

# Post-COVID Syndrome / Long-COVID / Long-Haulers

## CUPE BC REGION GUIDE

Updated October 2022

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The screenshot shows the website interface for the Provincial Health Services Authority. At the top, there is a navigation bar with links for 'Our Services', 'Health Info', 'Our Research', 'About', 'Contact', 'Health Professionals', 'Donate', and 'Careers'. Below this is a search bar and social media icons. The main content area features a breadcrumb trail: 'Health Info / Living with Persistent Post-COVID-19 Symptoms'. The article title is 'Living with Persistent Post-COVID-19 Symptoms'. The introductory text asks if the reader is a BC resident struggling with post-COVID-19 symptoms and looking for help. It mentions the Post-COVID-19 Interdisciplinary Clinical Care Network. A section titled 'What is Post-COVID or Long-COVID?' is expanded. Below this, three tabs are listed: 'Self-Care Info', 'Clinical Care', and 'Additional Care Info'. To the right, there is a section titled 'Symptoms of post-COVID' with a list of symptoms surrounding an illustration of a person. The symptoms listed are: Post Traumatic Stress Disorder, Brain Fog, Hair loss, Headaches, Ringing in the ears, Taste and smell changes, Anxiety, Depression, Chest pain, Lack of Appetite, Nausea, Abdominal pain, Diarrhea, Joint and muscle pain, Pins and needles or numbness, Weight loss, Fever, Dizziness, Cough, Sore throat, Difficulty swallowing, Breathlessness, Heart palpitations, Postural Orthostatic Tachycardia Syndrome (POTS), Sleep disturbance, Fatigue, Post-Exertional Malaise, and Skin rashes.

**This Guide should always be considered a draft working document.**

# Up to 72.5 percent of people who have had COVID-19 develop Long-Haulers / Long-COVID / Post-COVID Syndrome

(JAMA, 2021)

## I.I INTRODUCTION:

This Guide (updated October 2022) is for CUPE Local Executives, Joint Health and Safety Committees and CUPE members in the BC Region. They have asked for information related to the long-term outcomes of having COVID-19. There are significant updates and changes in the October 2022 version of this Guide e.g. the addition of Section II.IV on risk factors for developing Long-Haulers. **This Guide is accompanied by a Bulletin summarizing key points.**

As we enter the eighth wave of COVID-19 in Canada and are finishing the third year of COVID-19, there are many reports of long-term symptoms developing after people have developed COVID-19. Evidence shows that many people will go on to develop what is called Post-COVID Syndrome, Long-COVID, Long-Haulers, etc. (“Long-Haulers”). Current worldwide data indicates that anywhere from 5% to 91% of people who had COVID-19 may develop this potentially life altering condition (there is disagreement as to what to identify this as).<sup>1</sup> The number of Canadians affected by Long-Haulers is growing daily and could be in the millions (as one in three Canadians is suspected to have had COVID-19).

This Guide reviews some of the health and safety and workers compensation issues, recognizing that the information changes daily:

- What is Post-COVID Syndrome / Long-COVID / Long-Haulers (hereinafter referred to as “Long-Haulers” and noting the terminology will change)
- Examples of symptoms of Long-Haulers
- Prevalence and who is affected, including risk factors for Long-Haulers
- Potential impacts on employment
- Potential impacts on Collective Agreement entitlements
- Potential impacts and considerations for WorkSafeBC claims
- Potential impacts and considerations for health and safety

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<sup>1</sup> Science Daily. (April 19, 2022). See <https://www.sciencedaily.com/releases/2022/04/220419092334.htm>

## I.II. HOW THIS IS RELATED TO HEALTH AND SAFETY (SEE SECTION II.VI, II.VII AND II.VIII):

Long-Haulers will affect many aspects of employment. These may include:

- The entitlements under the Collective Agreement e.g. sick leave, discipline (such as non-culpable discharge), role of health and safety committees, scheduling / breaks, etc.
- Human rights related issues e.g. accommodation of potentially episodic / intermittent long-term health conditions, stigma, equity issues, etc.
- Workers' compensation benefits e.g. filing claims, sequelae, vocational rehabilitation

In terms of health and safety, prevention of COVID-19 transmission is the primary consideration. **Where Long-Haulers is present, workplaces may need to have risk assessments to address safety issues pertaining to the impact of worker symptoms e.g. use of equipment, ergonomics, adjustments to schedules and breaks, psychological risk factors that need to be addressed - the CSA Group Psychological and Work Disability Management Standards (Z1003-13 and Z1011), etc.**<sup>2</sup> This is important given the recent University of British Columbia study (October 24, 2022) regarding the psychological health and safety issues pertaining to self-harm and depression.<sup>3</sup> Long-COVID may exacerbate these issues and the risks posed to workers. This is a primary health and safety issue worsened by the pandemic and what is often referred to as the second pandemic. As per the UBC study lead (Dr. John Ogrodniczuk, head of psychotherapy at UBC) mental health was a public health crisis even before Long-Haulers:

“Nearly half of Canadian men are at risk of depression, according to a study led by University of B.C. researchers, with one in three reporting thoughts of suicide and self-harm”

“This is a serious public health crisis”

The presence of psychological distress before COVID-19 infection may increase the risk of Long-Haulers and aggravate pre-existing symptoms.<sup>4</sup> This is a key consideration for health and safety in the workplace and has impacts on all stakeholders.

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<sup>2</sup> CSA Group. Z1003-13 (which is being updated in 2022 and 2023). See <https://www.csagroup.org/article/canca-z1003-13-bnq-9700-803-2013-r2018/> and Z1011.1 Work Disability Management Standard. See <https://www.crwdp.ca/en/csa-z10111-work-disability-management-standard-paramedic-service-organization-webinar-series>

<sup>3</sup> Vancouver Sun. (October 24, 2022). UBC-led study finds almost half of Canadian men at risk for depression. See <https://vancouversun.com/news/local-news/ubc-led-study-finds-almost-half-of-canadian-men-at-risk-for-depression>

<sup>4</sup> Harvard School of Public Health (and JAMA Psychiatry). (September 07, 2022). See <https://www.hsph.harvard.edu/news/press-releases/psychological-distress-before-covid-19-infection-increases-risk-of-long-covid/>

**“A systematic review of studies published between January 1, 2020, and January 29, 2021, estimated that an additional 53 million cases of major depressive disorder (MDD) (an increase of 27%) and an additional 76 million cases of anxiety disorders (an increase of 25%) globally.”<sup>5,6</sup>**

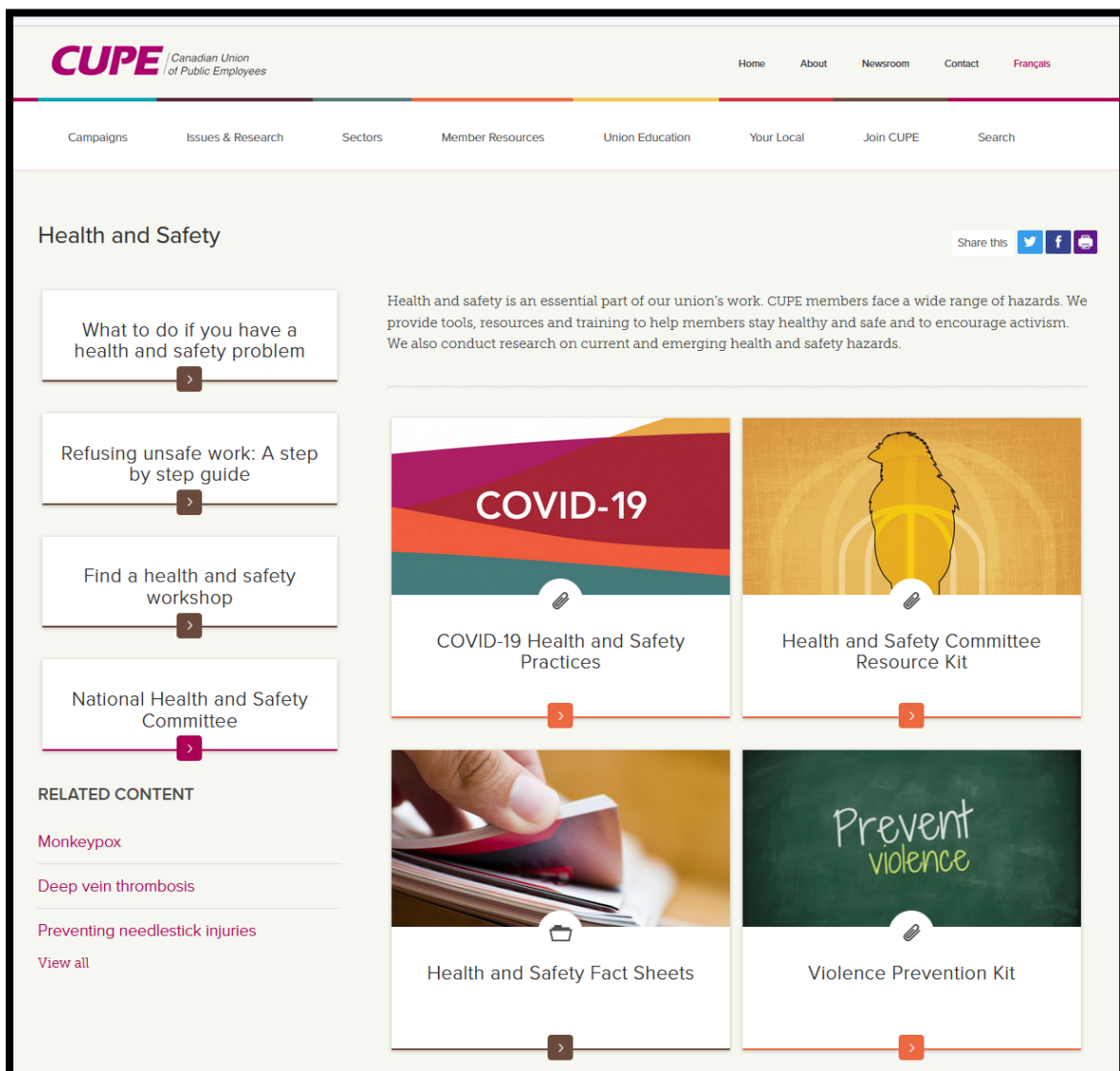
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<sup>5</sup> Lake, J. (October 24, 2022). COVID-19 and Mental Health: Global Consequences and CAM Approaches. See <https://www.psychiatrytimes.com/view/covid-19-and-mental-health-global-consequences-and-cam-approaches>. Also see COVID-19 Mental Disorders Collaborators. Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. *Lancet*. 2021;398(10312):1700-1712

