



REVIEW OF COVID-19 OUTBREAKS IN CARE HOMES IN BRITISH COLUMBIA



OFFICE OF THE
SENIORS ADVOCATE
BRITISH COLUMBIA

TABLE OF CONTENTS

MESSAGE FROM THE SENIORS ADVOCATE	2
THE REVIEW	5
LONG-TERM CARE AND ASSISTED LIVING IN BRITISH COLUMBIA	6
COVID-19 IN LONG-TERM CARE AND ASSISTED LIVING	9
OVERVIEW OF LONG-TERM CARE AND ASSISTED LIVING COVID-19 OUTBREAKS IN BC ...	12
OUTBREAK CHARACTERISTICS	14
SITE-LEVEL CHARACTERISTICS	19
AT THE SITE LEVEL: STAFF	29
SUMMARY OF FINDINGS	34
APPENDICES	39
APPENDIX 1: METHODOLOGY	39
APPENDIX 2: LIST OF DATA SOURCES	43
APPENDIX 3: COVID-19 CASES & OUTBREAKS IN BC	44



The past 18 months has seen British Columbians challenged as never before, and we have met this challenge with courage, compassion, and commitment. Across the province, people have been making sacrifices to keep themselves, their loved ones, and their community safe. COVID-19 vaccination rates in BC are some of the highest in the world as we all continue to do everything we can to combat this pernicious and prolific COVID-19 pandemic.

Firstly, I would like to express condolences and deepest sympathy to the families who have lost a loved one in care during the COVID-19 pandemic. This past year brought sacrifice and heartache to our already fragile health care system. However, we also witnessed tenacity, commitment, and opportunity to use what we have learned to improve long-term care and assisted living in the future. It is clear that British Columbians care deeply about the health and well-being of its oldest citizens. This more than anything gives hope for a better tomorrow.

While all of us have been affected by this pandemic, it is seniors, particularly those who live in long-term care and assisted living, that have felt the deepest personal impact, since they are disproportionately at risk of serious illness and death from COVID-19. Long-term care and assisted living staff and residents were almost three and a half times more likely to contract COVID-19 and residents were 33 times more likely to die from COVID-19. This burden was further compounded for residents who endured long periods of separation from their loved ones, for staff who are exhausted physically and mentally from working under unimaginable stress and for care home operators who saw exponential growth in the workload related to managing all aspects of their facilities.

This report examined just one aspect of the COVID-19 pandemic in long-term care and assisted living: outbreaks for the one-year period of March 2020 to February 2021. The focus of this report is to examine all COVID-19 outbreaks and determine the factors that contributed to an outbreak occurring and those that were related to larger outbreaks.

There is a need to examine the many ways in which COVID-19 has affected long-term care and assisted living. This office provided a report on the impact of visit restrictions (November 2020). Moving forward, we also need to look at overall resident health outcomes and the impact on staff, operators, and the health system overall. In time, I expect these issues and others will be probed and more fully examined.

The work incorporated in this report reflects a significant contribution of time, data, and information from facility operators, the health authorities, the Ministry of Health, the BC Centre for Disease Control, and the staff of long-term care and assisted living sites. My profound thanks to all who participated in the review.

The job of analyzing all the data and information received fell to the dedicated staff at this office and they worked tirelessly to leave no stone unturned and ensure accuracy in reporting; as always, my thanks to all of them. In particular, I would like to note the contributions of Sue Abermann, a dedicated healthcare professional and colleague for over 20 years who passed away before this report could be released. Her contributions were significant and highly valuable.

The review examined over 100,000 records, some spanning a three-year period. There is a significant repository of information and data about our long-term care and assisted living system that has been created and will prove invaluable as we plan for a stronger system in the future.

We learned that we experienced 365 outbreaks at 210 sites in BC. Almost three-quarters of outbreaks were contained to four or fewer cases and 75% of outbreaks had zero COVID-19 fatalities. While the Lower Mainland has 45% of BC's long-term care and assisted living sites, it experienced 84% of the outbreaks and this higher proportion of outbreaks was linked to higher local community transmission.

In BC, there was a vast difference between Wave 1 and Wave 2, with 87% of outbreaks in the latter. We observed that BC's long-term care and assisted living sector did perform proportionately better than other provinces, such as Ontario, in Wave 1, but these early achievements were lost in the magnitude of Wave 2, where outcomes in long-term care and assisted living were more similar between BC and other provinces.

We learned that knowing who was the first case, how the facility was notified about this first case, and the testing strategy directed by public health all had a relationship to whether the outbreak was likely to be larger. The amount of paid sick leave provided, the level of registered nursing staff, and whether the operator contracts for direct care services also influenced if an outbreak was larger or small.

While most rooms in long-term care are single occupancy, just over 10% of our long-term care rooms are shared rooms, and we found this also influenced the likelihood of having a larger outbreak.

We learned of the extraordinary stress and strain on the system. The staff who work in long-term care and assisted living, the people managing the facilities, and the health system supporting them have been through an 18-month marathon that continues. Every site experienced significant increases in overtime and those sites that experienced a large outbreak saw a 178% increase in their overtime in the past year. This speaks to the tremendous dedication of staff and management in caring for residents in long-term care and assisted living sites in BC.



As we move to the future, there is much we can do to improve long-term care and assisted living in general, but as we look at how we can decrease the prevalence of COVID-19 or, arguably, any infectious disease, we must:

- Increase paid sick leave for all staff
- Increase the pool of direct care staff in general
- Increase the levels of registered nursing staff as a proportion of direct care staff
- Decrease contracting for direct care services
- Eliminate shared rooms
- Increase testing scope, timeliness, and frequency
- Require staff of long-term care to be vaccinated and provide booster shots to residents

As we review this information, it is important to remember that it represents more than numbers on a page. It represents people—families, seniors, and the staff who care for them. This pandemic has disrupted lives everywhere, especially in long-term care and assisted living. Since March 2020, we have learned much more about how the virus is transmitted, how to screen for the virus, what layers of protection are most effective, and our response to the pandemic has evolved.

Now is the time to review how COVID-19 affected long-term care and assisted living to inform the improvements we need to make going forward. By applying what was learned through this review, we can thoughtfully respond to the needs of our seniors and their families. This may prove challenging, but it is the right thing to do as we seek to care for and protect British Columbia's seniors.

Sincerely,

Isobel Mackenzie
Seniors Advocate
Province of British Columbia

THE REVIEW

The Office of the Seniors Advocate of British Columbia has a statutory duty to monitor services for seniors and conduct systemic reviews of issues that affect seniors. Given the disproportionate impact of COVID-19 on BC seniors, particularly those that live in long-term care and assisted living, the office initiated a review to examine factors that influenced the probability a long-term care or assisted living site experienced an outbreak of COVID-19 and, if an outbreak did occur, what factors might have contributed to the number of staff and residents who became infected with the virus.

BC has experienced three waves of the COVID-19 pandemic and it is now in a variant-driven fourth wave. This review examined the first two waves of the COVID-19 pandemic in BC. Wave 1 covers the period from March 2020 to August 2020 and Wave 2 covers the period from September 2020 to February 2021. Unless otherwise specified, data related to COVID-19 case counts, outbreaks and deaths referenced in this report cover the period from March 1, 2020, to February 28, 2021, referred to as the “review period.”

This review is informed by data and information collected under the authority of Section 3 and 7 of the *Seniors Advocate Act*. Data used in this review include:

- 65,000 RAI MDS 2.0 assessment records in the Continuing Care Reporting System
- 60,000 incident and inspection reports from health authority licensing divisions and the Assisted Living Registrar, Ministry of Health
- 6,500 long-term care and assisted living staff survey results
- 356 long-term care and assisted living site reports with staffing and financial data for fiscal 2019/20 and 2020/21
- 373 operator questionnaires completed by site administrators with details on outbreak responses and COVID-19 infection control practices
- 298 publicly funded long-term care sites’ direct care hour data
- 487 Ministry of Health site records for licensed long-term care and registered assisted living sites
- 52 in-depth personal interviews with outbreak response leadership at long-term care sites that experienced an outbreak
- Over 100 documents such as orders, directives, guidance, policies and written responses provided by public health, the BC Centre for Disease Control (BCCDC) and health authorities
- A focus group of physicians who practiced in long-term care during the pandemic

Further details on the methodology and data sources used in this review are outlined in Appendix 1 and 2.

LONG-TERM CARE AND ASSISTED LIVING IN BRITISH COLUMBIA

In BC, long-term care and assisted living are defined by their regulatory frameworks and are licensed or registered under either the *Community Care and Assisted Living Act (CCALA)* or the *Hospital Act*. Assisted living sites are governed exclusively by the *CCALA* and are regulated, but not licensed, by the Province of BC through the Registrar for Assisted Living. Residents of assisted living must retain the ability to direct their own care and may have few or no actual care needs. In contrast, residents of long-term care generally have multiple health care needs and may or may not be able to direct their own care. There are almost 40,000 seniors who live in long-term care and assisted living in BC. Long-term care and assisted living sites may be operated directly by a health authority, by a third party under contract to a health authority, or by a fully private entity with no financial relationship to a health authority.

There are 355 long-term care and 132 assisted living sites in BC that are covered by the public health orders issued in response to the COVID-19 pandemic. 70 (20%) long-term care sites have units of assisted living co-located on the same site. For this review, the totality of beds/units in these sites are captured under the reporting for long-term care and they are referred to as “co-located sites.” Within these 355 sites, there are 31,550 beds of long-term care and 3,349 units of assisted living. There are a further 4,954 units of assisted living at the 132 assisted living-only sites.

Both long-term care and assisted living sites may house residents who receive a government subsidy and/or residents who pay privately for the total cost of their bed/unit. Overall, 85% of long-term care residents (beds) receive a government subsidy and 56% of assisted living residents (units) receive a government subsidy. All publicly subsidized long-term care and assisted living residents are assessed using either the Resident Assessment Instrument MDS 2.0 (RAI MDS 2.0) or RAI-Home Care (RAI-HC) assessment tool to determine their level of physical and cognitive function, mood and behaviour characteristics, and to document their medical conditions. The geographic distribution of long-term care and assisted living for the most part mirrors the population distribution within the province.

