COVID-19 vaccinations and immunity in care homes: Emerging evidence from Chile, the UK and Canada
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Introduction
# Population in Long-Term Care Homes

The table below shows the proportion of Canadians aged 80+ living in long-term care homes and residences for senior citizens, by provinces and territories, in 2016.

<table>
<thead>
<tr>
<th>Province</th>
<th>Total population living in long-term care homes and residences for senior citizens, N</th>
<th>Population ≥ 80 years old living in long-term care homes and residences for senior citizens, N</th>
<th>Proportion of residents in long-term care homes and residences for senior citizens who are 80 years of age or older, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>425,755</td>
<td>313,130</td>
<td>73.5</td>
</tr>
<tr>
<td>Newfoundland and Labrador</td>
<td>5,290</td>
<td>3,525</td>
<td>66.6</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>1,945</td>
<td>1,330</td>
<td>68.4</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>9,800</td>
<td>6,985</td>
<td>71.3</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>9,970</td>
<td>6,530</td>
<td>65.5</td>
</tr>
<tr>
<td>Québec</td>
<td>146,405</td>
<td>103,385</td>
<td>70.6</td>
</tr>
<tr>
<td>Ontario</td>
<td>133,470</td>
<td>101,745</td>
<td>76.2</td>
</tr>
<tr>
<td>Manitoba</td>
<td>15,960</td>
<td>11,930</td>
<td>74.7</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>13,350</td>
<td>10,295</td>
<td>77.1</td>
</tr>
<tr>
<td>Alberta</td>
<td>41,695</td>
<td>30,680</td>
<td>73.6</td>
</tr>
<tr>
<td>British Columbia</td>
<td>47,510</td>
<td>36,560</td>
<td>77.0</td>
</tr>
<tr>
<td>Yukon</td>
<td>175</td>
<td>105</td>
<td>60.0</td>
</tr>
<tr>
<td>Northwest Territories</td>
<td>135</td>
<td>70</td>
<td>51.9</td>
</tr>
<tr>
<td>Nunavut</td>
<td>40</td>
<td>20</td>
<td>50.0</td>
</tr>
</tbody>
</table>

Population in Long-Term Care Homes

Population in Long-Term Care Homes

Vaccination in Long-Term Care Homes

Figure 4. Cumulative percent of people who have received at least one dose of a COVID-19 vaccine in Canada by age group and report week, July 3, 2021

Hover over the line graph to see the cumulative number or percent of people vaccinated by age group and report week. Click on an age group to remove it from the graph. Add it back to the graph by clicking on the label again.

Vaccination in Long-Term Care Homes

Figure 4. Cumulative percent of people fully vaccinated with a COVID-19 vaccine in Canada by age group and report week, July 3, 2021

Hover over the line graph to see the cumulative number or percent of people vaccinated by age group and report week. Click on an age group to remove it from the graph. Add it back to the graph by clicking on the label again.

Vaccination in Long-Term Care Homes

Figure 5. Cumulative number of people who have received at least one dose of a COVID-19 vaccine in Canada by vaccine product and report week, July 3, 2021.

Percentage of Cases Caused by Variants

Percentage of Cases Caused by Variants

N501Y+/E484K+ variants (predominantly Alpha)

N501Y-/E484K- variants (wild type until April 2021, predominantly Delta now)

Outcomes Associated with the New VOCs

**Hospital admission**
- Denmark (Bager et al, 2021): 1.64 [1.32, 2.04]
- Ontario: 1.62 [1.41, 1.87]
- Heterogeneity: $I^2 = 0.00\%$
- 1.63 [1.44, 1.83]

**ICU admission**
- Ontario: 2.14 [1.52, 3.02]
- Heterogeneity: $I^2 = 0.00\%$
- 2.03 [1.69, 2.45]

**Death**
- United Kingdom (Challen et al, 2021): 1.64 [1.32, 2.04]
- Ontario: 1.40 [1.01, 1.94]
- Heterogeneity: $I^2 = 0.00\%$
- 1.56 [1.30, 1.87]

Fixed-effects inverse-variance model

Figure 3. Meta-Analysis of the Risk of COVID-19 Hospitalization, Intensive Care Unit Admission and Death Associated with new VOCs Compared to Early Variants

https://doi.org/10.47326/ocsat.2021.02.18.1.0
About This Study

• Click here for a short video about the study!

https://twitter.com/BruyereC19Study/status/1366727764032827393?s=20
Study Objectives

• To determine the risk factors that increase the likelihood of a SARS-CoV-2 infection, re-infection and serious outcomes from COVID-19.