<sup>6</sup> Skillen, E. (October 06, 2022). ‘They Have to Work to Make Ends Meet’: Long Covid is Affecting the Workplace. See <https://www.canadianbusiness.com/ideas/working-with-long-covid/>

### I.III. NOTES AND LIMITATIONS TO GUIDE:

This Guide is not medical, scientific or legal advice. The science changes weekly. This Guide does not specifically address human rights considerations, such as the duty to accommodate, nor labour relations considerations such as Collective Agreement entitlements. This Guide is without prejudice and precedent to labour relations and human rights matters, including accommodation. Please contact a CUPE National Representative with respect to these and any other matters at 604-291-1940 (BC Regional Office). This Guide does not supersede legislation, occupational health and safety regulations, workers compensation claims policies, claims Practice Directives, province of BC Provincial Health Officer Orders, Collective Agreements, etc. It is only a starting point to educate members and raise awareness.



## II. ISSUES TO CONSIDER (NOT AN EXHAUSTIVE LIST):

### II.I. WHAT IS LONG-HAULERS (THIS TERM IS SUBJECT TO CHANGE):

There is no standard universally accepted definition of what is often called “Long-Haulers”. It is thought that Long-Haulers is post-acute sequelae (consequence of a previous disease) of SARS-CoV-2. It may occur anywhere from four weeks (US CDC), twelve weeks (UK National Health Service) to six months or longer after infection with SARS-CoV-2. The duration varies considerably depending on the study and the jurisdiction. The most common symptoms - fatigue, post-exertional malaise, shortness of breath, cough, joint and muscle pain, headaches, and cognitive dysfunction – seem to change with each study. Research is ongoing to determine the cause of Long-Haulers. Long-Haulers may be caused by the following (although there is no medical and scientific consensus on this and it varies by country):

- Damage from the original infection
- Lingering remnants of the SARS-CoV-2 virus in the body
- Residual inflammation – especially damage to the pulmonary system
- Autoimmune responses (over 32 markers have been identified to date)

It can affect people who were severely symptomatic, and had to be hospitalized for COVID-19, or people who were completely asymptomatic. Long-Haulers has been difficult to study and offer treatment due to such variables as: the overlap between subjective and objectively measurable symptoms; the variety of symptoms; fluctuations in symptoms; endless new variants and subvariants; data collection issues; stigma and access to medical care and diagnostics. There are tests that identify inflammatory and other markers associated with Long-Haulers although it is often diagnosed based on symptoms. There are issues related to diagnosis including: access to medical care; diagnosis; there are over 200 reported symptoms; physical versus neurological and psychological symptoms (anxiety, depression, PTSD, etc.); severity of symptoms; time period looked at e.g. 12 weeks versus 52 weeks or longer; subjective versus objective symptoms; prevalence of pre-existing / comorbid conditions; reporting structures used and ability to access; whether symptoms are attributable to breakthrough infections / getting COVID again; etc. Integrative care is the recommended treatment approach as per the US CDC and the availability of resources are increasing monthly.<sup>7</sup>

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<sup>7</sup> US CDC. See <https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-index.html>

## II.II. SYMPTOMS:

The BC Provincial Health Services Authority website has provided information on the various symptoms (including videos) as per Figure 1:<sup>8</sup>

Figure 1:

Please find resource sheets and videos under each symptom, listed alphabetically.

<b>Breathlessness</b>	<b>+</b>
<b>Brain Fog &amp; Cognitive Issues</b>	<b>+</b>
<b>Fatigue &amp; Pacing</b>	<b>+</b>
<b>General Recovery</b>	<b>+</b>
<b>Hair Loss</b>	<b>+</b>
<b>Headaches</b>	<b>+</b>
<b>Heart Health</b>	<b>+</b>
<b>Mental Health</b>	<b>+</b>
<b>Post-Exertional Malaise</b>	<b>+</b>
<b> ringing in the Ears</b>	<b>+</b>
<b>Taste and Smell Changes</b>	<b>+</b>

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<sup>8</sup> BC Provincial Health Services Authority. See <http://www.phsa.ca/health-info/post-covid-19-care-recovery>

The Provincial Health Services Authority has a list of treatment clinics as per Figure 2.

Figure 2:

The image shows a screenshot of a web page with a dark green header and footer. The main content area is white with a dark green border. It is divided into three sections: 'Recovery Clinics', 'Referrals', and 'Clinic Locations'. The 'Recovery Clinics' section contains two paragraphs and a video link. The 'Referrals' section is a simple header with a plus sign. The 'Clinic Locations' section contains a bulleted list of five hospitals and a note about virtual health visits.

## Recovery Clinics

Post-COVID-19 clinics are available to all patients across B.C. who meet clinical eligibility criteria, and virtual health options are available in some cases.

These clinics are interdisciplinary, integrated with primary care providers, and based on a model of supportive care co-designed by clinicians and survivors of COVID-19.

Video: [What is the Post-COVID-19 Recovery Clinic and what can I expect?](#) – An overview of the clinics and ways the network can support you, even if you don't come into a clinic.

## Referrals

## Clinic Locations

- **St. Paul's Hospital** | Vancouver, BC ([Providence Health Care](#))
- **Vancouver General Hospital** | Vancouver, BC ([Vancouver Coastal Health](#))
- **Jim Pattison Outpatient Care and Surgery Centre** | Surrey, BC ([Fraser Health](#))
- **Abbotsford Regional Hospital** | Abbotsford, BC ([Fraser Health](#))
- **Royal Jubilee Hospital** | Victoria, BC ([Island Health](#))

Virtual health visits are also available.

