Public Health Agency of Canada | Agence de la santé publique du Canada

Canada

Post COVID-19 Condition – Review of Current Evidence and Opportunities for a Way Forward

Update to TAC prepared by the Centre for Surveillance and Applied Research

May 18, 2022

PROTECTING AND EMPOWERING CANADIANS TO IMPROVE THEIR HEALTH

What we shared at our last meeting in November 2021

- Summary of what we know and knowledge gaps
- Example of international initiatives in policy areas of interest to Canada
- Update on current actions at the Federal level
- Opportunities for a way forward

Outline for today

- What we know – Update on emerging science and policy interventions
- Knowledge gaps – Update on research and surveillance priorities
- What we are doing – Update on Health Portfolio actions and planned activities
- Discussion – Opportunities for engagement for TAC / SAC

What we know – Update on emerging science and policy interventions

Emerging scientific evidence

Prevalence

- A recent systematic review and meta-analysis (137 studies; up to Dec. 2021) [*SSRN Lancet prepub*] found:
  - prevalence of any long COVID symptom was 54% (95% CI: 34-73%) at 6 months and 54% (95% CI: 44-65%) at 12 months follow-up
  - neuropsychiatric symptoms showed a higher long-term prevalence and longer persistence than physical symptoms
- A recent survey was conducted in health care workers in QC (6,061 cases and 4390 controls) [*preprint*] and found that:
  - prevalence of post COVID-19 condition at 12 weeks was 40% (653/1746) among non-hospitalized cases and 68% (27/37) among hospitalized cases
  - A substantial proportion of non-hospitalized cases with 4-week post-COVID condition often or very often reported cognitive dysfunction with no decline at 12 weeks (e.g. impact on concentration - 33% at both 4 and 12 weeks)
- Based on a new survey in the UK, the odds of self-reporting long COVID symptoms four to eight weeks after a first coronavirus (COVID-19) infection were 49.7% lower in infections compatible with the Omicron BA.1 variant than those compatible with the Delta variant among adults who were double-vaccinated when infected (Note: official definition of long COVID is 12 weeks +).

Risk factors and effect of vaccination

- A recent systematic review and meta-analysis found that risk factors included:
  - female sex
  - experiencing severe acute COVID-19 or having been hospitalized for acute COVID-19 infection
- Preliminary findings from a recent evidence brief developed by PHAC suggest that vaccination may help reduce the risk of developing post COVID-19 condition (however, more research is needed as findings are based on a few studies)

Emerging scientific evidence – Cont'd

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What we know - Policy and program interventions

Canada

- PTs are starting to take action in this area and Post COVID-19 condition clinics have been in some provinces, with a clear focus on interdisciplinary care
- A scan of PT actions is underway by PHAC to provide additional information on current state.
- Current actions include:
  - QC: $20.5M to support 15 specialized Long COVID treatment clinics as well as further research on the condition.
  - ON: A COVID-19 Rehabilitation Clinic has been established in association with the University Health Network (UHN).
    - COVID-19 Science Advisory Table studying and preparing evidence briefs on Long COVID
  - BC: 5 Long COVID recovery clinics funded under the BC Post-COVID-19 Interdisciplinary Clinical Care Network

USA

- US President Biden has directed government agencies to take additional steps to research and treat post COVID-19 condition. The US Government will issue a report in about 4 months detailing available services and support for those who suffer from the condition.

Knowledge gaps – Update on research and surveillance priorities

Knowledge gaps

Prevalence, preventive interventions, treatments, recovery

- No robust prevalence estimates in Canada, particularly among children, Indigenous populations, and racialized populations
- Too early to determine the risk of post COVID-19 condition associated with the Omicron variant
- More evidence is needed on recovery trajectories
- There is currently no universally agreed-upon approach to diagnosis and treatment of post COVID-19 condition
- Only limited evidence still about the impact of vaccination

Biological mechanisms

- Significant research evidence gaps currently exist regarding the underlying biological mechanisms to fully estimate the health impacts of post COVID-19 condition and how to address them

Social and economic impacts

- Insufficient evidence to date to determine the socio-economic impacts of post COVID-19 condition and its impact on the healthcare system and the broader economy (e.g. children returning to normal activities, adults returning to work, impact on caregivers, use of health care services, etc.)

Key surveillance and research priorities and challenges

Surveillance

- Longitudinal population-based surveys (self-report of symptoms)
- Other sources, e.g. electronic health records and data linkage

Research

- More funding for basic science on physiopathology
- Stronger research designs
  - Ex: prospective and longitudinal, use of control groups when possible…
- Take advantage of specialized clinics being established to integrate research component

Challenge

- May need different types of control groups
  - Few people now never exposed to at least one variant, different status of vaccination, etc.

