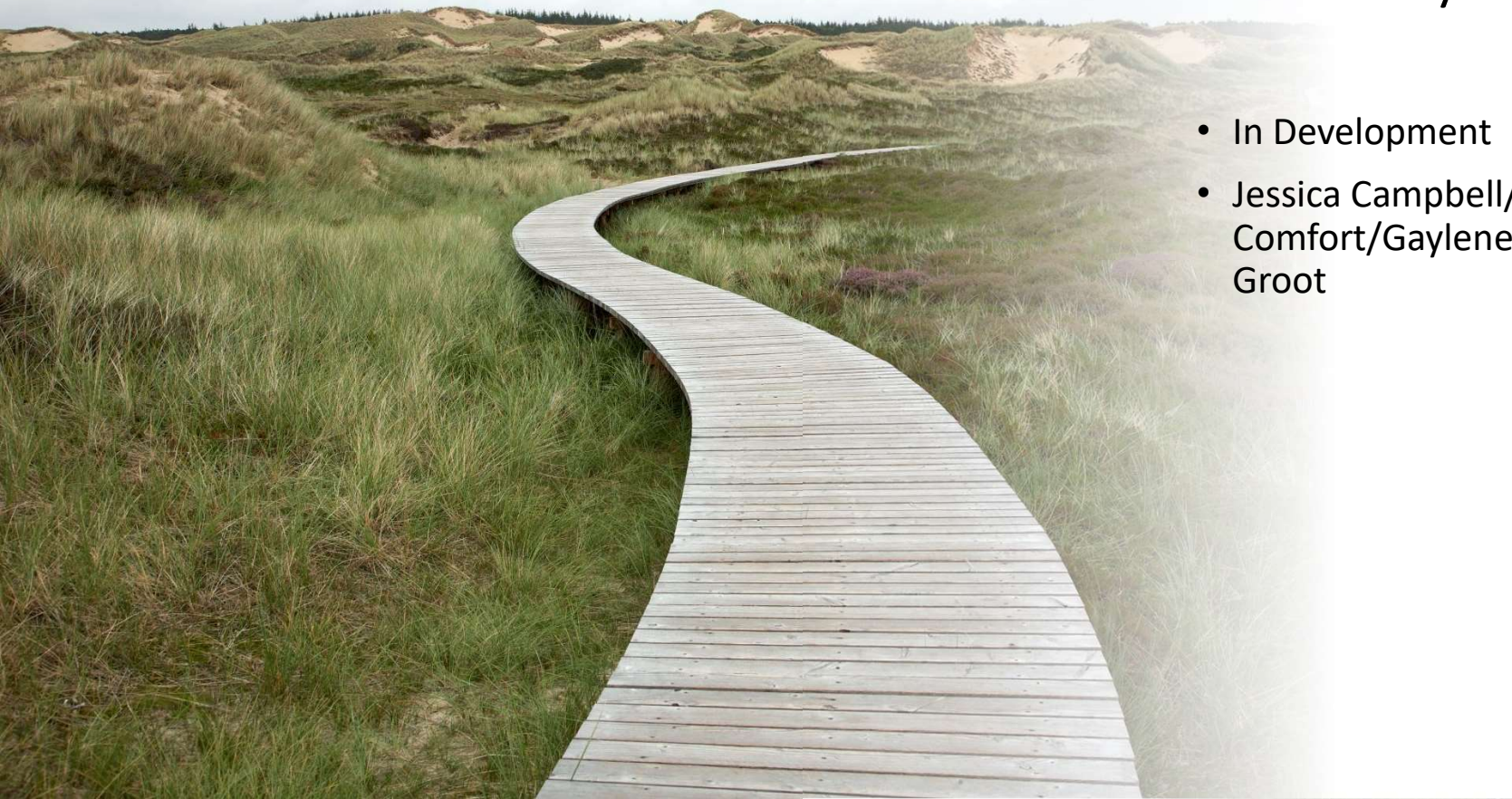
# Recommendations of the LC Working Group

1. Develop a Primary Care People-Centered Program of Care for people experiencing Long COVID that is designed for the Saskatchewan context with the option to be scaled up or down in size depending on the emerging burden of illness
2. Enhance communication and education for health care practitioners, people experiencing Long COVID, and families to build capacity for care, treatment and support.
3. Develop a program of research that strengthens the learning health system infrastructure required to support and improve implementation of the above two recommendations and attract independent researchers interested in building knowledge around Long COVID.