The symptoms of Long-Haulers vary considerably. There are over 200 symptoms and this is increasing.<sup>9</sup> The most common long-term symptoms (52 weeks) are fatigue, shortness of breath, low blood pressure, cough, joint and muscle pain, headaches and cognitive symptoms.<sup>10</sup> Symptoms include (not an exhaustive list):<sup>11</sup>

- Hair loss
- Headaches
- Ringing in the ears / tinnitus
- Changes in taste and smell
- Anxiety
- Depression
- Post traumatic stress disorder
- Loss of appetite
- Low blood pressure
- Chest pain
- Heart palpitations
- Postural orthostatic tachycardia syndrome
- Inflammation of the heart muscle
- Myocarditis
- Pericarditis
- Nausea
- Abdominal pain
- Diarrhea
- Kidney damage
- Liver damage
- Joint pain
- Muscle pain
- Fatigue
- Post-exertional malaise
- Numbness
- Pins and needles sensations
- Weight loss
- Weight gain

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<sup>9</sup> The Lancet. (April 2021). See <https://www.thelancet.com/action/showPdf?pii=S2589-5370%2821%2900299-6>

<sup>10</sup> Mayo Clinic. (October 2022). See <https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-long-term-effects/art-20490351>

<sup>11</sup> Johns Hopkins Medicine. (December 2021). See <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-long-haulers-long-term-effects-of-covid19>

- Brain fog
- Fever
- Dizziness
- Sore throat
- Cough
- Shortness of breath
- Sleep disturbances
- Skin rashes
- Type 2 diabetes

**There may be issues with differential diagnosis.** These symptoms may overlap with post intensive care syndrome<sup>12</sup> and multi-system inflammatory syndrome (where different body parts can become inflamed, including the heart, lungs, kidneys, brain, skin, eyes or gastrointestinal organs).<sup>13</sup> The most common current comparison is to lupus.<sup>14</sup>

**There is limited evidence linking Long-Haulers with other pre-existing conditions.** Many neurological symptoms resemble post-concussion syndrome. Symptoms may fluctuate and relapse / recur over time. In a 2022 study sponsored by Viral Neuro Exploration (VINEx), COVID Long-Haulers Support Group Canadian and Neurological Health Charities Canada (NHCC), numerous neurological symptoms were reported:<sup>15</sup>

“The findings confirm that the brain health impacts of Long COVID exist and persist for Canadians from coast-to-coast and negatively impact their daily life and ability to work. The most frequently reported brain health impacts include difficulty concentrating and thinking, short-term memory loss, sleep disturbances, headaches, dizziness, and depression.”

**Persons with pre-existing conditions, such as hypertension, diabetes or ischemic heart disease, may be at much higher risk for hospitalization due to COVID-19 and developing Long-Haulers. There is data on the impact of pre-existing conditions on Long-Haulers.**<sup>16,17</sup>

<sup>12</sup> Patients with COVID-19 are staying longer than the average three to four days in the intensive care unit, may be at greater risk for developing post-intensive care syndrome. Johns Hopkins Medicine. (June 2020). See

<https://www.hopkinsmedicine.org/news/articles/caring-for-patients-with-covid-19-and-post-intensive-care-syndrome>

<sup>13</sup> CDC. See <https://www.cdc.gov/mis/mis-c.html>

<sup>14</sup> Lupus. Mayo Clinic. See <https://www.mayoclinic.org/diseases-conditions/lupus/symptoms-causes/syc-20365789>

<sup>15</sup> Viral Neuro Exploration (VINEx), COVID Long-Haulers Support Group Canada, and Neurological Health Charities Canada (NHCC).

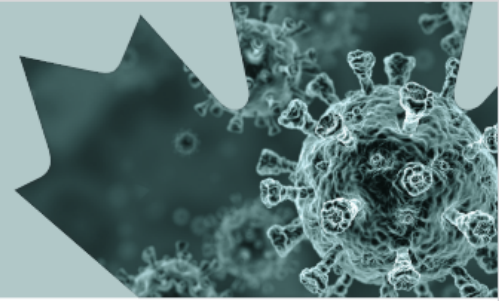
(May 2022). See <https://imgix.cosmicjcs.com/8774fd00-cbab-11ec-b98f-db6f075d4374-FINAL---Second-Survey-Report-May-2022.pdf>

<sup>16</sup> Public Health Agency of Canada. Impact of COVID-19 in adults with chronic conditions: Emergency departments visits. See <https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/coronavirus-disease-covid-19/epidemiological-economic-research-data/impact-covid-19-adults-chronic-conditions-emergency-department-visits/factsheet.pdf>

<sup>17</sup> Duggal, P., Penson, P., Manley, H.N., Vergara, C., Munday R.M., Duchon, D., Linton, E.E., Zurn, A., Keruly, J.C., Mehta, S.H., and Thomas, D.L. (2022). Post-sequelae symptoms and comorbidities after COVID-19. 2022 May;94(5):2060-2066. See <https://pubmed.ncbi.nlm.nih.gov/35032030/>

# Impact of COVID-19 in adults with chronic conditions:

## Emergency department visits



### Overview

COVID-19 has had a substantial impact on people in Canada. It has affected people's health and strained the healthcare system. [As of early May 2022, more than 3.7 million SARS-CoV-2 infections, confirmed by polymerase chain reaction, have been reported in Canada.](#)

This fact sheet describes the demographics, health characteristics, and outcomes of adults during their first documented emergency department visit (EDV) with a COVID-19 diagnosis. We also look at the relationship between severe EDV outcomes (i.e., hospital admission, transfer to an acute care facility, or death) and sex, age and selected chronic conditions.

We've limited our analysis to adults (aged 20+) visiting select emergency departments in Canada between January 1, 2020 and March 31, 2021. Please refer to the [technical notes](#) for data sources, methods, and limitations.

### Summary of characteristics and outcomes

We analyzed data for 97,939 adult EDVs with a confirmed (69.3%) or suspected (30.7%) COVID-19 diagnosis. Of these:

- › about half were male (49.6%)
- › the average age was 52 years
- › 28.9% arrived by ambulance
- › 74.4% were triaged as urgent or more serious

We examined the data to determine which patients had any of 18 chronic conditions listed in Figure 3. About 22.3% had at least 1 chronic condition.

The most common chronic conditions documented in their acute care hospitalizations over the past 10 years were:

- › hypertension (11.8%)
- › diabetes mellitus (9.4%)
- › ischemic heart disease (5.3%)

With respect to healthcare use over the past 6 months:

- › 28.6% had at least 1 previous EDV
- › 7.9% had at least 1 previous acute care hospitalization

In regards to EDV outcomes (Figure 1):

- › 23.8% were admitted or transferred to an acute care facility
- › 0.2% died

### Characteristics of patients with severe outcomes

Severe outcomes include being admitted to hospital, transferred to an acute care facility, and death. Compared to people with other outcomes, those who had severe outcomes were more likely to:

- › be male (55.6% versus 47.7%)
- › be older (average age: 67 versus 47 years)
- › have had an EDV (35.5% versus 26.4%) or acute care hospitalization (18.6% versus 4.5%) over the past 6 months
- › have pre-existing chronic conditions



Public Health  
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publique du Canada

Canada

### II.III. HOW MANY PEOPLE ARE AFFECTED AND WHO IS AFFECTED:

The percentage of people who develop Long-Haulers varies widely from 5%<sup>18</sup> to over 72.5%<sup>19</sup> and possibly as high as 91% in one study. The data appears to change weekly. There are new variants and subvariants e.g. BQ.1.1, reinfections / breakthrough infections, waning natural immunity, waning immunity conferred by vaccinations (the fifth vaccination is now being administered in Canada), cross infections of the influenza virus and SARS-CoV-2, etc. The issue and question as to why the extreme range of percentages of prevalence Long-Haulers / Long-COVID/Post-COVID Syndrome e.g.:

- 5% to 91% (The Lancet (numerous studies e.g. 2021, 2022))<sup>20, 21</sup>
- 5% to 20% (USA (multiple studies))<sup>22</sup>
- 10% to 20% (World Health Organization, December 2021)<sup>23</sup>
- 14.8% (Government of Canada, 2022)<sup>24</sup>
- 42% (Scotland, October 2022)<sup>25</sup>
- 72.5% (JAMA, 2021)<sup>26</sup> Note: there are numerous JAMA studies with varying numbers

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<sup>18</sup> Imperial College of London. (July 2021). See <https://www.imperial.ac.uk/news/226014/long-covid-unpicking-lasting-impact-covid-19/>

<sup>19</sup> Nasserie, T., Hittle, M., and Goodman, S.N. (2021). Assessment and the Frequency and Variety of Persistent Symptoms Among Patients With COVID-19 A Systematic Review. *JAMA Network Open*, 4(5). See <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2780376Austin>

<sup>20</sup> Ballering, A.V., van Zon, S.K.R., Hartman, T.C., and Rosmalen, J.G.M. (August 06, 2022). Persistence of somatic symptoms after COVID-19 in the Netherlands: an observational cohort study. See [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(22\)01214-4/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(22)01214-4/fulltext)

<sup>21</sup> Davis, H.E., Assaf, G.S., McCorkell, L., Wei, H., Low, R.J., Re'em, Y., Redfield, S., J.P., and Akrami, A. (July 15, 2021). Characterizing long COVID in an international cohort: 7 months of symptoms and their impact. See [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(21\)00299-6/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(21)00299-6/fulltext)

<sup>22</sup> Mayo Clinic. (2022). See <https://www.mayoclinic.org/diseases-conditions/coronavirus/in-depth/coronavirus-long-term-effects/art-20490351>