Table 1: Long-Term Care and Assisted Living Sites by Health Authority

	# BEDS/ UNITS	% BEDS/ UNITS	# OF SITES*	TOTAL POPULATION	% OF POPULATION
Fraser Health	12,582	32%	131	1,939,247	38%
Vancouver Coastal Health	9,020	23%	88	1,210,465	24%
Interior Health	8,353	21%	117	834,885	16%
Vancouver Island Health	8,426	21%	110	867,801	17%
Northern Health	1,472	4%	41	287,170	6%
British Columbia	39,853	100%	487	5,139,568	100%

*includes long-term care and assisted living sites

The size, age, and room configuration of long-term care sites vary between health authorities and between ownership types. In general, older sites and sites with three or more residents per room are found in sites operated directly by health authorities. Proportionately, Northern Health has the highest number of sites operated by the health authority and Fraser Health has the lowest. In terms of age, Vancouver Coastal has, on average, the oldest buildings and Fraser Health has the newest. However, this does vary by ownership as follows:

- Health authority-operated sites are, on average, 36 years old
- Not-for-profit sites are, on average, 32 years old
- For-profit sites are, on average, 25 years old

In addition to the age of a building, the review examined the overall size of long-term care and assisted living sites as indicated by their number of beds or units:

- 24% of sites are small in size (0 to 30 beds/units)
- 33% of sites are medium in size (31 to 99 beds/units)
- 43% of sites are large in size (100 or more beds/units)

Large long-term care sites are generally located in larger (by population) health authorities and they are most likely a for-profit site contracted by the health authority as opposed to a health authority-operated or fully private site. The proportion of large sites by ownership is as follows:

- 40% of large sites are for-profit sites contracted by the health authority
- 33% of large sites are not-for-profit sites contracted by the health authority
- 20% of large sites are health authority-operated
- 6% of large sites are fully private

Overall, 89% of long-term care rooms are single occupancy, 8% are semi-private and 3.5% are multi-bed (three or more). Single occupancy rooms are more likely to be offered in contracted sites than in health authority-operated sites.

- 80% of health authority-operated rooms are single occupancy
- 89% of for-profit rooms are single occupancy
- 93% of not-for-profit rooms are single occupancy

In long-term care, 32% of health authority-operated sites have rooms with three or more residents compared to 13% of sites operated by a not-for-profit entity and 7% of sites operated by a for-profit entity.

Table 2: Long-Term Care and Assisted Living Sites by Bed/Units and Ownership

LONG-TERM CARE*	SITES	% OF TOTAL	BEDS/UNITS	% OF TOTAL
Health authority-operated	109	31%	9,022	26%
Not-for-profit (contracted)	107	30%	12,457	36%
For-profit (contracted)	90	25%	10,608	30%
Fully private**	49	14%	2,812	8%
Total	355	100%	34,899	100%

ASSISTED LIVING	SITES	% OF TOTAL	UNITS	% OF TOTAL
Health authority-operated	6	5%	103	2%
Not-for-profit (contracted)	30	23%	1,253	25%
For-profit (contracted)	54	41%	2,074	42%
Fully private**	42	32%	1,524	31%
Total	132	100%	4,954	100%

* Including co-located assisted living sites
 ** No publicly subsidized beds; fully private operators may be either for-profit or not-for-profit

All long-term care sites that receive public funding (86% of sites included in this review) are funded by the health authority to deliver a prescribed number of direct care hours per resident, per day (subsidized residents only). Direct care hours refers to work done by registered nurses (RN), licensed practical nurses (LPN), registered care aides and allied health professionals that is specific to individual residents. A review of funded direct care hours in 2020/21 showed variation across sites and between types of ownership.

Overall, the average funded direct care hours for 2020/21 was 3.38 hours per resident, per day with a range of 3.00¹ hours to 7.65 hours per resident, per day. The breakdown by ownership is as follows:

- Health authority-operated sites averaged 3.49 hours per resident, per day with a range from 3.36 to 7.65 hours per resident, per day
- Not-for-profit sites averaged 3.35 hours per resident, per day with a range from 3.00 to 5.26 hours per resident, per day
- For-profit sites averaged 3.30 hours per resident, per day with arrange from 3.00¹ to 3.36 hours per resident, per day

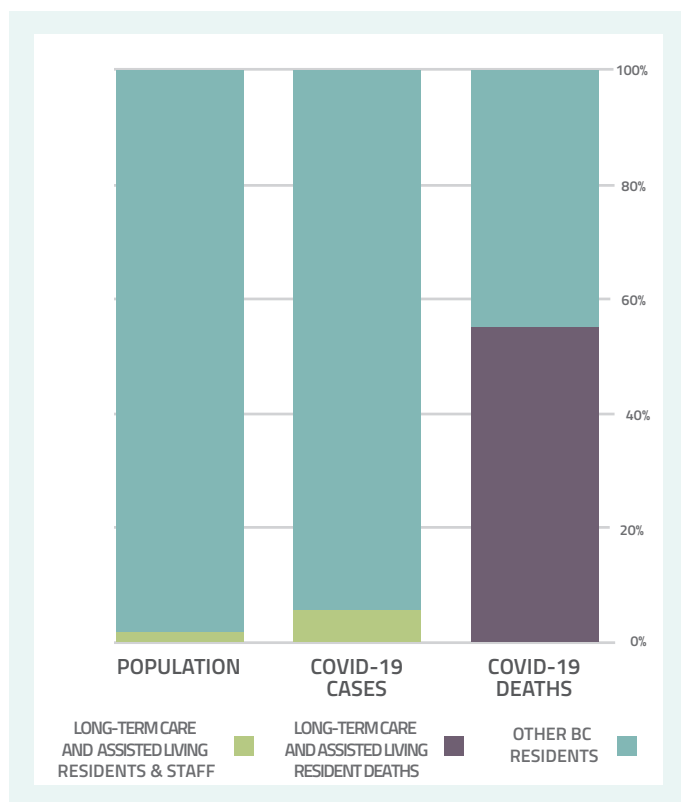
1. The site with the lowest direct care hours (a for-profit contracted site) was removed as it was not provided additional funding for direct care since it was scheduled to close in fiscal year 2020/21.

COVID-19 IN LONG-TERM CARE AND ASSISTED LIVING

COVID-19 presents a greater risk to older adults and individuals with frailty, co-morbidities, and compromised immune systems. In addition, transmission of the virus amplifies in congregate living environments like long-term care and assisted living where communal dining, group activities, and personal care are provided as a regular component of daily life.

As with most other jurisdictions in Canada, long-term care and assisted living residents and staff in BC experienced a disproportionate share of cases and deaths from COVID-19. As a proportion of the population, residents and staff of long-term care were 3.3 times more likely to contract COVID-19 and residents of long-term care were 32.6 times more likely to die from COVID-19 than members of the population at large.

Figure 1: Proportional Impact of COVID-19 in Long-Term Care and Assisted Living in BC



In response to the threat that COVID-19 presented to residents and staff of long-term care and assisted living, provincial officials in BC implemented several public health measures early in the pandemic. This early and aggressive management of COVID-19 in long-term care and assisted living was lauded by health professionals across the country and similar measures were eventually adopted in most other provinces. Beginning in March 2020, the BC government announced:

- Visitors to long-term care and assisted living were restricted to essential visits only
- The threshold for declaring an outbreak in long-term care and assisted living was lowered to one test-positive case of COVID-19 in either staff or resident
- All staff who worked in long-term care and assisted living were restricted to work at one site only (single site order)
- COVID-19 rapid response teams of public health experts were created for immediate deployment to outbreak sites

- The procurement and deployment of personal protective equipment (PPE) to all long-term care and assisted living sites was centralized under the Provincial Health Services Authority (PHSA)
- Significant financial resources were dedicated to stabilize the workforce and enhance infection control practices at all long-term care and assisted living sites

In the summer of 2020, as BC neared the end of Wave 1, it appeared these early measures taken by the Province had blunted the full impact of COVID-19 in long-term care and assisted living. While BC did experience some large outbreaks in Wave 1, when compared to the Wave 1 experiences in other provinces such as Ontario, BC had significantly lower rates of COVID-19 outbreaks, cases and deaths in long-term care and assisted living. However, the degree to which this relative success was due to specific control measures implemented in long-term care and assisted living versus BC's overall lower rates of COVID-19 community transmission is difficult to distinguish.