<https://www.saskhealthauthority.ca/your-health/conditions-diseases-services/long-covid-post-covid-19-condition-self-management-resource>

# Long COVID Pathway

- In Development
- Jessica Campbell/Patricia Comfort/Gaylene Molnar/Gary Groot



# Educational Needs





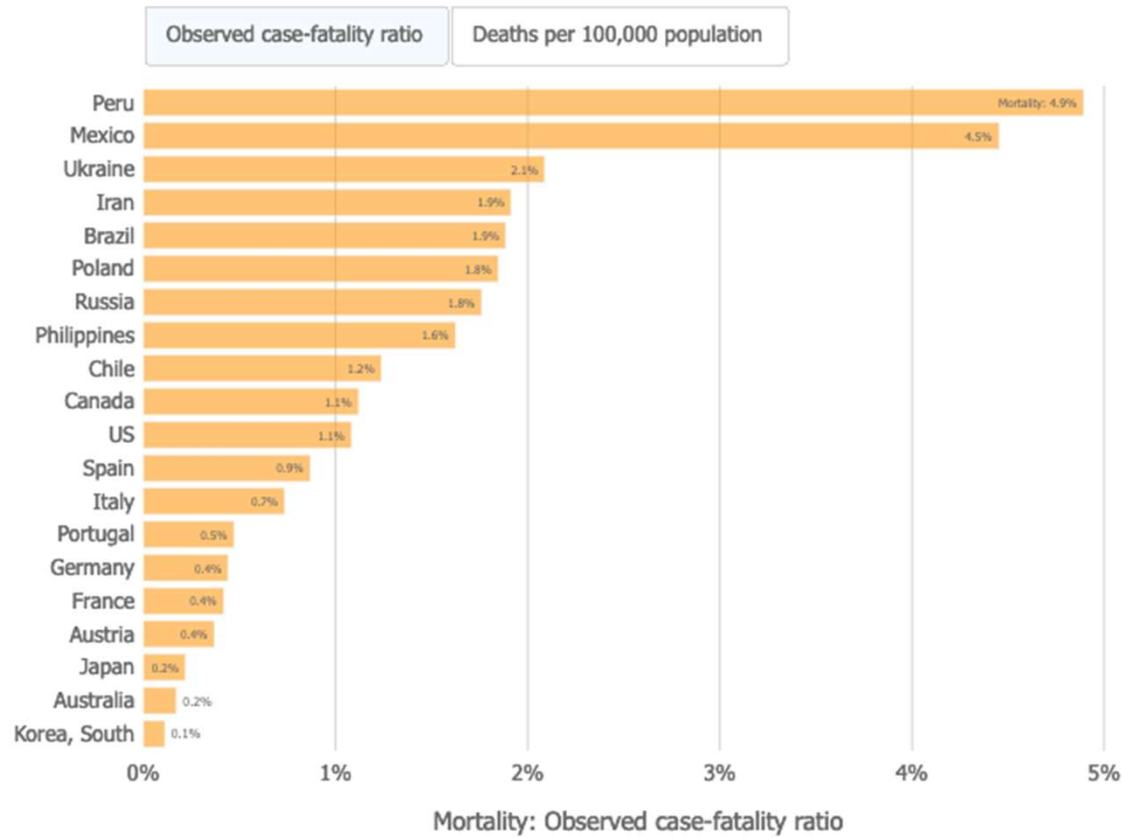
# Research

- Long COVID Research Group
- Ongoing Longitudinal Study <https://ethicadata.com/study/1241/>
- SSUC National Award
- Long COVID Web Network award <https://www.longcovidweb.ca/>
- <https://patientscientist.ca/long-covid-survey>
- MN-S award
- SCPOR Learning Health System Award
- CIHR Thinc grant (awaiting confirmation)