<sup>23</sup> World Health Organization. (2021). Coronavirus disease (COVID-19): Post COVID-19 condition. See [https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-\(covid-19\)-post-covid-19-condition](https://www.who.int/news-room/questions-and-answers/item/coronavirus-disease-(covid-19)-post-covid-19-condition)

<sup>24</sup> Government of Canada. Post COVID-19 Condition (long COVID). See <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms/post-covid-19-condition.html>

<sup>25</sup> Hastie, C.E., Lowe, D.J., McAulsey, A., Winter, A.J., Mills, N.L., Black, C., Scott, J.T., O'Donnell, C.J., Blane, D.N., Browne, S., Ibbotson, I.R., Pell, J.P. (2022). Outcomes among confirmed cases and a matched comparison group in the Long-COVID in Scotland study. *Nature Communications*, 13. See <https://www.nature.com/articles/s41467-022-33415-5>

<sup>26</sup> Nasserie, T., Hittle, M., and Goodman, S.N. (2021). Assessment and the Frequency and Variety of Persistent Symptoms Among Patients With COVID-19 A Systematic Review. *JAMA Network Open*, 4(5). See <https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2780376>

Why is there a wide range of data? **Long-Haulers appears to occur on a continuum.** The reasons, in no particular order, include the following (non-exhaustively):

- The subjective nature of many symptoms
- That there are over 200 reported symptoms
- How many symptoms a person has - one versus dozens and physical versus neurological
- Severity of symptoms
- Definition of disablement - partial recovery versus full recovery versus not recovered
- Time period looked at e.g. 12 weeks versus 52 weeks or longer
- Location of studies
- Subjective versus objective symptoms in studies
- Date of studies
- Duration of studies
- Who performed the studies
- Number of participants in studies
- Prevalence of pre-existing / comorbid conditions
- Age
- Gender
- Reporting structures used and ability to access
- Whether symptoms are attributable to breakthrough infections / getting COVID again (though no meta study has shown an increase in Long-Haulers / Long-COVID / Post-COVID Syndrome with multiple infections - the risk stays the same)

At one end of the continuum (e.g. 5%), people may have multiple symptoms, lasting 52 weeks or more post-COVID infection, and are disabling. Alternatively (e.g. 91%) people may have one or two symptoms, lasting only 12 weeks post-COVID infection, and these may not be disabling.

Gender and age also play roles. Women may develop Long-Haulers symptoms more than men and different symptoms.<sup>27</sup> Of the women in investigation, 72% had fatigue as their dominant symptom while of the 27 men, 58% had shortness of breath as their dominant symptom.<sup>28</sup> Another study showed up to 52% of teens and young adults may get Long-Haulers.<sup>29</sup>

Long-Haulers symptoms and prevalence vary depending on many overlapping variables. Symptoms may change depending on the variant and subvariant.<sup>30</sup> There are no meta-studies on the prevalence and severity of Long-Haulers in people who have had COVID-19 more than once or who have had different variants and sub-variants of SARS-CoV-2.

One observational study from Italy found that those people infected with the Alpha variant were more likely to report muscle aches, cognitive issues (brain fog), insomnia and mental health issues (anxiety).<sup>31</sup> We are now in the 8<sup>th</sup> wave and there are over 300 subvariants of the Omicron variant alone.<sup>32</sup>

People aged 35 to 69 and people with another health condition or a disability are at higher risk for developing Long-Haulers. The long-term consequences of this overlap are not known.<sup>33</sup> As stated previously, there is some initial data on the impact of pre-existing conditions on Long-Haulers.<sup>34,35</sup>

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<sup>27</sup> Mayo Clinic Proceedings. See <https://www.mayoclinicproceedings.org/>

<sup>28</sup> Mayo Clinic Proceedings. See <https://www.mayoclinicproceedings.org/>

<sup>29</sup> HealthyChildren.Org. See <https://www.healthychildren.org/English/health-issues/conditions/COVID-19/Pages/Long-Haul-COVID-19-in-Children-and-Teens.aspx>

<sup>30</sup> University of Florence and Careggi University Hospital. European Congress of Clinical Microbiology & Infectious Diseases

<sup>31</sup> University of Florence and Careggi University Hospital. European Congress of Clinical Microbiology & Infectious Diseases

<sup>32</sup> Miller, A. (October 2022). New immune-evasive Omicron strains coming. Is Canada ready? CNC News. See <https://www.cbc.ca/news/health/omicron-subvariants-immune-escape-bivalent-covid-19-vaccines-canada-1.6625212>

<sup>33</sup> Public Health Agency of Canada. Impact of COVID-19 in adults with chronic conditions: Emergency departments visits. See <https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/coronavirus-disease-covid-19/epidemiological-economic-research-data/impact-covid-19-adults-chronic-conditions-emergency-department-visits/factsheet.pdf>

<sup>34</sup> Public Health Agency of Canada. Impact of COVID-19 in adults with chronic conditions: Emergency departments visits. See <https://www.canada.ca/content/dam/phac-aspc/documents/services/diseases/coronavirus-disease-covid-19/epidemiological-economic-research-data/impact-covid-19-adults-chronic-conditions-emergency-department-visits/factsheet.pdf>

<sup>35</sup> Duggal, P., Penson, P., Manley, H.N., Vergara, C., Munday R.M., Duchon, D., Linton, E.E., Zurn, A., Keruly, J.C., Mehta, S.H., and Thomas, D.L. (2022). Post-sequelae symptoms and comorbidities after COVID-19. 2022 May;94(5):2060-2066. See <https://pubmed.ncbi.nlm.nih.gov/35032030/>

## II.IV. RISK FACTORS FOR LONG-HAULERS (THIS IS A META-DATA COMPILATION AND SUBJECT TO CHANGE):

The links between pre-existing conditions (and other risk factors) and Long-Haulers are much less clear than with COVID-19:

### RISK INCREASE

### RISK FACTORS



- Socio-economic status
- Ex-smoker or current smoker
- People with alterations in the variety and volume of resident bacteria during their initial COVID-19 infection
- Gender (especially women aged 40 to 60)
- Persons from equity seeking group (racialized persons)
- Age (especially men over age 70 - up to a 67% increase in the likelihood of developing Long-Haulers)
- Presence of symptoms of COVID-19 (Note: people who didn't have symptoms or had only mild to moderate symptoms during initial infection may get Long-Haulers)
- Having five or more symptoms during the first week of having COVID-19
- High viral load and severity of infection (up to a 400% increase in the likelihood of developing Long-Haulers)
- Duration of symptoms of COVID-19
- Presence of respiratory symptoms, headache and sore throat during the initial COVID-19 infection



- Hair loss during the initial COVID-19 infection (to a 700% increase in the likelihood of developing Long-Haulers)
- Lower levels of IgM and IgG3 at the beginning of having COVID-19
- Having an autoimmune disorder
- High Body Mass Index (up to a 500% increase in the likelihood of developing Long-Haulers)
- Reactivation of the Epstein-Barr virus
- Vaccination status (especially those who are unvaccinated)
- Presence of pre-existing conditions (especially respiratory conditions like asthma, hypertension, diabetes and heart disease / ischemia - up to 1000% increase in the likelihood of developing Long-Haulers)
- Hospitalization for COVID-19 (especially if in acute care)
- Duration of hospitalization for COVID-19

Due to the large number of sources, only the primary organizations are included in the sources used for the risk factors:

Cell, January 24, 2022. See [https://www.cell.com/cell/fulltext/S0092-8674\(22\)00072-1](https://www.cell.com/cell/fulltext/S0092-8674(22)00072-1)

Government of Canada, October 19, 2022. See <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms/post-covid-19-condition.html>

Johns Hopkins Medicine, June 14, 2022. See <https://www.hopkinsmedicine.org/health/conditions-and-diseases/coronavirus/covid-long-haulers-long-term-effects-of-covid19>

Kings College London, June 25, 2021. See <https://www.medrxiv.org/content/10.1101/2021.06.24.21259277v1>

Medical News Today, February 17, 2022. See <https://www.medicalnewstoday.com/articles/long-covid-risk-factors-and-how-to-mitigate-them>

National Library of Medicine (Asadi-Pooya et al.), 2021. See <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8611223/>

Nature Medicine, July 25, 2022. See <https://www.nature.com/articles/s41591-022-01909-w/tables/2>

Nature Medicine (Sudre et al.), March 10, 2021. See <https://www.nature.com/articles/s41591-021-01292-y>

Science News, September 21, 2022. See <https://www.sciencenews.org/article/long-covid-epstein-barr-link-risk>

The Scientist, January 26, 2022. See <https://www.the-scientist.com/news-opinion/studies-identify-risk-factors-for-long-covid-69648>

UK Office for National Statistics, October 21, 2022. See <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/infections#:~:text=Self%2Dreported%20long%20COVID%20was,another%20health%20condition%20or%20disability>

US Centers for Disease Control and Prevention (CDC), 2021. See <https://www.healthline.com/health-news/these-groups-are-at-higher-risk-of-developing-long-covid-19#Heres-who-is-most-at-risk-for-long-COVID> (as reported by Healthline)

US News, July 19, 2022. See <https://www.usnews.com/news/health-news/articles/2022-07-19/wholl-get-long-covid-just-a-look-at-a-patient-gives-clues>

## II.V. IMPACT ON EMPLOYMENT:

More than 70% of people with Long-Haulers had to take leave from work as a result of living with Long-COVID, sometimes for periods longer than a year.<sup>36</sup> Study results on the impact on employment vary considerably. This is one example for illustration purposes only.