Figure 2: Number of COVID-19 Weekly Cases in BC, March 2020 to February 2021

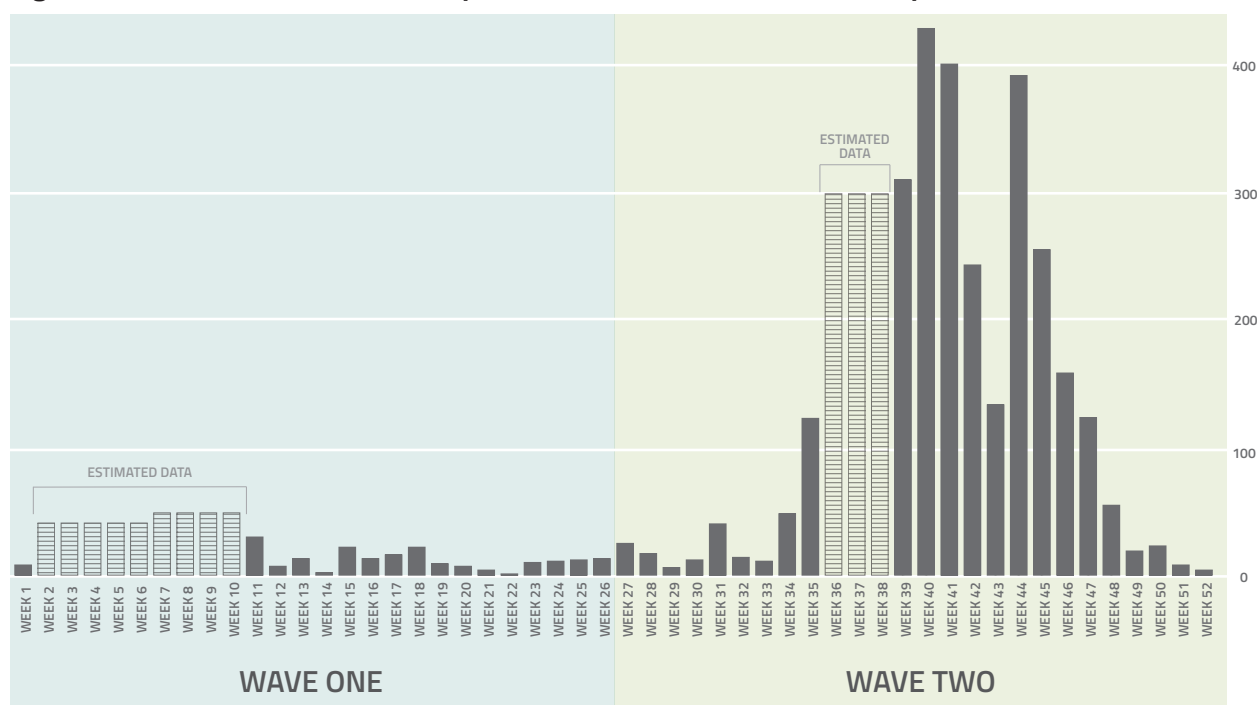
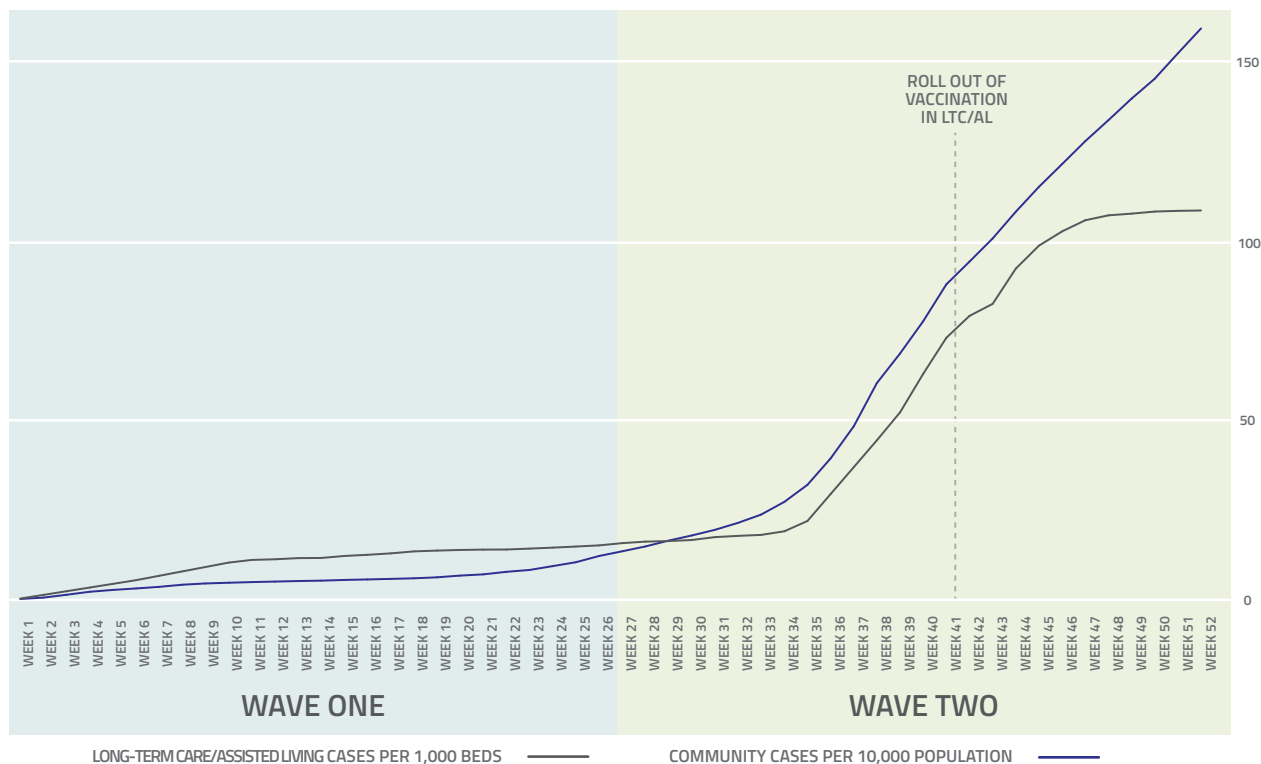


Figure 2 Notes:

- Each week begins on a Tuesday. Week 1 represents all LTC/AL resident and staff cases reported between March 4 and March 10, 2020. Week 52 represents all LTC/AL resident and staff cases reported between February 24 and March 2, 2021.
- Data for weeks 11 through 35 is sourced from BCCDC COVID-19 surveillance reports provided to our office by the Ministry of Health's Government Communications and Public Engagement (GCPE) office. Data for weeks 39 through 52 is sourced from aggregated line lists provided to our office by the Ministry of Health's COVID-19 Analysis and Reporting unit.
- Data for weeks 2 through 10 and weeks 36 through 38 were not made available to our office. We interpolated case growth at a weekly level by uniformly averaging the change in total cases between week 1 and week 11 and between week 35 and week 39. Additionally, we had access to a single surveillance report for April 14, 2020, (week 6) that was used to adjust our distribution of case growth (represented by slightly higher case counts for weeks 7 through 10).

Figure 3: Cumulative Long-Term-Care/Assisted Living and Community Cases – March 2020 to February 2021

One approach to understand the impact of BC's early measures is to compare case rates in long-term care against case rates in the community between BC and Ontario. The result of this analysis indicated that BC did much better than Ontario in Wave 1, but achieved more similar results to Ontario in Wave 2 (when Ontario had more fully implemented the long-term care control measures BC brought into effect earlier in Wave 1). For example, in Wave 1, long-term care represented 20% of all COVID-19 cases in Ontario compared to only 10% of cases in BC. In Wave 2, Ontario and BC both had 5% of all COVID-19 cases occur in long-term care.

This suggests that the measures BC undertook in Wave 1 did have a positive effect and BC's better overall results in long-term care during Wave 1 were not exclusively linked to lower rates of community transmission.

Table 3: COVID-19 Outbreaks and Cases, Wave 1 and Wave 2, British Columbia and Ontario

	WAVE ONE		WAVE TWO		TOTAL	
	ON	BC	ON	BC	ON	BC
Community Cases per 100,000 Population	286.8	114.5	1,754.0	1,460.1	2,040.9	1,574.7
Total Long-Term Care Cases per 1,000 Beds	107.4	17.4	166.4	105.8	273.8	123.2

Table 3 Notes:

1. For consistency in case data comparisons for BC and Ontario, Wave 1 is defined as January 15 to August 31, 2020, and Wave 2 is defined as September 1, 2020, to February 28, 2021. Total is January 15, 2020 to February 28, 2021.

2. BC long-term care cases includes cases in both long-term care and any co-located assisted living.

OVERVIEW OF LONG-TERM CARE AND ASSISTED LIVING COVID-19 OUTBREAKS IN BC

In the time period covered by this review, there were a total of 365 outbreaks at 210 long term-care and/or assisted living sites in BC. Overall, 51% of long-term care sites and 22% of assisted living sites in BC experienced an outbreak of COVID-19. These outbreaks resulted in:

- A total of 4,484 COVID-19 cases (6% of all cases)
- 782 COVID-19 resident deaths (57% of all COVID-19 deaths)
- Residents were 59% of all cases in long-term care and assisted living and 100% of fatalities
- 96% of the cases and 98% of the deaths were experienced in long-term care versus assisted living

The outbreaks were not uniform in size, duration, case mix, or number of fatalities. The review found:

- 72% (261) of outbreaks were small (1 to 4 cases), which is considered a contained outbreak
- 15% (55) of outbreaks were medium (5 to 25 cases)
- 13% (49) of outbreaks were large (26 or more cases)
- 75% of outbreaks experienced no fatalities from COVID-19
- 87% of outbreaks and 98% of large outbreaks were in long-term care
- 32% of outbreaks included both resident and staff cases; 64% were staff only and 4% resident only cases
- 26 days was the average duration of an outbreak with a range from the shortest at 6 days to the longest at 107 days
- 48% of sites that experienced an outbreak experienced more than one outbreak
- 55% of sites that experienced an outbreak experienced only a contained outbreak
- While the number of deaths varied, the overall case fatality rate was a fairly consistent average of 30%

There were marked differences in the number and size of outbreaks between Wave 1 and Wave 2. More than eight out of 10 outbreaks, cases, and deaths were experienced in Wave 2. However, outbreaks in Wave 2 were more likely to be smaller, contained to staff only, and result in fewer or no fatalities.

For this review, outbreak size descriptions are adapted from the Canadian Institute of Health Information's definitions, as described in their report, *Long-term care and COVID-19: The first 6 months*. Medium and large outbreaks are grouped as "larger" outbreaks.

Table 4: Number of Long-Term Care and Assisted Living COVID-19 Outbreaks and Cases by Health Authority

REGION	NUMBER OF OUTBREAKS	CASES PER 100,000 POPULATION	LONG-TERM CARE AND ASSISTED LIVING CASES	STAFF/RESIDENT CASES PER 1,000 BEDS
Interior Health Authority (IHA)	40	897.8	434	52.0
Fraser Health Authority (FHA)	213	2,452.4	2,479	197.0
Vancouver Coastal Health Authority (VCHA)	92	1,543.1	1,411	156.4
Vancouver Island Health Authority (VIHA)	12	276.2	22	2.6
Northern Health Authority (NHA)	8	1,615.1	138	93.8
British Columbia	365	1,574.7	4,484	112.5

Each health authority experienced at least one or more outbreaks over the review period; however, there were disproportionately more outbreaks in Fraser and Vancouver Coastal Health Authority (the Lower Mainland). For the most part, this reflected higher rates of local community transmission. Overall, 45% of long-term care and assisted living sites are located in Fraser or Vancouver Coastal Health Authority, but they experienced 96% of the outbreaks in Wave 1, 82% of the outbreaks in Wave 2, and 84% of the outbreaks overall.

OUTBREAK CHARACTERISTICS

The characteristics of outbreaks were examined to distinguish patterns unique to contained outbreaks and determine what, if any, factors might influence an outbreak to grow larger. For this review, the condition of one COVID-19 test-positive case in either staff or residents was sufficient to meet the threshold of an outbreak. This criterion was established within the first month of the pandemic. In early November 2020, some health authorities began to require evidence of actual transmission at the site to declare an outbreak. Based on the particulars of the first test-positive case of COVID-19, it was at the discretion of the local Medical Health Officer to either declare an outbreak or call for a period of enhanced surveillance and monitoring.

Of the 365 outbreaks reviewed:

- 142 were periods of enhanced surveillance only
- 25 began as periods of enhanced surveillance and grew to a full outbreak
- 198 were declared an outbreak at the first COVID-19 confirmed case of either staff/resident

THE FIRST CASE

Sites that experienced an outbreak were asked to identify their first confirmed case of COVID-19, sometimes referred to as the “index case”:

- 76% reported that a staff member was the first case with the following breakdown:
 - 52% care aides
 - 12% RN/LPN
 - 8% housekeeping/laundry
 - 7% other
 - 6% food services
 - 4% dietary aides
 - 3% allied health
- 22% reported that a resident was the first case with the following breakdown:
 - 2% were new admissions from community within the past two weeks
 - 12% were transferred from acute care within the past two weeks
 - 85% were residents already at the site for more than two weeks
- <1% reported that a visitor was the first case (one long-term care outbreak reported a visitor as the index case)
- 2% reported that the first case could not be identified

Characteristics of the first case that were associated with larger outbreaks:

- A resident was the first case in 35% of larger outbreaks compared to 9% of contained outbreaks
- A night shift worker was the first case in 19% of larger outbreaks compared to 4% of contained outbreaks
- A RN/LPN was the first case in 15% of larger outbreaks compared to 9% of contained outbreaks

Overall, this means a site was 4 times more likely to have had a larger outbreak if their first case was a resident, 5 times more likely if their first case was a night shift worker, and 1.5 times more likely if their first case was an RN or LPN. These findings are not surprising for a number of reasons.