What we are doing – Update on Health Portfolio Actions

Portfolio actions to date have focussed primarily on generating and synthesizing evidence

Funded Research
LEAD: CIHR

CIHR has invested ~$17.7M in targeted rapid response funding to support 41 research projects on post COVID-19 condition

Additional post COVID-19 condition research projects have been funded through non-targeted competitions.

Surveillance
LEADS: PHAC, Statistics Canada, CIHI

- Assessing other data sources for surveillance of post COVID-19 condition in Canada
- Canadian COVID-19 Antibody and Health Survey (spring 2022)

Synthesize and Disseminate Evidence

- Best Brains Exchange (May 2021) *Leads: CIHR, PHAC*
- CSAR Systemic reviews of scientific studies on prevalence, risk factors, preventative interventions *Lead: PHAC*
- OCSO bi-weekly scans of new/emerging research *Lead: PHAC*
- Web content *Lead: PHAC*

Engagement & Collaboration

- PTs - updates to TAC and SAC *Lead: PHAC*
- National health organizations/health professional associations *Lead: PHAC*
- Patient partnerships *Lead: PHAC*
- International - WHO, UK, GloPID-R *Leads: PHAC, CIHR*
- Emerging engagement on economic modelling: *Lead: PHAC*

Canadian COVID-19 Antibody and Health Survey (CCAHS) – Cycle 2

- In April 2022, PHAC, Statistics Canada and the COVID-19 Immunity Task Force (CITF) launched the CCAHS Cycle 2

- Primary objectives of the survey are to:
  - estimate the prevalence of post COVID-19 condition in Canada, overall and by different subpopulations
  - characterize the clinical presentation of post COVID-19 condition in terms of the range, prevalence and duration of symptoms reported
  - identify risk factors contributing to the development of post COVID-19 condition
  - examine the general impacts of post COVID-19 condition on daily functioning

- The survey will also aim to better understand the general impacts of the pandemic on the health and well-being of Canadians, as they relate to:
  - the prevalence of other chronic conditions and symptoms; and
  - the challenges that Canadians may have faced in accessing healthcare

- Target population:
  - 100 000 randomly selected Canadians aged 18 years and older across the ten provinces living in private households (excludes the Territories)
  - Excludes individuals in institutions, on-reserve & on military installations

Canadian COVID-19 Antibody and Health Survey (CCAHS) – Cycle 2

- The CITF is leveraging the survey to include the addition of test kits, including:
  - Dried Blood Spot (DBS) kits - to estimate the number of Canadian adults who have infection-acquired and/or vaccine-induced antibodies to SARS-CoV-2
  - PCR test kits – to detect active SARS-CoV-2 infections

- Current Status:
  - Survey invitations and test kits are being sent in three waves, with a 2-month period of data collection and follow-up after each wave:
    - Wave 1 (including only DBS test kits) sent in April and Wave 2 (including DBS and PCR test kits) sent in early May 2022
      - Wave 3 invitations (including DBS and PCR test kits) scheduled for mail-out in June
    - Follow-up period involves sending reminders to potential respondents via letters, SMS text messages, and telephone calls

  - Promotional activities include a joint news release, proactive media outreach, outreach to provincial public health authorities, and social media campaigns

  - Statistics Canada in the process of deeming in select PHAC employees so that we can jointly validate, confront and analyze survey results on Statistics Canada's Protected B Secure Research Environment

Supplementary Web Panel

- In an effort to supplement the results from the CCAHS cycle 2, PHAC and Statistics Canada have offered PT health authorities and other stakeholders the opportunity to participate in a targeted crowdsourcing opportunity

- The web panel would involve making the survey questions included in the CCAHS available through an open web link that can be disseminated to key populations of interest

- Participating jurisdictions would be responsible for:
  - Identifying the populations of interest
  - Developing a promotion plan
  - Promoting and disseminating the survey link to potential respondents
  - Providing resources to assist in the data validation and confrontation within Statistics Canada's collaborative portal

- To date, four provinces have expressed interest in leveraging the web panel to collect data on post COVID-19 condition within their jurisdiction: BC, MB, PEI and ON

- Discussions are ongoing regarding next steps and timelines for implementation

Other data sources

1. **Canadian Primary Care Sentinel Surveillance Network (CPCSSN)**
   - PHAC is conducting an exploratory analysis of EMR data available through CPCSSN for all primary care patients between 2018-2021
   - A comparison of health and resource utilization indicators in the time periods before and after COVID-19 diagnosis will serve as a proxy measure for identifying potential cases of post COVID-19 condition in Canada

2. **Canadian Chronic Disease Surveillance System (CCDSS)**
   - PHAC is working with select provinces to determine the feasibility of using existing surveillance systems, such as the CCDSS, to include a COVID-19 flag

3. **Canadian COVID-19 Emergency Department Rapid Response Network (CCEDRRN)**
   - CCEDRRN investigators are currently leading a study aimed at determining the prevalence of post COVID-19 condition among patients visiting Emergency Departments across Canada
   - The study will also examine risk factors for developing post COVID-19 condition, and the impact of this condition on patients' reported quality of life and health service use