Long-Haulers has physical, cognitive, emotional and psychological impacts on employment and functioning. Some workers were forced to leave the workforce entirely.<sup>37</sup> Complicating this is that treatment is based on the symptoms being experienced, however, symptoms may fluctuate rapidly and there may be periods of partial or total remission in some symptoms. The impact on employment will depend on many different variables, including:

- Symptoms occurring
- Frequency of symptoms
- Overlap of symptoms
- Severity of symptoms
- Other pre-existing or co-existing conditions
- Age
- Type of employment and job duties
- Precarity of employment
- Transportation to employment
- Types of accommodation required and duration of accommodation
- Impact on family obligations e.g. childcare, eldercare, etc.

This list will likely change over time and is for non accommodation example purposes only.

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<sup>36</sup> HRReporter. (June 2021). See <https://www.hrreporter.com/focus-areas/safety/nearly-70-per-cent-of-covid-long-haulers-take-leave-from-work/356883>

<sup>37</sup> Viral Neuro Exploration (VINEx), COVID Long-Haulers Support Group Canada, and Neurological Health Charities Canada (NHCC). (May 2022). See <https://imgix.cosmicjs.com/8774fd00-cbab-11ec-b98f-db6f075d4374-FINAL---Second-Survey-Report-May-2022.pdf>

## II.VI. POTENTIAL COLLECTIVE AGREEMENT IMPACTS:

A multi-stakeholder and multi-benefit review should occur due to numerous potential overlapping entitlements and obligations. Examples include:

- Sick leave
- Long-term disability
- Job postings and job selection
- Probationary status
- Discipline, including culpable and non-culpable discharge
- Job evaluation
- Annual performance evaluation
- Benefits
- Accommodation under human rights legislation
- Return to work programs
- Health and safety
- Breaks and scheduling
- Equity and equality
- Employee assistance plans (EAP)

There may be equity, equality and reconciliation considerations (along others) that need to be applied and addressed. Racialized workers may be a much higher risk for developing Long-Haulers. Risk assessments and accommodation may need to consider this.

Stakeholders that may need to be involved include (non-exhaustively):

- Workers
- Employers, including supervisors
- Union
- Joint Health and Safety Committee
- Human resources specialists
- External providers e.g. long-term disability, EAP, WorkSafeBC, etc.

A potential overlapping issue is the definition of disability (including perceived disability as per Supreme Court of Canada decisions)<sup>38</sup> and whether Long-Haulers will be considered a disability by employers, insurers and WorkSafeBC. This may require additional expertise. Please contact a CUPE National Representative for human rights and accommodation related questions.

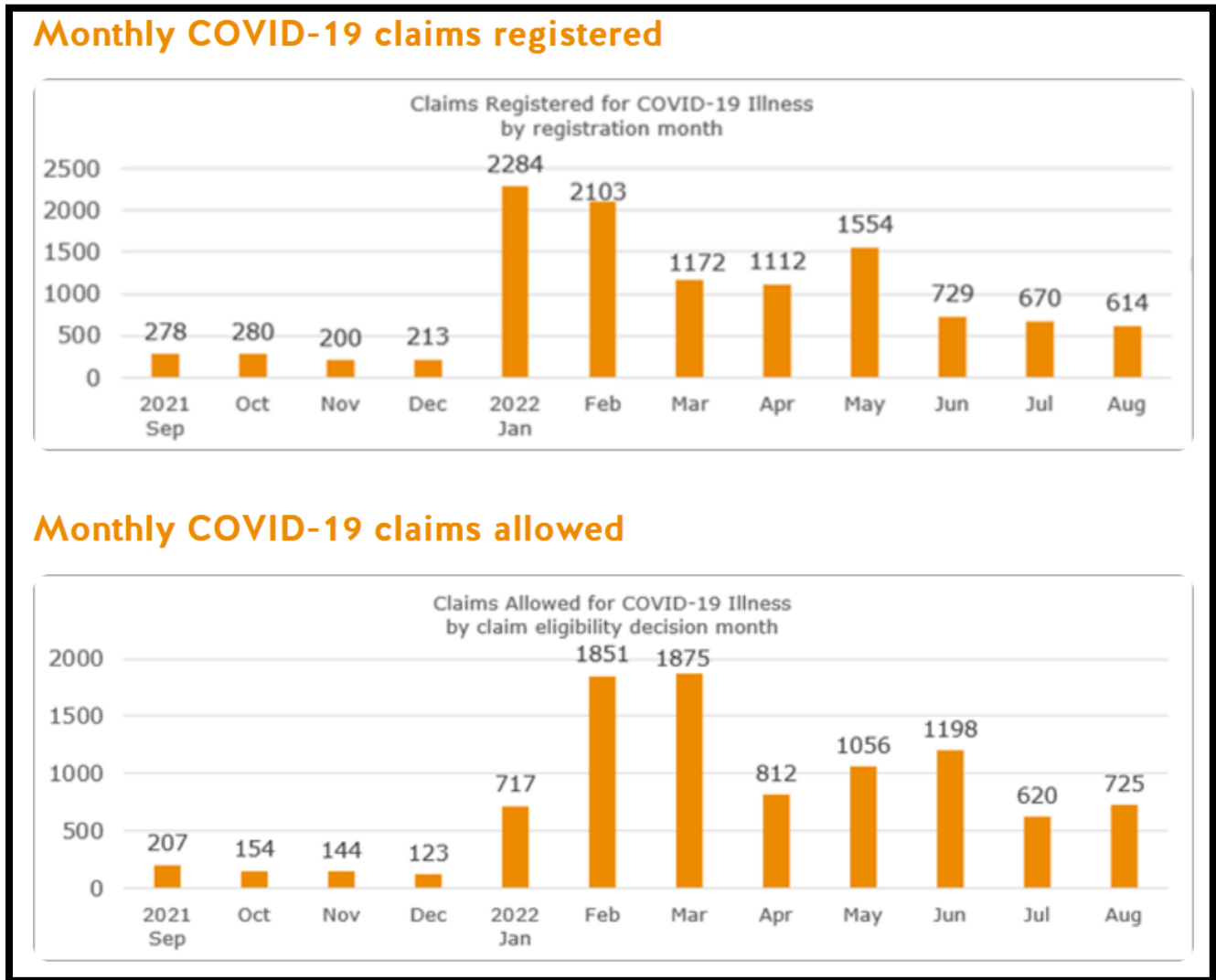


<sup>38</sup> Granovsky v. Canada (Minster of Employment and Immigration). (2000). SCC 28. See <https://scc-csc.lexum.com/scc-csc/scc-csc/en/item/1791/index.do>

## II.VII. POTENTIAL WORKSAFEBC CLAIMS IMPACTS AND CONSIDERATIONS:

There is insufficient data, claims and appeal decisions to assess the criteria required for the acceptance of Long-Haulers claim acceptance rates. While the majority of COVID-19 claims are being accepted (72% are allowed), as per WorkSafeBC data in Figures 3 and 4, the acceptance of secondary conditions (and Reopenings) related to Long-Haulers is not known at this time.<sup>39</sup>

Figure 3:



(Updated October 25, 2022)

<sup>39</sup> WorkSafeBC. COVID-19 Claims Data. See <https://www.worksafebc.com/en/covid-19/claims/covid-19-claims-by-industry-sector>

Figure 4:

	Eligibility Decision						Total
	Allowed	Disallowed	No adjudication required	Pending	Rejected	Suspended	
<b>Total</b>	<b>13,514</b>	<b>1,988</b>	<b>227</b>	<b>243</b>	<b>54</b>	<b>1,284</b>	<b>17,310</b>
<b>Service - Health Care and Social Services</b>	7,492	699	73	115	11	456	8,846
<b>Service - Education</b>	2,079	194	14	20	5	94	2,406
<b>Self-insured employers</b>	591	93	8	31	5	101	829
<b>Service - Other subsectors (including business, professional and other services)</b>	491	128	28	13	8	120	788
<b>Public Administration</b>	627	76	6	18	2	25	754
<b>Trade - Retail</b>	405	173	34	8	4	101	725
<b>Service - Tourism and Hospitality</b>	318	65	9	7	2	92	493

(Updated October 25, 2022)

Since symptoms can arise months after COVID-19, WorkSafeBC Reopening requests and / or claim forms (e.g. Form 6 - workers) may have to be filed months after a claim for COVID-19 has been initiated. See <https://www.worksafebc.com/en/resources/claims/forms/application-for-compensation-and-report-of-injury-or-occupational-disease-form-6?lang=en> for Form 6 – Application for Compensation and Report of Injury or Occupational Disease.