COVID-19 has a long incubation period (up to 14 days). It can be transmitted by people who are pre/asymptomatic and frail seniors are often less likely to present typical symptoms of infection, including COVID-19. The most likely source of a resident infection is a pre/asymptomatic staff person. If the first detected case was a resident, it was likely the virus was transmitting, undetected, from staff-to-residents and staff-to-staff prior to discovery of the first test-positive case. This would render measures taken to contain the outbreak less effective as a result.

As reported by facility operators, it is challenging to cohort and screen night shift workers and cohort professional nursing staff (RN/LPN) due to staffing models. Both night shift staff and professional nursing staff are more likely to work on multiple units and/or floors throughout the site. If these staff were contagious prior to testing positive, there was more opportunity for the virus to be transmitted throughout the facility before it was first detected and the ability to contain the outbreak would be significantly more challenging as a result.

NOTIFICATION OF FIRST CASE

A site was formally notified that a staff member or resident tested positive for COVID-19 by their local public health officials. If a resident tested positive, the site was notified which resident had tested positive. If a staff member tested positive, the site was notified that a staff member had tested positive, but they were not notified which staff member. It was the responsibility of the staff member to identify themselves to their site after testing positive for COVID-19. Contact tracing for COVID-19-positive staff was the responsibility of public health and results were not routinely disclosed to the site.

Sites that experienced outbreaks reported variations in both the method and timeliness of notification to sites of their first positive case of COVID-19:

- 62% of sites were initially notified of the first test-positive case by a call, text, or email from the person who tested positive
- 30% of sites were initially notified of the first test-positive case by a call, text, or email from public health/contact tracing or the local Medical Health Officer

Sites that experienced a contained outbreak were more likely to have been initially notified of the first test-positive case directly by the staff member who tested positive and sites that experienced a larger outbreak were more likely to have been initially notified of the first test-positive staff case by public health.

- 73% of contained outbreaks were first notified by a phone call, text, or email from the person who tested positive compared to 48% of larger outbreaks
- 44% of larger outbreaks were first notified by public health versus 19% of contained outbreaks

This association of a larger outbreak with notification of the first case by public health and the association of contained outbreaks with notification by the person who had tested positive is not surprising. If notified by the person who tested positive, a facility would learn of the case earlier, would know which staff person was infectious, and would be able to commence their own contact tracing and be proactive in their implementation of outbreak protocols.

The timeliness of outbreak response protocols, including staff/resident cohorting and testing, are critical to increasing the probability that an outbreak could be contained. When a facility was notified directly by the test-positive staff person, there was an opportunity to commence the outbreak response several hours and in some cases by as much as a day or more earlier. This may have been critical to containing some outbreaks.

TESTING PROTOCOLS

Once an outbreak was declared, the local Medical Health Officer would determine which residents and staff were to be tested. As confirmed by site operators, there was variation between sites of the local Medical Health Officer-authorized testing strategy in terms of scope, timeliness, and frequency of testing residents and staff for COVID-19 during an outbreak.

Site-level records were maintained by operators, and they reported that within the first 24 hours of the first test-positive case of COVID-19:

- 6% of sites received direction to test all staff and residents
- 5% of sites received direction to test all residents but not all staff
- 3% of sites received direction to test all staff but not all residents
- 35% of sites received direction to test staff and residents in close contact with test-positive cases
- 12% of sites received direction to test staff and residents who were symptomatic only
- 27% of sites received direction to test various other combinations of symptomatic and close contact testing for staff and/or residents
- 12% of sites received no direction to test

Within the first 96 hours (four days) of the first test-positive case of COVID-19:

- 22% of sites received direction to test all staff
- 22% of sites received direction to test all residents

In addition to reports from site operators, 55% of staff who worked on site during an outbreak reported they were tested at some point during the outbreak. Of those who were tested:

- 36% reported they were first tested within 48 hours of the declared outbreak
- 19% reported they were first tested five or more days later
- 24% were tested once, 25% were tested twice, and 48% were tested three or more times

Over the course of the pandemic, more became known about how and when an infected person was most likely to transmit the virus. Initially it was believed that only people who were actively displaying symptoms of COVID-19 could infect others. By the time the pandemic entered Wave 2, it was generally accepted that a person who did not show any symptoms could infect others and some evidence suggested that a person was most infectious in the 24 hours prior to onset of symptoms. The molecular polymerase chain reaction (PCR) test used to detect COVID-19 is considered highly effective, but still requires a certain level of detectable “viral load” to confirm a case of COVID-19. An infected person’s viral load builds over time and there is no absolute standard for time from infection to test positive confirmation of COVID-19. Testing too early can potentially overlook those who are infected but do not yet have a detectable viral load and testing too late can mean an infected person has been unknowingly transmitting the virus to others.

These are the factors that undoubtedly gave rise to a degree of debate and resulted in different testing approaches across outbreaks as identified by operators. Of the 52 site operators who were interviewed, there was a consistent theme of operators favouring more frequent widespread testing than was generally supported by the local medical health officer. Operators were aware of asymptomatic staff and residents testing positive with each round of testing and those who were experiencing large outbreaks believed active transmission was still occurring several days into the outbreak from untested/undetected asymptomatic staff. Some operators also expressed frustration that residents transferred from acute care were not tested for COVID-19 prior to the transfer.

- 77% of sites that tested residents reported test-positive results from asymptomatic residents
 - Among sites that experienced contained outbreaks, this was 42% compared to 89% among sites with larger outbreaks
- 45% of sites that tested staff reported test-positive results from asymptomatic staff
 - Among sites that experienced contained outbreaks, this was 27% compared to 74% among sites with larger outbreaks

The limitations of public health records preclude analyzing site-specific testing strategies and data matched to the epidemiological (epi) curve of the outbreak. In general, it is acknowledged by public health that the strategy was to test staff and residents based on symptoms and/or potential exposure to COVID-19-positive staff/residents based on close contact and/or known breaches in the personal protective equipment protocols.

However, the data available show that:

- When a staff member was the first case, 91% of contained outbreaks received direction to test some residents and staff within the first 24 hours compared to 79% of larger outbreaks
- 16% of sites that experienced a larger outbreak received no direction to test within the first 24 hours compared to 10% of contained outbreaks
- Of the sites with no direction to test all staff by day four of the outbreak, 40% developed into larger outbreaks
- A greater proportion of staff at contained outbreak sites were tested sooner compared to larger outbreak sites; 51% of staff from contained outbreak sites reported being tested within the first two days of the outbreak compared to 33% of staff from larger outbreak sites
- 3% of outbreaks had a resident transferred as their first case

While the overall adequacy of testing both in terms of scope and frequency is difficult to measure, on balance, it is reasonable to conclude that a more aggressive approach to testing all staff and residents early in the outbreak with frequent repeat testing would better contain outbreaks than an approach based on symptom display and contact tracing. Within the contained environment of a long-term care or assisted living site where a test-positive case of COVID-19 had been identified, the risk from under-testing was arguably greater than the risk from over-testing.

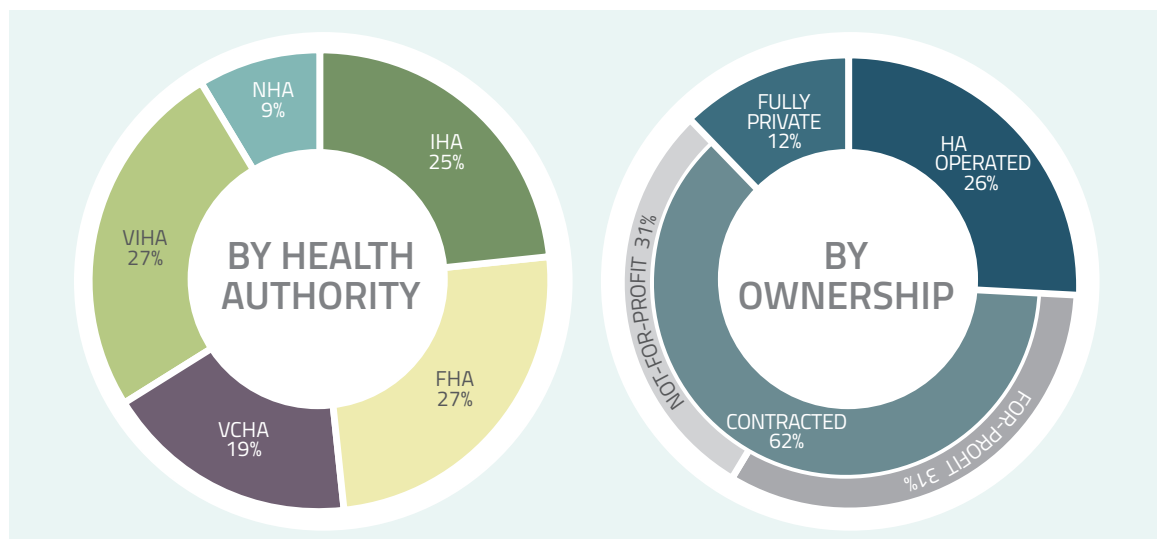
SITE-LEVEL CHARACTERISTICS

Long-term care and assisted living sites provided site-specific data and offered their perspective of the experience of managing a long-term care and/or assisted living site during the COVID-19 pandemic.

Responses were received from 373 site operators (77%) covered by the COVID-19 public health orders. All health authorities, forms of ownership and both long-term care and assisted living sites were represented in the responses and records received.

In addition to data and observations collected from all sites, in-depth interviews were conducted with management teams at 52 long-term care sites. These sites included the 25 largest outbreaks (defined by total number of cases), a “matched” sample of 25 sites that experienced a contained outbreak, and two sites that experienced large outbreaks at the beginning of the pandemic. Where possible, collateral data from the Ministry of Health, the BC Centre for Disease Control (BCCDC) and the health authorities was used to further inform and/or validate the operator experience.