Synthesizing and Disseminating Evidence

- Ongoing scans of evidence and policy responses
  - **Office of the Chief Science Officer** biweekly scans of new / emerging research on post COVID-19 condition
  - COVID-END/SPOR Living Synthesis – potential role for regular updates on long COVID
- Rapid reviews and evidence briefs (PHAC / PHAC-funded)
  - Living evidence brief on the associations and safety of COVID-19 vaccination and post COVID-19 condition
  - Update 1 – April 14, 2022 (currently being finalized for distribution in this week's tracker)
  - Original report – January 13, 2022
- Systematic reviews (PHAC/CSAR)
  - Risk factors and preventative interventions for post COVID-19 condition: living systematic review (Pre-print March 2022)
  - Prevalence of long-term effects in individuals diagnosed with COVID-19: a living systematic review (Pre-print June 2021; under peer-review)
- Knowledge exchange and translation events and products
  - Best Brains Exchange (May 2021)
  - **Web content on Canada.ca – Update planned for the week of May 23**

Engagement and Collaboration

Engagement with experts and other government departments/levels

- **Provincial and territorial governments** – updates to SAC and TAC
- Collaboration with **academic experts** on systematic reviews and surveillance
- Office of the Chief Science Officer (PHAC) broader scientific network
- **PHAC led Inter-Departmental Working Group**: PHAC, HC, CIHR, Stat Can, ISC, ESDC, CIHI
- Emerging collaboration on economic modelling

National health organizations / professional associations

- College of Family Physicians of Canada (information-sharing for guidelines development)
- Canadian Paediatric Society (surveillance of Post COVID-19 condition through CPSS)

Patient partnerships

- Panel of individuals living with post COVID-19 condition whose valuable input from a patient's perspective have supported various PHAC-led initiatives (i.e. web content, rating of outcomes for systematic reviews, etc.) (September 2021 – March 2022)

International engagement to share latest scientific evidence

- E.g. WHO, the UK National Institute for Health and Care Excellence, etc.

Where to next – planned activities

Planned activities at PHAC

- **Strengthening public health surveillance**, including:
  - Development and implementation of a follow-up survey – examine longer -term outcomes
  - Additional data sources from existing surveillance systems
- **Planning the development and dissemination of evidence-based guidelines and tools** for health professionals and for Canadians
  - Guidance for the identification, prevention and management (including models of care) of post COVID-19 condition
  - Adapted to the Canadian context, and for diverse populations (e.g. indigenous, racialized, etc.) where feasible
- **Facilitate coordination and information sharing** by creating a FPT dashboard of actions on post COVID-19 condition

In summary

- Post COVID-19 condition is a complex condition that requires longer term dedicated studies to better understand the condition and its impacts on health, society and workforce / labour market.

- Health Portfolio will collaborate with PTs and other stakeholders to:

  - **Generate the evidence needed** to better understand post COVID-19 condition and estimate the impact (health and economic) in Canada, including on vulnerable populations
    - Seeking expressions of interest for the web panel of the CCAHS.

  - **Monitor** national and international evidence and responses

  - **Develop and disseminate evidence-based guidelines** for patients and health care professionals that are adapted to the Canadian context

  - **Explore potential policy directions and interventions to support** for those with post COVID-19 condition

Discussion – opportunities for engagement

- Interest in receiving updated dashboard on FPT actions on post COVID-19 condition?
  - Help validate or suggest additional content?
- Interest in promoting web panel link to specific groups?
- Interest and capacity to contribute to work on evidence-based guidelines and tools?

Annex – for additional information

Emerging scientific evidence

Risk factors

- A recent systematic review and meta-analysis *(preprint)* on risk factors for post COVID-19 condition (≥ 12 weeks) found:
  - Large associations (OR≥2) with:
    - Hospitalization in acute stage and non-recovery at 12-21 weeks, dyspnea and return to work
    - Severe/critical acute COVID 19 and cognitive impairment
  - Small to moderate associations (OR ≥1.5-1.99)
    - Female sex and non-recovery, fatigue, dyspnea and functional capacity
    - Severe/critical acute COVID 19 and non-recovery and depression
    - ≥1 comorbidities and non-recovery
    - Chronic pulmonary disease and fatigue
    - COPD with cognitive impairment
    - >5 symptoms in the acute phase and fatigue
- Most findings were of low or very low certainty, often from risk of bias and inconsistency/single studies
- Findings are most applicable to those experiencing post Covid-19 condition at ≥22 weeks after Covid-19 illness
- Few studies adjusted for any SES/social factors
- Only 3 risk factors (female sex, need for hospitalization and severe/critical Covid-19 illness severity) had associations with >1 outcome