Claims may be reopened<sup>40</sup> where a claim has been accepted for COVID-19, as 25% to 81% of people with COVID-19 may be asymptomatic, depending on the variant.<sup>41</sup> Another consideration is that the BC Provincial Health Officer’s Notice Declaring COVID-19 Public Health Emergency was still in effect as of April 2022 (this is subject to change). When the Notice Declaring COVID-19 Public Health Emergency is in effect “a presumption that a claim for COVID-19 is work-related will still apply if there is evidence to establish that a worker has COVID-19 and the risk in the workplace was significantly greater than the ordinary exposure risk, unless there is evidence to rebut that presumption.”<sup>42</sup> It is essential to address presumption in workers compensations claims. See the RS&CM claims Policies. Workers should seek the most current information regarding this. Questions and issues for adjudication of Long-Haulers related WorkSafeBC claims include (this is not an exhaustive list):

- Is there presumption in RS&CM II Policy
- When does the presumption apply from
- Medical evidence e.g. cardiology, and / or pulmonary specialists required
- Testing required
- PCR and Rapid Antigen Test results
- Subjective evidence required
- Continuity of symptoms
- Onset of symptoms
- Whether the original claim for COVID-19 was accepted
- Whether the claim for COVID-19 was active
- Duration of time between the COVID-19 WorkSafeBC claim and onset of symptoms

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<sup>40</sup> WorkSafeBC. Non-mandatory Practice Directive C14-3 (there may be others. See the RS&CM Policies as well). See <https://www.worksafebc.com/en/resources/law-policy/compensation-practice-directives/reopenings?lang=en> and <https://www.worksafebc.com/en/law-policy/claims-rehabilitation/compensation-policies/rehab-claims-volumeii>

<sup>41</sup> Healthline. See <https://www.healthline.com/health-news/50-percent-of-people-with-covid19-not-aware-have-virus>

<sup>42</sup> WorkSafeBC. COVID-19 claims FAQs. See <https://www.worksafebc.com/en/covid-19/claims/information-for-workers>

If workers believe SARS-CoV-2 / COVID-19 was contracted at work, they should file a WorkSafeBC claim to determine if they are eligible for workers' compensation benefits. It is imperative that workers file a claim if they test positive in a Rapid Antigen Test or PCR test or even if they are symptomatic with COVID-19 (without positive Rapid Antigen Test or PCR test), and they believe the exposure was due to employment. Even if there are no symptoms, a claim should be initiated when there is a positive Rapid Antigen Test or PCR test.

WorkSafeBC has stated that it encourages anyone who believes that they have contracted COVID-19 to file a claim and while ideally it wants to see proof of a positive test for COVID-19, if none is available WorkSafeBC will make a judgement based upon the available evidence provided by the worker and the employer.

For further information, please see WorkSafeBC at <https://www.worksafebc.com/en/covid-19/claims/information-for-workers> and the fall 2020 CUPE BC Region Guide on filing WorkSafeBC claims for COVID-19 at <https://www.cupe.bc.ca/committee/occupational-health-and-safety-committee/> as per Figure 5. That Guide is for information purposes only as it is from fall 2020 and may be out of date.

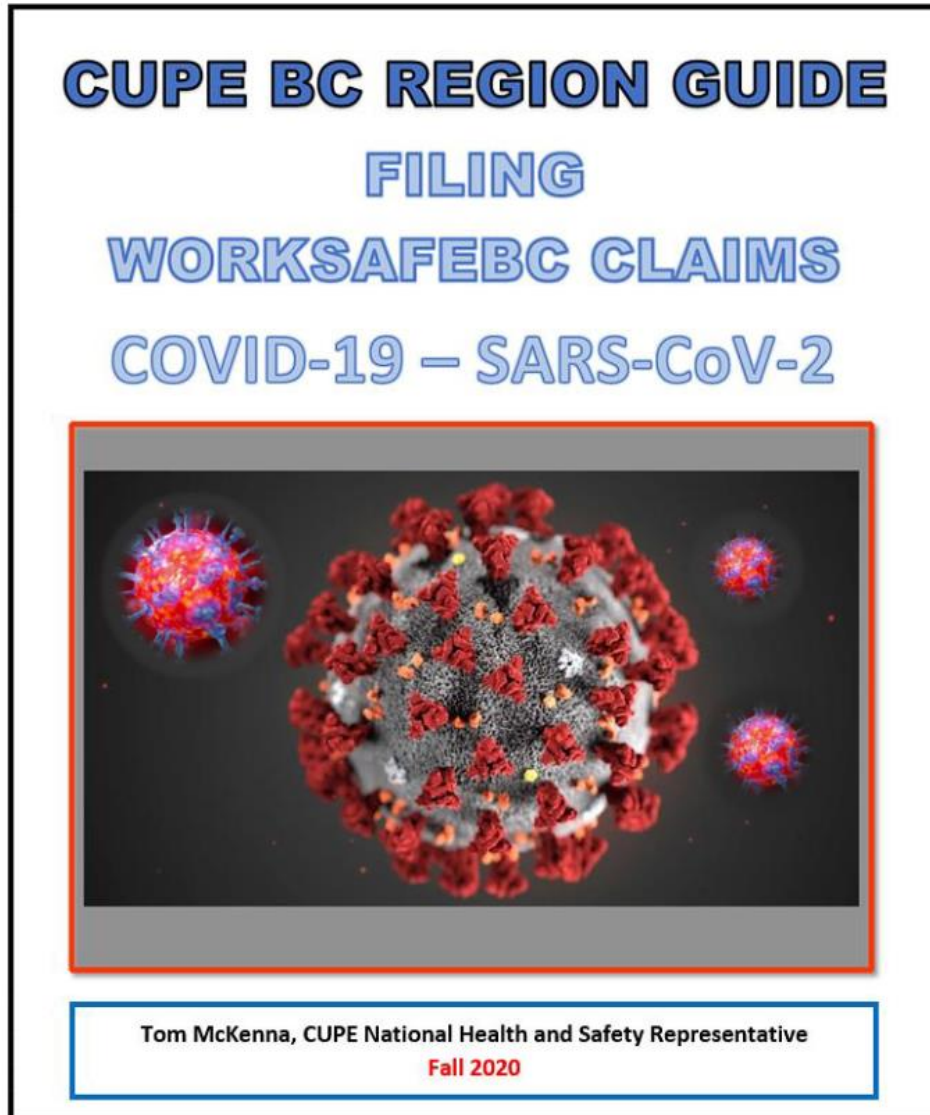
It is essential to ensure the most recent WorkSafeBC claims Policies and Practice Directives are referred to. These supersede any materials from CUPE, including this Guide and Figure 5.

The psychological and biopsychosocial impacts of Long-Haulers, including filing claims, should also be addressed in the claim(s) e.g.:

- Adjudication
- Return to work
- Reopenings
- Vocational rehabilitation
- Disability awards
- Health and safety

Stigma is a major barrier that may prevent workers from accessing assistance. See the CMHA materials in the Resources section below.