Figure 4: Operator Questionnaire Response Breakdown by Health Authority and Ownership



OVERALL GENERAL INFORMATION:

- 69% of sites were accredited by a national or international accrediting body
- 25% of sites were part of a campus of care
- 82% of sites had a full-time on-site site leader
- 45% of site leaders held a clinical designation
- 96% of sites provided paid orientation for new staff that included Infection Prevention and Control (IPC)

- 81% of sites reported their workload related to completing IPC-related plans and training was much more than usual
- 86% reported their workload related to recruiting, training, scheduling, and managing staff was much more than usual
- 67% reported their workload related to inventory management (i.e., ordering supplies) was much more than usual
- 80% reported workload related to communication with families was much more than usual
- 79% reported their workload related to communications with the health authority was much more than usual

OVERALL COVID-19 INFECTION PREVENTION & CONTROL PRACTICES

- 94% of sites provided daily symptom screening of residents
- 98% of sites provided daily symptom screening of staff
- 98% of sites required staff to wear a surgical mask, 91% required staff to wear eye goggles, and 59% required staff to wear face shields
- 61% of sites had break rooms that are shared by staff on different floors
- 33% of sites tested residents newly admitted from community for COVID-19
- 74% of sites placed new admissions from community on contact and droplet precautions for 14 days or more
- 76% of sites cleaned resident rooms once per day or more
- 98% of sites cleaned common lounges once per day or more
- 100% of sites cleaned dining room once per day or more (89% cleaned twice per day or more)
- 82% of sites received additional IPC assistance from their health authority since the pandemic was declared
- 96% of sites agreed or strongly agreed they had sufficient onsite access to IPC expertise and education (other than during an outbreak)
- 95% of sites agreed or strongly agreed they had sufficient access to PPE (other than during an outbreak)
- 47% of sites ordered their surgical masks directly from the health authority, 45% ordered from their own supplier, and 7% ordered from a health authority-recommended supplier
- 10% of sites that experienced an outbreak reported they had at least one occasion in which they had less than a two day supply of surgical masks and 28% reported at least one occasion of less than a two day supply of N95 or equivalent respirators (note: this excludes the first three months of the pandemic)

A review of the general characteristics of sites did not reveal any notable associations with outbreaks. There is an obvious increased burden on site operators to manage a facility during the pandemic. This was reinforced across all sites and ownership models with reported significant increases in workloads across multiple areas of site management. For those sites that experienced an outbreak, specifically those in the 25 largest and matched sample of contained outbreaks, site operators expressed both fatigue and anxiety. Many spoke of traumatized staff who were overworked.

The review examined site-level financial reporting data for fiscal years 2019/20 (pre-pandemic year) and 2020/21 (pandemic year). These data were used to examine staffing levels/mix, sick leave and overtime both in the year prior to the COVID-19 pandemic and for the pandemic year.

GENERAL STAFFING INFORMATION:

- 61% of all staff were regular and 39% casual, with a similar rate across sites and ownership models
- 96% of regular staff received paid sick leave and the amount ranged from 2.5 to 18 days per year
- Direct care staffing hours reflected 78% of all staffing hours, which did not vary much between sites or across ownership types (except for fully private sites, where direct care hours were 64% of all staffing hours)
- Overall, 69% of long-term care sites provided 24-hour on-site RN coverage, with a similar rate between health authority-operated and for-profit sites (69% and 71%, respectively), increasing to 79% of sites operated by a not-for-profit

The data were reviewed to determine the direct care hours that were delivered by regular staff and those delivered by casual staff. In both the pre-pandemic and the pandemic year, 18% of direct care hours were delivered by casual staff (note that, based on headcounts, 37% of direct care staff are casual). There were no significant variations in this between sites or across ownership types.

The review examined if sites contracted with a third party to provide some or all of their staff and found that 58% of sites contracted with a third party for some or all of their staff:

- 32% contracted for RN services
- 46% contracted for LPN services
- 45% contracted for care aide services
- 59% contracted for laundry/janitorial and housekeeping services
- 53% contracted for food services

The percentage of total annual hours contracted from a third party did not vary significantly between the two years reviewed. In 2020/21, the following percentage of hours were contracted:

- 43% of housekeeping/janitorial/laundry
- 35% of food service hours
- 17% of care aide hours
- 17% of LPN hours
- 15% of allied health hours
- 11% of RN hours

The use of a contracted third party to deliver care and services varied by site, with a marked pattern based on ownership type. Health authority-operated sites are more likely to contract for housekeeping/janitorial/laundry staff and least likely to contract for direct care staff. For-profit operators with publicly funded beds are most likely to contract for direct care staff.

Table 5: Proportion of Hours Provided by Contracted Staff by Ownership, 2020/21

OWNERSHIP	RN	LPN	CARE AIDES	ALLIED	HOUSEKEEPING	FOOD
Health authority-operated	2%	0%	0%	0%	54%	39%
For-profit (contracted)	29%	33%	36%	30%	46%	39%
Not-for-profit (contracted)	14%	22%	14%	14%	34%	28%
Fully private	2%	10%	5%	6%	9%	22%

The review analyzed data on the staffing mix for the direct care hours. Table 6 (next page) shows the relative share of total direct care hours delivered, respectively, by RNs, LPNs, and care aides in long-term care sites. Overall, the staffing mix for direct care staff did not differ between fiscal years 2019/20 and 2020/21, but there were differences between sites, with a marked pattern based on ownership.

Table 6: Direct Care Nursing Hours Distribution by Ownership, 2020/21

OWNERSHIP	RN HOURS	LPN HOURS	CARE AIDE HOURS
Health authority-operated	13%	23%	65%
For-profit (contracted)	6%	18%	76%
Not-for-profit (contracted)	9%	18%	73%
Fully private	6%	12%	82%
Total	9%	19%	71%

The review examined the provision of paid sick leave and found it did not vary dramatically between pre-pandemic and pandemic years. In both years, almost all sites (96%) provided some paid sick leave for regular staff and few sites (10%) provided paid sick leave for casual staff. The utilization of paid sick leave did not vary between the two years, remaining at 5% of total paid hours.

The number of days of paid sick leave that were provided, while consistent for both 2019/20 and 2020/21, did vary significantly between sites, with a marked pattern based on ownership. In addition to ownership distinctions, higher amounts of paid sick leave, on average, were generally offered to leadership and management positions, followed by nursing staff, with care aides provided the least number of paid sick leave days for direct care staff.

Overall, 45% of sites provided their regular care aides with 18 days of paid sick leave per year. When examined by ownership type, this varied significantly:

- 100% of health authority-operated sites provided 18 days
- 44% of not-profit sites provided 18 days
- 7% of for-profit sites provided 18 days

Within the full range of paid sick days, 51% of contracted for-profit sites and 22% of contracted not-for-profit sites provided six or fewer days of sick leave per year.

The review examined site specific staffing characteristics to determine if they had any relationship to outbreaks and found that some factors did influence outbreak size. Sites that provided fewer days of paid sick leave were more likely to experience a larger outbreak. Comparing the 25 largest outbreaks to a matched sample of contained outbreaks, the review found:

- 41% of RNs were provided with five or fewer sick days at the largest outbreak sites versus 17% at the matched sample sites
- 50% of LPNs were provided with five or fewer sick days at the largest outbreak sites versus 19% at the matched sample sites
- 32% of care aides were provided with five or fewer sick days at the largest outbreak sites versus 21% at the matched sample sites

This finding is not surprising. Outbreaks grew in size through infected staff and residents transmitting the virus to each other. While controlling transmission from resident-to-resident was challenging, control of transmission from staff-to-resident and staff-to-staff could be better achieved by removing staff who were infectious from the site until they were no longer infectious. In the absence of daily testing, this required staff to remain at home if they displayed even the mildest symptoms of illness and to quarantine if exposed. Much of the testing strategy for staff during an outbreak was based on staff identifying they were symptomatic. In all these cases, if a staff member did not have access to paid sick days, they would be without pay for the days they were absent and this was one of many pressures that some staff felt in terms of the need to report to work.

The use of third-party contractors for the delivery of direct care services also influenced the size of an outbreak. Among the largest outbreaks, 21% of RN hours, 25% of LPN hours, and 19% of care aide hours were delivered by contractors. In comparison, in a matched sample of contained outbreaks, 9% of RN hours, 10% of LPN hours, and 11% of care aide hours were delivered by contractors.

This finding is not surprising given what was experienced at BC's first outbreak, where three different employers provided staff for one site. Management direction and leadership, standardized training, and the ability to communicate directly with staff are all diluted when staff are employed by contractors; furthermore, most sites that use contractors to deliver service will contract with more than one company. Contact tracing was key to quickly identify those to be tested and/or isolated, and this was hampered when multiple employers and multiple bureaucracies worked within a single outbreak.

Staffing mix was also found to influence outbreaks. Sites with a higher proportion of RN hours within their direct care staffing model were more likely to experience a contained outbreak, while sites with a lower proportion of RN hours were more likely to experience a larger outbreak.

This finding is not surprising. Registered Nurses offer the highest level of clinical expertise and experience within the long-term care staffing model. When a site experienced an outbreak, this expertise was critical to provide direction, oversight and IPC protocol co-ordination.

In long-term care, overtime in the year prior to the COVID-19 pandemic (2019/20) represented 5% of all direct care staffing hours. The rate of overtime in the pre-pandemic year was similar between health authority and for-profit sites, and lower at not-for-profit sites. In 2020/21, overtime increased by 63% to 2.3 million hours of overtime worked across all sites. The year-over-year increase in overtime ranged from 27% for sites that did not experience any outbreaks, 58% at sites with contained outbreaks, 86% at sites with medium outbreaks, to 178% at sites with a large outbreak.

This finding is not surprising given that larger outbreaks would result in more staff off sick or isolating, triggering the need for more staff to fill in. It is assumed that overtime is the result of the outbreak and not the cause of the outbreak. In reviewing levels of overtime in the year prior, there was no pattern linking higher or lower levels of overtime to the probability that a site would experience a larger outbreak.

Not included in total hours or in overtime hours were additional staffing hours provided by the health authority to sites experiencing an outbreak as part of the outbreak response. Additional staff were deployed to some sites that were experiencing an outbreak. In total, over 78,000 hours of additional staffing was provided by health authorities, with the likelihood of deployed staff rising concomitant with outbreak size:

- 23% of sites with contained outbreaks received additional staff
- 55% of sites with medium outbreaks received additional staff
- 96% of sites with large outbreaks received additional staff

The deployment of additional staff from the health authority was in response to the outbreak and it is reasonable to see larger outbreaks more likely to receive additional staff from the health authority. While operators were appreciative of the additional staff provided, some sites did reference the reluctance of health authority staff to work with COVID-19-positive residents as a challenge.

LICENSING INSPECTIONS

In addition to data provided by the operator, the review examined licensing data. It is a goal to have each long-term care site receive at least one annual inspection. Additional inspections can be triggered by complaints to licensing and/or the need to follow-up on deficiencies from previous inspections. Two fiscal years of inspection data were examined: 2018/19 and 2019/20.

The review found 77% of subsidized long-term care sites received at least one inspection in both of the two years examined with some variation across sites and by ownership model:

- Health authority-operated sites were the least likely (64%) to be inspected in both years
- 88% of contracted not-for-profit sites and 80% of contracted for-profit sites received inspections in both years
- 40% of subsidized long-term care sites received multiple inspections per year in both of the two years examined (i.e., a follow up inspection to a routine inspection)
- Health authority-operated sites were the least likely (25%) to receive multiple inspections
- 45% of contracted not-for-profit sites and 49% of contracted for-profit sites received multiple inspections

The review found an association between a site receiving multiple inspections in both of the two years examined and a large outbreak. Overall, 47% of sites with contained outbreaks received multiple inspections in both years compared to 67% of sites with large outbreaks.