• To monitor vaccine efficacy up to 12 months post-vaccination.
Sample Collection

- Dried blood sample (DBS) cards.
- Up to 4 collection timepoints over 12 months.
Dried Blood Sample Collection Instructions

Step 1:
Open the dried blood spot kit and check that it contains the following:
- Dried Blood Sample (DBS) Card
- Biohazard Self-Sealing Bags
- Lancet
- Alcohol Wipe
- BandAid

Step 2:
Wash hands with soap and warm water for 20 seconds and dry your hands thoroughly after.

Step 3:
Scan the Dried Blood Sample (DBS) Card and fill out the date of collection (the date on which you are collecting the sample) on the card and spreadsheet.

Step 4:
Soak the finger that you will draw the blood from in a bowl of warm water for 1 minute. Clean your finger with an alcohol prep pad and allow the alcohol to dry/evaporate.

Step 5:
Twist off the lancet cap. Place the exposed end of the lancet onto your finger and press down on the opposite end of the lancet to prick your finger.
Allow a drop of blood to form on your finger (you can apply pressure to your finger to encourage the blood drop to form).

Step 6:
When ready, hold finger over the card and place a drop of blood in the first circle.
Apply pressure to the fingertip to allow a drop of blood to form aiming to fill the entire circle up to the dotted border on the card. If unable to fill the entire circle with one drop of blood, massage finger and try again on a new circle.
Repeat to fill all 5 circles on the pad.

Step 7:
Bandage your finger and discard the used lancet and other garbage.
Leave the card open and allow it to dry for at least 3 hours, if you can, leave it to dry overnight.

Step 8:
Once dry, fold the top over the circles and tuck the cover inside.
Place the card inside the pouch and place the pouch in the return envelope.
Follow the provided instructions for how to mail the completed kit back to the laboratory.
Evidence on Effectiveness
Kitchener-Waterloo

Fully vaccinated woman died with COVID-19 at Kitchener long-term care home

Woman had shown only mild symptoms, long-term care home says

Kate Bueckert · CBC News · Posted: Jun 20, 2021 11:47 AM ET | Last Updated: June 21
How well do these vaccines work?

How well do these vaccines work?

Number of residents and staff who currently have COVID-19.

How well do these vaccines work?

Deaths

<table>
<thead>
<tr>
<th>Daily</th>
<th>Cumulative</th>
</tr>
</thead>
</table>

Each day’s total is added to the total of all previous days.

- Graph
- Table
- All time

- Residents
- Staff

Duration of Immunity
Implications for Future
Implications for the Future

- Level and duration of immunity, in light of newer variants of concern
Implications for the Future

• Community transmission will continue to expose care home populations to future infections, morbidity and mortality.
• Ongoing social, ethical and legal issues related to vaccination of workers in long-term care.

As COVID-19 outbreaks in long-term care continue, B.C. rethinks voluntary vaccines policy

JUSTINE HUNTER
VICTORIA
PUBLISHED JUNE 13, 2021
Implications for the Future

- Direct and indirect long-term health impact of COVID-19

Table 2
Number of people in Canada who would develop cardiovascular disease over a three-year period under different scenarios of change in leisure-time physical activity

<table>
<thead>
<tr>
<th>Age group</th>
<th>Number of Canadians</th>
<th>No change in physical activity</th>
<th>Additional new cases of cardiovascular disease under different scenarios of reduced leisure-time physical activity, 2020 to 2023</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10% decrease</td>
</tr>
<tr>
<td>Women, aged 20 and older</td>
<td>13,339,000</td>
<td>90,500</td>
<td>534</td>
</tr>
<tr>
<td>20 to 39</td>
<td>4,651,000</td>
<td>1,600</td>
<td>14</td>
</tr>
<tr>
<td>40 to 59</td>
<td>4,738,000</td>
<td>1,410</td>
<td>123</td>
</tr>
<tr>
<td>60 to 79</td>
<td>3,405,000</td>
<td>47,700</td>
<td>320</td>
</tr>
<tr>
<td>80 or older</td>
<td>545,000</td>
<td>27,000</td>
<td>81</td>
</tr>
<tr>
<td>Men, aged 20 and older</td>
<td>12,879,000</td>
<td>137,700</td>
<td>1,133</td>
</tr>
<tr>
<td>20 to 39</td>
<td>4,863,000</td>
<td>3,000</td>
<td>34</td>
</tr>
<tr>
<td>40 to 59</td>
<td>4,699,000</td>
<td>41,300</td>
<td>400</td>
</tr>
<tr>
<td>60 to 79</td>
<td>2,921,000</td>
<td>71,400</td>
<td>602</td>
</tr>
<tr>
<td>80 or older</td>
<td>395,000</td>
<td>22,000</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: CVD: Cardiovascular disease. Numbers may not sum to the total because of rounding.
Sources: Statistics Canada, 2018 Canadian Community Health Survey, Cardiovascular Population Risk Tool (CVDPoRT).