Figure 5:



## Long COVID will have health, economic impact for years to come, says expert



Omicron will lead to 'tsunami' of long COVID cases, says sufferer behind support group



[Kerry Campbell](#) · CBC News · Posted: Jan 27, 2022 6:00 AM AT | Last Updated: January 27

### II.VIII. HEALTH AND SAFETY IMPACTS (SEE SECTION I.II):

The health and safety impacts of Long-Haulers are unknown. There are too many variables to identify the long-term consequences and too many variables e.g.:

- Industry
- Occupation
- Size of employer
- Location of employer
- Status of worker e.g. workers in precarious employment
- Age of workers
- Gender

In the interim, it is recommended that the tools and resources on the CUPE National Health and Safety Branch website be used with respect to COVID-19.<sup>43</sup>

While the impacts of Long-Haulers on health and safety are not known, prevention – **using the Precautionary Principle (not waiting for scientific certainty before taking action to protect workers from potential hazards) – should be the foundation for protecting workers.**

<sup>43</sup> CUPE National Health and Safety. See <https://cupe.ca/covid-19-health-and-safety-practices-0>

WorkSafeBC Prevention stated on April 08, 2022, that employers are no longer required to have COVID-19 Safety Plans and must instead “follow communicable disease guidance”.<sup>44</sup> This reduces the protections of workers and increases the interventions that may be required by Joint Health and Safety Committees. Health and safety issues to consider include:

- Operation of equipment
- Operation of vehicles, including commuting to employment
- Use of stairs
- Use of ladders
- Repetitive work and ergonomics issues generally
- Cold and heat tolerance
- Lifting
- Duration of work including scheduling and breaks
- Time of work e.g. evening versus daytime
- Task variability
- Psychosocial stressors, using the biopsychosocial model (including aggravation of PTSD, anxiety, depression, cognitive deficits, etc.)
- Use of hazardous substances / WHMIS
- New and young workers, including workers in precarious employment
- Working alone

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<sup>44</sup> WorkSafeBC. Communicable Disease Prevention. See <https://www.worksafebc.com/en/covid-19/covid-19-prevention>

In the UK, the National Health Service and the Advisory Conciliation and Arbitration Service have made a number of recommendations. These include (non-exhaustively - see CSA Group Z1011.<sup>45</sup>):

- Use assessments such as the Work Ability Index<sup>46</sup>
- Phased return to work programs
- Flexible work arrangements
- Ensure (paid) time off for medical and rehabilitation appointments
- Introduce fatigue management strategies
- Address workload issues
- Adapt work tasks
- Job redesign
- Workplace redesign including ergonomic considerations

Stakeholders that may need to be involved include (non-exhaustively):

- Workers
- Employers, including supervisors
- Union
- Joint Health and Safety Committees
- WorkSafeBC (Claims and Prevention)
- Human resources specialists (including external providers e.g. long-term disability, EAP, WorkSafeBC, etc.)

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<sup>45</sup> CSA Group. Z1011 Work Disability Management System. See <https://www.csagroup.org/store/product/CSA%20Z1011:20/>

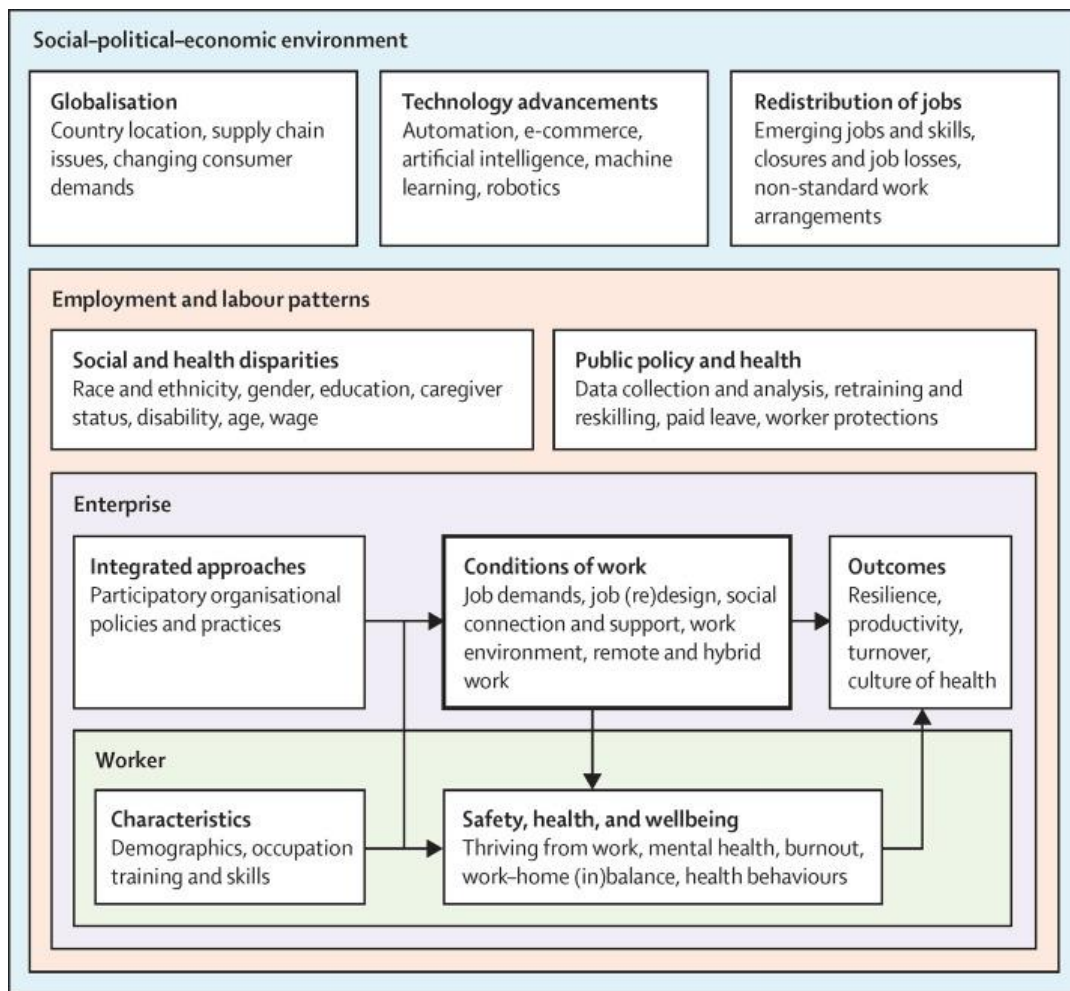
<sup>46</sup> European Union. Work Ability Index. Sample questionnaire. See [https://workbox.chrodis.eu/repository/pdf/WAI\\_Work-Ability-Index.pdf](https://workbox.chrodis.eu/repository/pdf/WAI_Work-Ability-Index.pdf)

It is important to address workers in precarious employment. As per Peters et al.:<sup>47</sup>

“However, workers in non-standard arrangements are also exposed to increased risk of injury, health risks, and income uncertainty. These workers often lack appropriate job protections, a worker voice, and access to affordable health care.”<sup>48</sup>

In “Work and worker health in the post-pandemic world: a public health perspective”,<sup>49</sup> a macro level approach was recommended as per Figure 6:

Figure 6 (Conditions of Work; Safety, health and wellbeing):



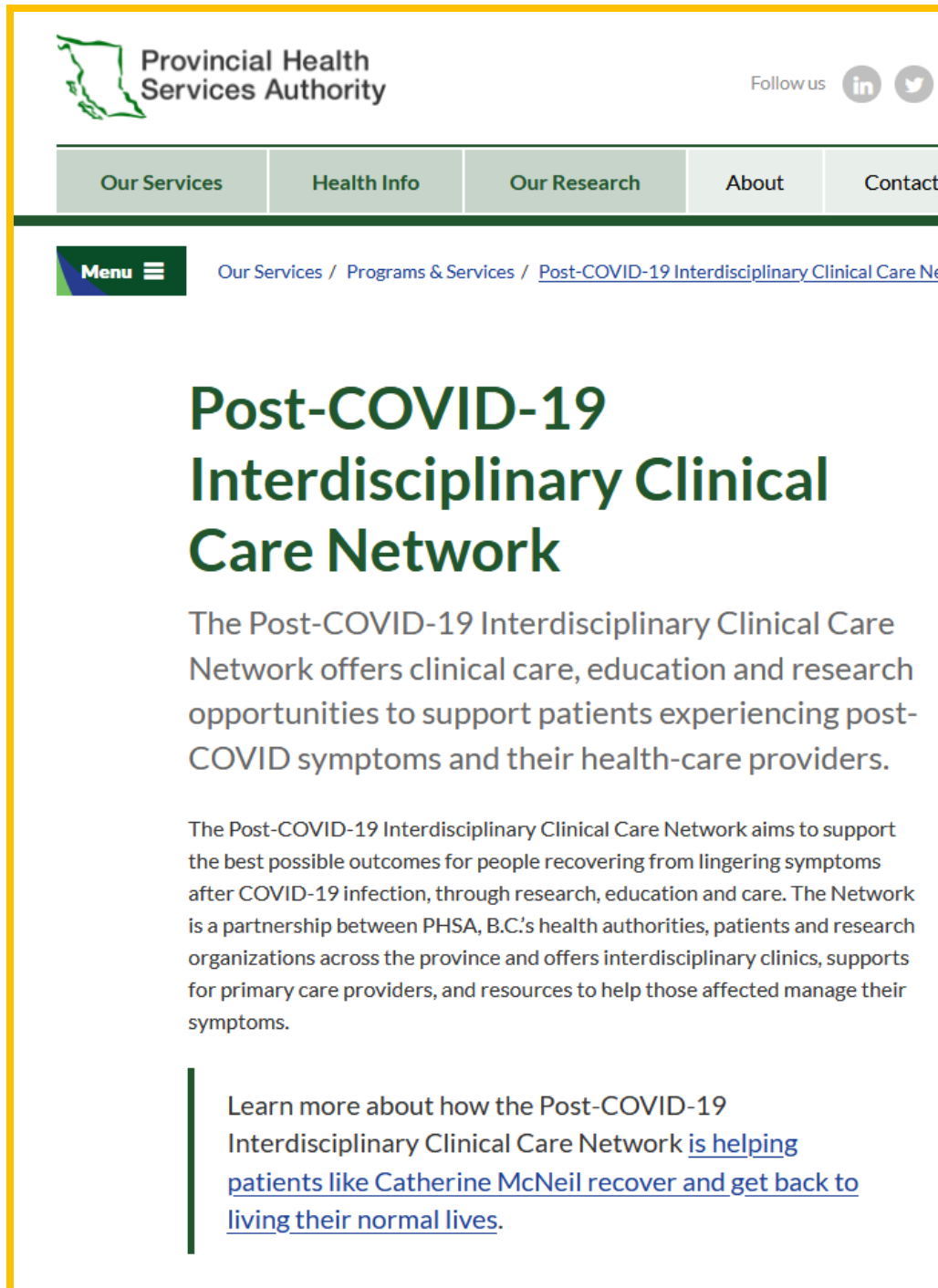
<sup>47</sup> Peters, S.E., Dennerlein, J.T., Wagner, G.R., and Sorensen, G. (February 2022). Work and worker health in the post-pandemic world: a public health perspective. Europe PMC. See <https://europepmc.org/article/med/35122760>