PREVIOUS INFECTIOUS DISEASE OUTBREAKS

Long-term care facilities experienced infectious disease outbreaks prior to the COVID-19 pandemic. Typically these were triggered by influenza or gastrointestinal-related illnesses. The review examined outbreak data for all long-term care sites for the three years prior to the pandemic to determine if there was a pattern between past outbreaks and the probability that a site would experience a larger COVID-19 outbreak.

On average, there were 226 non-COVID-19 outbreaks per year and, on average, 39% of sites experienced one or more of these outbreaks per year. There was variation between sites and amongst ownership types:

- 59% of health authority-operated sites experienced an outbreak
- 67% of contracted not-for-profit sites experienced an outbreak
- 75% of contracted for-profit sites experienced an outbreak
- 34% of fully private sites experienced an outbreak

An association was found between the number of previous infectious disease outbreaks and the probability a site experienced a larger COVID-19 outbreak:

- 62% of sites that experienced a contained COVID-19 outbreak had experienced a non COVID-19 outbreak in the previous three years
- 84% of sites that experienced a larger COVID-19 outbreak had experienced a non-COVID-19 outbreak in the previous three years

OWNERSHIP MODEL

The review examined the possible influence of ownership model on outbreaks. Ownership models were classified as:

- health authority-operated
- owned by a not-for-profit society and contracted to provide beds to the health authority
- owned by a private, for-profit entity and contracted to provide beds to the health authority
- fully private with only private pay residents (owned by either a not for profit society or a private company)

There is not an equal distribution of sites amongst the ownership models based on geography or room configuration, which were independent factors unique to larger outbreaks. These inequities can be addressed to some degree by looking at the rate of infection on a per bed basis. Overall, in BC, the rate of cases per 1,000 beds was 123. When examined by ownership, we find the following rates:

Table 7: COVID-19 Cases per 1,000 Beds, by Ownership

OWNERSHIP	CASES PER 1,000 BEDS
Health authority-operated	81
For-profit (contracted)	146
Not-for-profit (contracted)	153
Fully private	43

If we look just at the Lower Mainland, where 84% of outbreaks occurred, we find the following:

Table 8: COVID-19 Cases per 1,000 Beds in Lower Mainland, by Ownership

OWNERSHIP	CASES PER 1,000 BEDS
Health authority-operated	106
For-profit (contracted)	259
Not-for-profit (contracted)	219
Fully private	79

It should be noted that case rates for fully private facilities are based on a small number of sites with a disproportionate number of co-located assisted living beds and is not representative of the sites with publicly funded beds.

Room configuration was a factor in larger outbreaks. For publicly funded long-term care sites, the likelihood of having a larger outbreak was 24% greater in sites with shared rooms than those with only private rooms.

The biggest difference in the rate of cases per 1,000 beds is between the health authority-operated sites and contracted sites (either for-profit or not-for-profit). This is not surprising when placed in the context of other data. Provision of paid sick leave, use of contractors for direct care, and the proportion of RN hours in direct care staffing all independently influence outbreak size and all are markedly different, on average, between health authority-operated sites and contracted sites. The differences between not-for-profit and for-profit are less pronounced but still conformed to the general pattern related to paid sick leave, RN hours, and contracting for direct care.

AT THE SITE LEVEL: STAFF

Over 6,500 staff were consulted through a comprehensive and confidential online survey. The survey asked a number of wide-ranging questions to measure the overall impact of working in a site during the COVID-19 pandemic and to inform on any key themes or staff characteristics that might influence an outbreak.

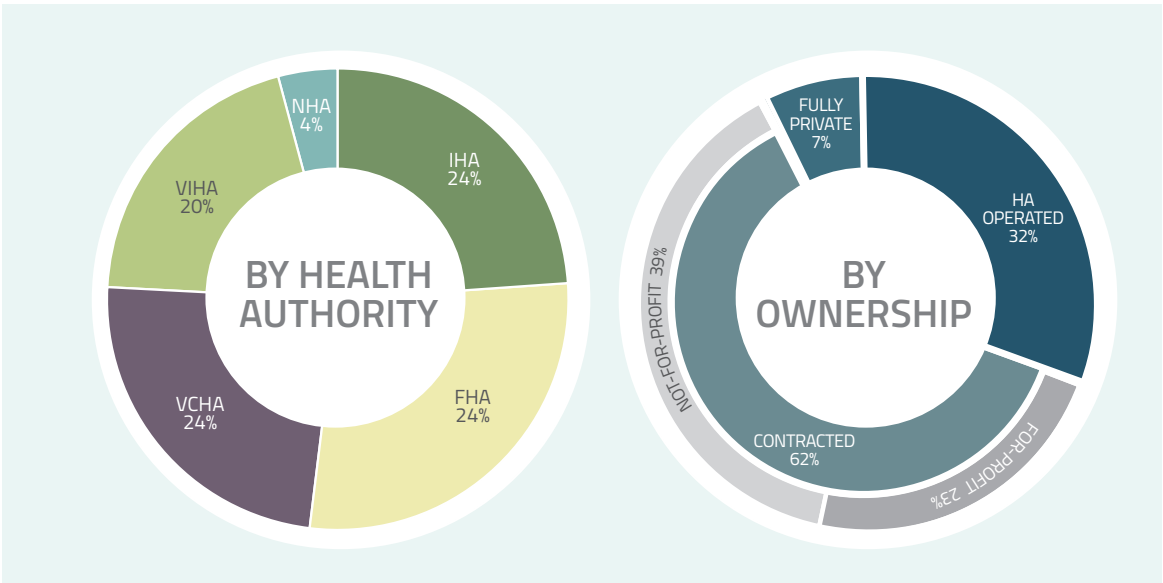
Staff from all parts of the continuing care system participated in the survey:

- 76% were from long-term care sites, 8% from assisted living sites, and 16% from sites with co-located long-term care and assisted living combined
- 40% (2,589) worked as registered care aides
- 19% (1,216) worked as registered nurses (RN) or licensed practical nurses (LPN)
- 11% (747) were in leadership/management roles
- 10% (673) worked in housekeeping, food services or janitorial
- 11% (715) worked as allied health professionals (e.g., occupational therapist, recreation assistants, dietitian)
- 15% (998) reported working in other roles (e.g., pharmacy, security, building maintenance)

All ownership models of long-term care and assisted living responded:

- 32% health authority-operated
- 23% for-profit (contracted)
- 39% not-for-profit (contracted)
- 7% fully private

Figure 5: Staff Survey Response Breakdown by Health Authority and Ownership



HIGHLIGHTS OF THE STAFF EXPERIENCE

- Most staff were seriously concerned they could possibly infect residents and their own family members with COVID-19
- Almost two-thirds of staff reported that their mental health had worsened over the period of the pandemic, and more than half indicated a negative impact specifically on quality time with their family
- 75% of staff reported their site was always, usually or sometimes understaffed during the past year
- Three-quarters of staff reported learning about infection prevention and control (IPC) in their professional training and two-thirds report receiving site-specific IPC training at their site when hired
- Among staff working in an outbreak setting, 80% of staff reported they received additional PPE training when the outbreak was declared
- 71% of staff reported receiving additional training on how to do their job safely during the pandemic
- With the exception of how to care for COVID-19 positive residents, at least 75% of staff rated the various aspects of the IPC training they received as very helpful
- 63% of staff rated training on how to care for residents with COVID-19 very helpful
- 79% of staff who worked during outbreak felt that COVID-19 residents' care needs were met during the outbreak
- 66% of staff reported feeling safe to provide care to residents with COVID-19
- 35% of staff reported they regularly cared for droplet and contact precaution residents prior to the pandemic
 - This number was much higher (43%) for staff employed by health authority-operated sites versus staff employed at for-profit sites (30%)
- While 98% of staff reported putting on a fresh surgical mask when they arrived at work, only 64% reported changing their mask after a meal break
- Just over half of the staff (53%) reported taking an average of two or more breaks each shift, with 62% of staff taking breaks in the common staff/break room
- 25% of staff reported the number of people in the staff/break room always, usually or sometimes exceeded the posted occupancy limits

- 87% of staff reported that they always completed a health screening check upon arrival at work
- Overall, 9% of staff reported that, on at least one occasion, they did not pass the daily health screening and were sent home; 76% of these staff were tested for COVID-19, of whom 13% tested positive
- 40% of staff reported that they came to work in the past year when not feeling well on one or more occasions
 - Their primary motivations (multiple choices allowed) were an obligation to co-workers (55%) followed by an obligation to residents (38%); feeling pressured from the employer was the third-most likely reason (29%) that a staff person attended work when not feeling well, with 20% indicating the fact they would not be paid if they did not attend work as one reason why they came to work.

IMPACT ON RESIDENTS

In the survey, staff were asked to reflect on how COVID-19 prevention measures in long-term care and assisted living affected residents care and well-being. The following percentage of staff reported a "very negative" or "somewhat negative" impact on residents:

- 89% visitation restrictions
- 87% inability to leave the site for outings
- 85% isolating residents to their room for 14 days when admitted
- 76% dining room limitations
- 75% isolating residents to their room during an outbreak
- 69% staff required to wear medical masks at all times

In addition, 60% of staff rated the residents' overall mental health and well-being (i.e., mood, anxiety, irritability) as having significantly worsened or worsened compared to before the pandemic.

COMMUNICATION AND LEADERSHIP DURING AN OUTBREAK

Communication is always challenging and this was reflected in the feedback from staff. Those who worked in management and leadership were less likely to highlight challenges with communication versus staff who worked in direct care or other services. Part of this links to the fragmented staff in sites with contracted staff, which also relates to availability of and access to workplace emails and electronic communication devices. In any crisis situation, including the management of a COVID-19 outbreak, communication and leadership are key. Staff who worked during an outbreak were asked a number of questions about the leadership and communication during the outbreak:

- 48% of staff strongly agreed that leadership at their site was consistent during the outbreak
 - This ranged from a high of 53% in contained outbreaks to a low of 39% in large outbreaks
- 48% of staff strongly agreed they were very confident in the leadership at their site during the pandemic
 - This ranged from a high of 54% in contained outbreaks to a low of 39% in large outbreaks
- One-third of staff rated the leadership and support in their site as excellent, with another one-third rating it as good, and the remaining one-third rating it as either average, fair, or poor

Staff who were part of an outbreak were asked how well they thought their site had responded the outbreak:

- 31% of staff believed more could have been done to control the outbreak
 - This ranged from a high of 46% in large outbreaks to a low of 20% in contained outbreaks
 - In addition to outbreak size, there was also a difference in response based on occupation, with direct care staff being more likely to think more could have been done to control the outbreak (36%) than those in management or leadership roles (22%)
- 44% of staff believed their site was very prepared to handle an outbreak, while 38% felt they were somewhat prepared
 - Staff at large outbreak sites were less likely to believe they were prepared (29%)
 - Staff in management and leadership were more likely to believe they were prepared (56%) than direct care staff

Staff were asked a series of questions about communications over the course of the pandemic.