## Social inequities in Canada (Government of Canada)

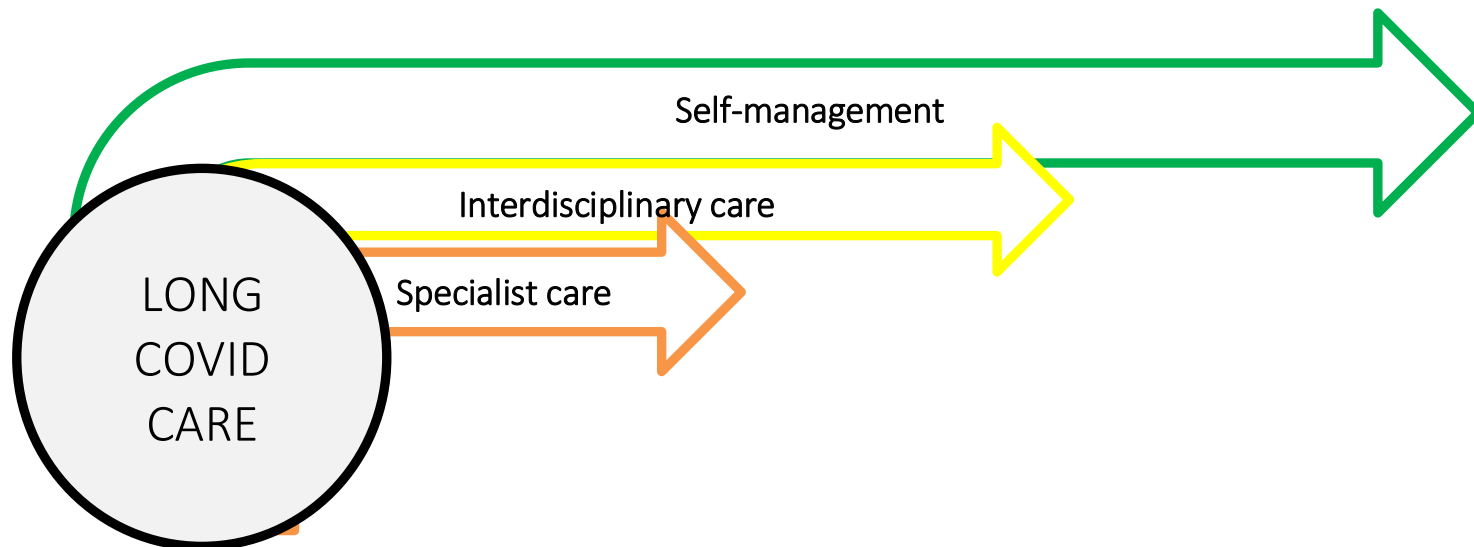
- Men were more likely to die of SARS-CoV-2 infection than women
- Between January 2020 and March 2021, we found significant inequalities in COVID-19 death rates for people living in large cities, as well as those living in:
  - apartments
  - lower-income neighbourhoods
  - neighbourhoods with more people who:
    - are a visible minority
    - recently immigrated to Canada
    - were born outside of Canada or
    - speak neither English nor French

# Social inequities worldwide



Source: Johns Hopkins  
<https://coronavirus.jhu.edu/>

# How do we treat Post-COVID Condition?







Questions?

# Question & Answer Period

- Please note that this part of the session is also **recorded**
- Learners can submit **written questions** through **Q&A** (anonymously, if desired) or **chat** (addressed to "everyone")

or

- Learners can **raise their hand** and **unmute** to ask a question

# Initial Feedback

- **To what extent did this session:**
  - Improve your knowledge about Post-COVID Condition?
- **Please provide further feedback through the survey link shared in the chat!**

# Thank you for attending!

- **Recording & Presentation PDF:** Will be available on CME's website within a week after the event ([https://cmelearning.usask.ca/specialized-programs/post-covid-condition/about\\_post-covid-condition-overview/pcc\\_past\\_events.php/](https://cmelearning.usask.ca/specialized-programs/post-covid-condition/about_post-covid-condition-overview/pcc_past_events.php/))
- **Next session:** The next session in *CME's Post-COVID Condition Spring 2023 Webinar Series* is scheduled for next Wednesday, May 24th.
- **Registration link:** <https://usask.ca.zoom.us/meeting/register/tJluceqtqzksGdEQpUdpmVp9261ddPBlpgs1>

## When COVID Won't Let Go: Understanding the Symptoms of Long COVID / Post-COVID Condition

May 24, 2023 - Hosted virtually via Zoom & featuring



**Dr. Donna Goodridge**  
RN, PhD

Professor Respiriology, Critical Care and Sleep Medicine  
Executive Director, Respiratory Research Centre  
Chair, Canadian Respiratory Health Professionals Interest Group on Improving Care for People with Advanced Respiratory Illness

**Dr. Andrea Vasquez Camargo** MD, MSc, CCFP

Physician Lead, Long COVID Educational Needs Assessment Project, Continuing Medical Education Division, University of Saskatchewan  
Family Physician - Regina Family Medicine Unit, University of Saskatchewan Department of Academic Family Medicine  
Assistant Professor, University of Saskatchewan Department of Academic Family Medicine



### Target Audience:

Patients and their families are encouraged to attend. Health care professionals are also welcome.

### Session Learning Objectives:

At the end of this session, participants will be able to:

- Identify specific symptoms related to Long COVID/Post-COVID Condition.
- Describe the most common symptoms associated with Long COVID/Post-COVID Condition (including neuropsychiatric, cardiac, and respiratory).



All presentations will be recorded and sent to all registered participants.

Funding provided by the Saskatchewan Health Authority enables us to offer **FREE** registration for 300 attendees!

**REGISTER NOW!**



**SCAN ME**



Email [Program.Coordinator@shah.sask.ca](mailto:Program.Coordinator@shah.sask.ca) for more info.





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*#learnherebecauseyoulivehere*



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