<sup>48</sup> See the CUPE BC Region Guide on workers in precarious employment, new and young workers at <https://www.cupe.bc.ca/committee/occupational-health-and-safety-committee/>

<sup>49</sup> Peters, S.E., Dennerlein, J.T., Wagner, G.R., and Sorensen, G. (February 2022). Work and worker health in the post-pandemic world: a public health perspective. Europe PMC. See <https://europepmc.org/article/med/35122760>

The “Worker” section above should be adapted and expanded as required e.g. as per Risk / Hazard Assessments, Work Ability Index, CSA Z1011, etc. These should be used in conjunction with the relevant medical resources e.g. BC Provincial Health Services Authority. See Figure 7.

Figure 7:



The screenshot shows the website for the Provincial Health Services Authority. At the top left is the logo, which includes a map of British Columbia and the text "Provincial Health Services Authority". To the right of the logo are social media icons for LinkedIn and Twitter, with the text "Follow us" above them. Below the logo is a navigation bar with five tabs: "Our Services", "Health Info", "Our Research", "About", and "Contact". Below the navigation bar is a breadcrumb trail: "Our Services / Programs & Services / [Post-COVID-19 Interdisciplinary Clinical Care Network](#)". The main heading is "Post-COVID-19 Interdisciplinary Clinical Care Network" in a large, bold, green font. Below the heading is a paragraph: "The Post-COVID-19 Interdisciplinary Clinical Care Network offers clinical care, education and research opportunities to support patients experiencing post-COVID symptoms and their health-care providers." Below this paragraph is another paragraph: "The Post-COVID-19 Interdisciplinary Clinical Care Network aims to support the best possible outcomes for people recovering from lingering symptoms after COVID-19 infection, through research, education and care. The Network is a partnership between PHSA, B.C.'s health authorities, patients and research organizations across the province and offers interdisciplinary clinics, supports for primary care providers, and resources to help those affected manage their symptoms." At the bottom of the page, there is a call-to-action box with a vertical line on the left side. The text inside the box reads: "Learn more about how the Post-COVID-19 Interdisciplinary Clinical Care Network [is helping patients like Catherine McNeil recover and get back to living their normal lives.](#)"

### III. RESOURCES

There are numerous resources that can be accessed for Long-Haulers. The following sample Canadian (and BC specific) resources (and links) may change without notice. The following resources are provided for general information only and do not reflect CUPE's position on Long-Haulers and any related matters. These are offered for information purposes only.

BC Centre for Disease Control  
COVID-19

<http://www.bccdc.ca/health-info/diseases-conditions/covid-19>

CMHA  
Not Myself Today

<https://cmha.ca/what-we-do/national-programs/workplace-mental-health/not-myself-today/>

CMHA  
Returning To A Shared Workspace: A psychological toolkit for transitioning to a new normal  
[https://ontario.cmha.ca/wp-content/uploads/2019/12/CMHA\\_ReturnToWorkplace-Toolkit\\_EN\\_jan-2022\\_FINAL.pdf](https://ontario.cmha.ca/wp-content/uploads/2019/12/CMHA_ReturnToWorkplace-Toolkit_EN_jan-2022_FINAL.pdf)

COVID-Long-Haulers Support Group Canada and VINEX  
Survey – Report on Second Pan-Canadian Long COVID Impact Survey May 04, 2022  
<https://imgix.cosmicjs.com/8774fd00-cbab-11ec-b98f-db6f075d4374-FINAL---Second-Survey-Report-May-2022.pdf> and <https://covidlonghaulcanada.com/>

CSA Group  
Psychological Health and Safety in the Workplace: Employer Practices in Response to COVID-19  
<https://www.csagroup.org/article/research/psychological-health-and-safety-in-the-workplace-employer-practices-in-response-to-covid-19/>

CSA Group  
Z1011 Work Disability Management System Standard  
<https://www.csagroup.org/store/product/CSA%20Z1011:20/>

CUPE BC OHS Committee  
Various resources  
<https://www.cupe.bc.ca/committee/occupational-health-and-safety-committee/>

CUPE National Health and Safety  
COVID-19 Health and Safety Practices  
<https://cupe.ca/covid-19-health-and-safety-practices-0>

Government of Canada  
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/symptoms/post-covid-19-condition.html>

Long-COVID Alliance  
Support Group and resources  
<https://longcovidalliance.org/about>

Long-COVID Canada  
Support Group and resources  
<https://longcovidcanada.ca/> and <https://longcovidresourcescanada.ca/>

Long-Haulers Canada  
Support Group and resources  
<https://www.covidlonghaulcanada.com/>

Providence Health Care  
Post-COVID-19 Recovery Clinic  
<https://www.providencehealthcare.org/covidrecoveryclinic>

Provincial Health Services Authority  
Post-COVID-19 Interdisciplinary Care Network  
<http://www.phsa.ca/our-services/programs-services/post-covid-19-care-network>

Provincial Health Services Authority  
Living with Persistent Post-COVID-19 Symptoms  
<http://www.phsa.ca/health-info/post-covid-19-care-recovery>

Vancouver Coastal Health  
COVID-19 Resources  
<http://www.vch.ca/covid-19/shareable-resources>

WorkSafeBC  
Addressing the mental health effects of COVID-19 in the workplace: A guide for workers  
<https://www.worksafebc.com/en/resources/health-safety/books-guides/addressing-mental-health-effects-covid-19-guide-for-workers?lang=en>

# COVID-19: Lasting impact

Even those survivors with mild initial cases can have wide-ranging health issues for six months or more.

WashU researchers link many diseases with COVID-19, signaling long-term complications for patients and a massive health burden for years to come.

**Cardiovascular**  
acute coronary disease, heart failure, palpitations, arrhythmias

**Respiratory system**  
cough, shortness of breath, low blood oxygen

**Kidney**  
acute kidney injury, chronic kidney disease

**Musculoskeletal**  
joint pain, muscle weakness

**General**  
malaise, fatigue, anemia

**Mental health**  
anxiety, depression, sleep problems, substance abuse

**Nervous system**  
stroke, headaches, memory problems, smell problems

**Metabolic/endocrine**  
obesity, diabetes, high cholesterol

**Gastrointestinal**  
constipation, diarrhea, acid reflux

**Skin disorders**  
hair loss, rash

**Coagulation disorders**  
blood clots

[https://cupe.sharepoint.com/sites/BritishColumbiaRegionalOffice/Health\\_Safety/CORONA\\_VIRUS\\_\(COVID19\)/Guide\\_Long\\_Haulers\\_COVID-19\\_BC\\_Region\\_2022\\_10\\_25.docx](https://cupe.sharepoint.com/sites/BritishColumbiaRegionalOffice/Health_Safety/CORONA_VIRUS_(COVID19)/Guide_Long_Haulers_COVID-19_BC_Region_2022_10_25.docx)  
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