- Slightly less than half of staff (46%) found communications from their site were very timely and effective; 37% found them somewhat timely and effective
 - Management was much more likely (68%) to report communications to be very timely and effective

The staff who work in long-term care have endured a marathon and this is reflected in the data. The pandemic has had an overall negative effect on their health and well-being, as well as those around them, both at the workplace and at home. The extraordinary levels of overtime, the stress they felt from the possibility of infecting both residents and their own family members, the physical burden of constantly donning and doffing PPE, and, for some, the financial burden of using unpaid sick days to responsibly manage the risk of COVID-19 have weighed heavily on this population for the past 18-plus months.

Some of the findings from the survey are not surprising, particularly in the context of other data. Staff who worked in outbreak sites and those who worked in large outbreaks were more likely to see opportunities for improvement in the control and management of outbreaks. Fear of infecting others conflicted with a sense of obligation to co-workers and residents, leading some staff to make the difficult choice to work when feeling unwell.

Overall, it is arguably still too early to measure the long-term impacts on staff who worked in long-term care and assisted living during the pandemic. The initial data tell us that we need to understand how staff have responded and to examine more closely the burden of rigorous IPC protocols, including PPE, and the overall psychological impact on those who worked in outbreaks, particularly large outbreaks.

SUMMARY OF FINDINGS

Overall, the majority of outbreaks in BC were contained and did not result in any deaths from COVID-19. This was achieved by the herculean efforts of devoted staff who worked tirelessly under immense pressures and stressful circumstances, site operators who were challenged on managing multiple fronts, public health officials who worked with rapidly evolving science and a Provincial Health Officer and Minister of Health who, early in the pandemic, took decisive actions to blunt the impact of COVID-19 in long-term care and assisted living in BC.

However, even with everyone's best efforts, we have tragically lost over 800 residents to COVID-19. In addition, the lives of residents and family members were upended with the trauma of life in care homes under pandemic-imposed restrictions. Those who operate and work in them have been affected, and, in some cases, deeply, by the emotional experience of the pandemic.

The purpose of this review was to examine as many different factors as possible to determine if there are any actions that can prevent an outbreak or if an outbreak does occur, to prevent it from spreading. The review gathered a significant amount of data and information about our long-term care and assisted living system in BC. The learnings from this review can help site operators and health authorities inform their practice and policies going forward, which will benefit residents beyond containing COVID-19 outbreaks.

Overall, when we look at the data and recognize that one case of COVID-19 in either a resident or staff member triggers an outbreak, it is clear that whether or not a facility experiences an outbreak is most directly linked to the level of community transmission. This was initially controlled through a variety of public health measures and restrictions and now we have the benefit of a highly effective vaccine.

Outside of reduced community transmission, the approach to protecting residents of long-term care and assisted living from COVID-19 was based on "layers" of protection. The first layer of protection was to reduce the risk of introducing the virus into the care home. This was first achieved by severely restricting who entered the site with rules and limits for visitors and implementing the single site order for staff. For the most part, this first layer was effective. There was only one outbreak that was linked to a visitor and no documented cases of the same staff person transferring the virus from one outbreak site to another.

The next layer was to screen all those who entered the site for signs and symptoms of COVID-19. For most sites, this required staff to undertake daily symptom checks and to stay home if they felt unwell. Visitors were also required to undertake a symptom check prior to each visit. While successful for visitors, this review found that self reported symptom checking for staff may not have been as effective for a number of reasons.

While each layer was necessary, none were sufficient in and of themselves to provide complete protection. Even with the effective application of all layers, there could not be a guarantee of absolute protection. However, with each additional layer, the probability that a resident or staff member would become infected with COVID-19 was reduced.

While it was first believed that a person was not contagious with COVID-19 until they began to display symptoms, as the pandemic evolved, it was acknowledged that a person could have no symptoms and yet be infectious to others. This reduced the efficacy of symptom checking, although it still maintained an overall beneficial effect as many, but not all, infectious people continued to display symptoms.

Reliance on staff to remain at home if they felt unwell was challenging. Just over 40% of staff reported coming to work on one or more occasions during the pandemic when they were not feeling well. Their reasons for doing so were often benevolent and related to concern about the burden on co-workers and residents that their absence would cause. However, 20% of staff made a difficult choice to go into work because of financial pressures as they would not receive paid sick leave to stay at home.

The lack of paid sick leave for casual staff and the variation in the number of paid sick days offered to regular staff is significant. The link between sites that provide fewer days of paid sick leave and sites that experienced larger outbreaks is not surprising given additional data related to staff attending work when unwell and other patterns within outbreak sites.

Controlling transmission of the virus should it be introduced into the site was to be achieved through a third layer of effective cleaning and strict personal protective equipment (PPE) protocols. The foundation of the latter required staff to wear a surgical mask for the duration of their shift and use full droplet and contact precautions when caring for COVID-19 positive residents. Staff in long term care engage in physical work and wearing a surgical mask for the duration of an eight-hour shift for many months is a significant burden. As well, effective use of full contact and droplet precautions requires a high level of training in the intricacies of “donning and doffing”. Long-term care staff are not accustomed to this level of PPE vigilance, which are more likely to be found in acute care settings. The impact of these factors and the requirement to sustain the necessary rigour for effective PPE practices was an underappreciated burden on staff and was likely more difficult to enforce than formally recognized.

The PPE protocols implemented were necessary but not always sufficient to ensure that staff and residents would not transmit and/or contract the virus from each other. The degree to which the insufficiencies of the PPE was due to practice issues versus the efficacy of surgical masks is difficult to distinguish. For the 261 (72%) outbreaks that were contained, it would appear the PPE was both necessary and sufficient, but we cannot know if it was the PPE that contained the outbreak or detecting the virus before it had begun to spread or a combination. Given this, it may be reasonable to re-examine whether PPE protection should be increased to require an N95 or equivalent respirator for staff providing personal care to COVID-positive residents and/or for all staff during an active outbreak.

The on-site leadership required to contain an outbreak, especially an outbreak of a new virus that has triggered an international pandemic, requires experience and strong clinical assessment skills. Within long-term care and assisted living staff, registered nurses (RNs) have the highest level of training and breadth of experience. Over the past twenty-five years, there has been a gradual reduction of the RN component of staffing in long-term care. This has partly been attributed to managing budgets, program re-design and in response to human resource challenges (i.e., shortage of RNs). Regardless of the reasons, the evidence demonstrates a strong link between low levels of RN coverage and high COVID-19 case counts.

In addition to RN staffing levels is the practice of contracting to a third party for direct care staff and its association with larger outbreaks. The containment strategy for an outbreak required notification of staff, efficient contact tracing and standardized PPE and IPC protocols. The efficacy of this strategy was compromised at sites where a consistent standardized approach to managing the outbreak was hampered by multiple employers and multiple bureaucracies within a single outbreak.

Room configuration also played a role in determining the greater probability of a larger outbreak. The likelihood of having a larger outbreak was 24% greater in publicly funded sites with shared rooms. The future design of long-term care needs to look at eliminating these shared rooms.

Overall, the public health response to the outbreaks was strong, but there were inconsistencies and frustrations as identified by facility operators and staff. All sites reported that public health outbreak teams contacted them and were on-site within 48 hours. Some sites experienced challenges with conflicting direction from health authority staff, generally a result of having multiple different people involved in outbreak management. As expected, the larger the outbreak, the more likely a facility was to experience challenges and also, as expected, those who experienced outbreaks at the peak of Wave 2 regardless of size were the most likely to express frustration with the number of different health authority staff and different directions received during an outbreak.

Significant numbers of health authority staff were re-deployed by public health to support outbreak response at the request of site operators. From the perspective of the operator, these were welcomed additional resources, but many noted that health authority deployed staff would not work with COVID-19 positive residents and this created some tension at some sites.

There were issues reported at some sites about the process for notification of test positive staff, contact tracing and outbreak testing strategy. The public health process for disclosure of COVID-19 testing results and contact tracing for long-term care was similar to that in the community. Several operators who experienced large outbreaks felt that contact tracing could have been more effective and timely if operators were given more opportunity to be involved, and that testing was not as widespread and frequent as it should be. The evidence does support that early and frequent testing of all staff and residents could identify cases earlier than testing based on symptoms and contact tracing.

We now have two effective testing tools. There is the PCR “gold” standard test that has a high sensitivity to detect the virus and may even detect the virus in people who are pre-symptomatic and asymptomatic; this was the test used in all outbreaks reviewed. The PCR test must be analyzed in a laboratory and there may be a range of several hours to days between swabbing for the virus and receiving the test results. We also have the rapid antigen test (rapid test), which became available in November 2020. The rapid test has a lower sensitivity to detect the virus but produces very few false positives. However, it is highly effective at detecting the virus in people with higher viral loads that are likely contributing to transmission. The rapid test has a quick turnaround time, providing results in 15 minutes or less and, as of January 2021, can be administered as a nasal swab (versus the nasal pharyngeal swab) making it easy to use.

Rapid tests may be a practical and timely screening tool that can identify people most at-risk of transmitting the virus and would complement current PCR testing strategies. Frequent rapid tests in conjunction with current PCR testing protocols would likely be an effective strategy to suppress the introduction and spread of the virus in a high-risk setting, such as long-term care or assisted living sites.

RECOMMENDATIONS

1. Expand paid sick leave

Only 60% of staff are entitled to paid sick leave and one-third receive six days per year or less. The impact of this on transmitting COVID-19 and other infectious diseases and illness is pronounced. Staff need to be supported financially if they remain at home when ill.

2. Continue efforts to increase the pool of staff in long-term care and assisted living

In addition to increased sick leave, we need to continue efforts to increase staff. There needs to be someone to replace the person who is absent due to illness and we know many staff felt the pressure their absence would have on co-workers and residents. There are many current efforts aimed at increasing access to training for care aides. We need to continue these efforts and increase training for nurses, particularly registered nurses.

3. Decrease contracting for direct care staff

It is possible that if current wage levelling is continued, some of the benefits achieved by contracting direct care staff will diminish and an overall reduction will be achieved.

4. Increase the proportion of registered nursing staff at non-health authority sites

This will be challenging to achieve immediately due to the staffing shortages and the long training horizon for those who wish to become an RN, but we can begin the process by setting a target to work toward and measure progress.

5. Increase the scope and frequency of testing

With a combination of rapid testing and PCR tests, we now have the ability to very quickly detect and isolate COVID-19 positive staff and residents. During an active outbreak, a rapid test should be done on a daily basis for both staff and residents combined with PCR testing as required until the outbreak is under control. Use of rapid tests as a screening tool at sites not in active outbreak should also be considered.

6. Eliminate shared rooms

A single room has been the standard in long-term care for many years however we still have older facilities with shared rooms and even some with three or more residents. Among the many issues with shared rooms, the spread of infectious diseases overall and in particular COVID-19 was amplified in sites with shared rooms. It will take some time to achieve this goal, but we can begin by setting targets and measuring progress against those targets.

7. Vaccinations in long-term care and assisted living should be mandatory for staff and booster shots should be provided to residents

This has been achieved by the current Provincial Health Orders. The evidence is overwhelming and it is not unreasonable to expect those who work in health care to take all precautions to protect the patient or in the case of long term care and assisted living, the resident.

APPENDIX 1: REVIEW METHODOLOGY

The Office of the Seniors Advocate (OSA) launched an in-depth review to examine COVID-19 outbreaks¹ declared in BC long-term care and assisted living sites between March 5, 2020, and February 28, 2021. The review used a mixed methodology of both quantitative and qualitative approaches.

STAKEHOLDER CONSULTATION

From March 2021 to April 2021, consultations were held to seek input and guidance on the lines of enquiry that should be applied to the review. Four consultation sessions were held with the following groups: (1) all long-term care and assisted living operators, (2) senior leaders from the health authorities and BC Centre for Disease Control, (3) senior leaders in the Ministry of Health (MoH), and (4) senior leaders from the following organizations: Doctors of BC, Physiotherapy Association of BC, CAOT-BC, Safecare BC, Worksafe BC, BC Association of Social Workers, BC Recreational Therapy Association, Hospital Employees Union, BC Nurses Union, BC Government Employees Union.

In total, over 200 people participated in the consultations.

COVID-19 LONG-TERM CARE AND ASSISTED LIVING STAFF SURVEY

The OSA launched the *COVID-19 Outbreak Care Home Staff Survey* from May 7, 2021 to June 15, 2021. Data was collected from staff who work in long-term care and assisted living through a confidential survey that was made available to all staff. The survey covered a range of areas of interest affected by the pandemic that include: training, workload, infection prevention & control practices, PPE, communication, COVID-19 testing and outbreak management and related experiences.

The survey was designed with the assistance of the British Columbia Office of Patient-Centred Measurement and informed by a focus group of front-line staff that included care aides and nursing staff represented from each health authority. All long-term care and assisted living sites were required to forward an emailed survey link and access code to staff. Staff unions and associations encouraged their members to participate in the survey. Participants could receive a paper-based version of the survey upon request. The survey was launched on an industry-standard survey platform through the Ministry of Citizens' Services on behalf of Office of the Seniors Advocate.

The survey consisted of a minimum set of 68 questions, with additional sets of questions depending on the respondent's answers. For example, if a respondent worked at a site during an outbreak, they were directed to a set of outbreak-specific questions. The survey responses were collected under sections 26(c) and 26(e) of the *Freedom of Information and Protection of Privacy Act*.

In total, 6,507 survey responses were received.

1. Sites with enhanced surveillance episodes are counted in outbreaks.

OPERATOR QUESTIONNAIRE AND FACILITY REPORTING TEMPLATE

All long-term care and assisted living operators who were covered by the BC Public Health Orders for COVID-19 were asked to complete a general operator questionnaire and reporting template on specific site and staffing information from May to July 2021.

The questionnaire and reporting template design was carried out by the OSA and informed by a focus group of LTC/AL operators. The focus group provided feedback and guidance on questions that measured the overall impact of the COVID-19 pandemic and guidance on the available quantitative information for the reporting template.

The general operator questionnaire asked sites to provide information about staff and site characteristics and outbreak management and response. The facility reporting template covered two fiscal years (2019/20 and 2020/21) and accompanied the questionnaire. The template collected quantitative information about the site's staffing and wages, hours worked, single site order, visitor policy, and other site-level information. The questionnaire and reporting template was launched online using an industry-standard survey platform through the Ministry of Citizens' Services on behalf of Office of the Seniors Advocate.

The questionnaire consisted of a minimum set of 55 questions, with additional sets of questions depending on the operator's (site) answers. For example, if a site experienced an outbreak, they were directed to a set of outbreak-specific questions. The reporting template consisted of 13 questions. Both the questionnaire and reporting template were requested pursuant to Sections 3 and 7 of the *Seniors Advocate Act*.

There are 487 long-term care and assisted living sites in British Columbia. There were 356 completed questionnaires and 373 completed reporting templates.

INTERVIEWS AND FOCUS GROUP

Site operators from the 25 largest outbreaks and a selected sample of 25 contained outbreaks, matched for size, health region and time of outbreak, were invited to participate in an in-depth interview (June and July 2021). The interviews provided an opportunity for operators to reflect on their experience, site responses and actions that took place prior to the outbreak through to the end of the outbreak. Two additional interviews were conducted with sites that experienced the first large outbreaks at the beginning of the pandemic to understand lessons learned and how they were applied as the pandemic progressed.

A small focus group was conducted in August 2021 with long-term care physicians (Vancouver Coastal Health and Fraser Health) to understand their outbreak experiences in LTC/AL.

Medical Health Officers and public health staff who were involved in the management of LTC/AL outbreaks were invited to participate in interviews (June and July 2021), but were unable to participate due to urgent pandemic-related responsibilities. In lieu, the Office of the Provincial Health Officer (PHO), Chief Medical Health Officers, and public health officials submitted written responses to questions provided by the Office of the Seniors Advocate (September 2021), as well as provided extensive written materials outlining outbreak management guidance and response in each health authority. Additional documents were gathered on policies, orders and directives issues by the PHO and MoH. Their cooperation in these unprecedented times is appreciated.

DATA & DOCUMENTS

The review included all LTC/AL site level data across the five health authorities in BC. Administrative data were obtained from various sources (see Appendix 2) and from existing data within the Office of the Seniors Advocate. COVID-19 case and death data for LTC/AL was collected by BC Centre for Disease Control (BCCDC). Data was used for descriptive and summary statistics and modelling.

Documents were gathered on policies, orders and directives issues by the PHO and MoH. Health authority pandemic plans, training, protocols, practices, and other guidance documents were also collected. These orders and guidance documents provided the context and direction for pandemic response and management in BC.

ANALYSIS APPROACH

Data obtained for the review was examined for patterns, characteristics and to identify potential factors associated with outbreak spread. For the analysis, characteristics of various regional, outbreak and site groups were described and compared. The relationship between various factors and the outcomes of an outbreak occurring and spreading were examined. Qualitative analysis identified patterns of experience and provided direction and context to the statistical analysis.

A more detailed analysis of the outbreak response was conducted for the 25 largest outbreak sites (25 cases or more) and matched that to a sample of 25 contained outbreak sites (4 cases or less); a total of 50 sites, to determine if there were any material differences that influenced the likelihood the outbreak would spread or remain contained. All outbreaks were also categorized as small/contained (0-4), medium (5-25) and large (26+) based on the number of cases and analysis was conducted to determine factors associated with outbreak spread or containment.

LIMITATIONS OF THE REVIEW

The OSA recognizes a limitation of this review is the lack of perspective from LTC/AL residents and families who personally experienced these outbreaks. Our previous report, *Staying Apart to Stay Safe: The Impact of Visit Restrictions on Long-Term Care and Assisted Living Survey*, acknowledges the hardships experienced by families who were unable to see their loved ones in LTC/AL. We hope to include the voices of residents and their loved ones on their pandemic experiences in future work.

The COVID-19 testing data for staff and residents in LTC/AL was not feasible to enable reliable matching with the provincial laboratory and therefore was excluded from this review. However, information about testing was gathered in the surveys and interviews conducted by the Office of the Seniors Advocate.

APPENDIX 2: LIST OF DATA SOURCES

DATA	TIME FRAME	SOURCE
Flu Vaccinations	Fiscal Year 2019/20	BC Centre for Disease Control
COVID-19 Outbreaks	March 2020 - February 2021	BC Centre for Disease Control
COVID-19 Testing Data	March 2020 - February 2021	BC Centre for Disease Control
COVID-19 Case and Fatality Data	January 2020 - February 2021	BC Centre for Disease Control
Enhanced Surveillance Sites	October 2020 - February 2021	BC Health Authorities
Staff Redeployment	May 2020 - February 2021	BC Health Authorities
Inspections and Incidents in Long-Term Care	Fiscal Years 2017/18 - 2019/20	Health Authority Licensing Departments
Incidents in Assisted Living	Fiscal Years 2017/18 - 2019/20	Assisted Living Registrar, BC Ministry of Health
Direct Care Hours	Fiscal Year 2020/21	BC Ministry of Health
Long-Term Care and Assisted Living Data	September 2020	BC Ministry of Health
Long-Term Care Admissions	Fiscal Years 2019/20 - 2020/21	BC Ministry of Health
Long-Term Care Quick Facts Directory	Fiscal Years 2017/18 - 2020/21	Office of the Seniors Advocate
Population Projections (P.E.O.P.L.E. 2020)	July 1, 2020	BC Stats
Ontario COVID-19 Case Data	January 2020 - February 2021	Public Health Ontario

APPENDIX 3: COVID-19 CASES & OUTBREAKS IN BRITISH COLUMBIA

	WAVE ONE	WAVE TWO	TOTAL
Number of Sites with Outbreak(s)	45	198	210¹
Number of COVID-19 Cases	622 / 14%²	3,862 / 86%	4,484
Number of Staff	249 / 13%	1,600 / 87%	1,849
Number of Residents	373 / 14%	2,262 / 86%	2,635
Number of Resident Deaths	135 / 17%	647 / 83%	782
Case Fatality Rate	36.2%	28.6%	29.7%
Number of Outbreaks	48	317	365
Small	28 / 58% ³	233 / 74%	261 / 72%
Medium	14 / 29%	41 / 13%	55 / 15%
Large	6 / 13%	43 / 14%	49 / 13%
Number of Outbreak(s) - Staff Only	21 / 44%	212 / 67%	233 / 64%
Number of Outbreak(s) - Residents Only	6 / 13%	10 / 3%	16 / 4%
Number of Outbreak(s) - Staff and Residents	21 / 44%	95 / 30%	116 / 32%
Number of Outbreak(s) with Resident Fatality	22 / 46%	68 / 21%	90 / 25%
Duration of Outbreak (Days)			
Average	36	24	26
Longest	83	107	107
Shortest	7	6	6
Small Outbreak	22	16	16
Medium Outbreak	50	35	39
Large Outbreak	70	59	60

Table notes:

1. Total includes unique sites across both waves. 33 sites experienced outbreaks in both waves.

2. As a percentage of the number of outbreaks.

3. As a percentage of the number of outbreaks in each wave.

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