

COVID-19 First Wave Review

March to September 2020

Minister Randy Delorey
Department of Health and Wellness
Government of Nova Scotia

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Terms & Definitions

CCA: Continuing Care Assistant; An individual who provides assistance with activities of daily living (ADLs) and instrumental activities of daily living (IADLs) for the purpose of promoting holistic health and independence

CNS: Communications Nova Scotia

COVID-19: SARS-CoV-2 (referred to as COVID-19 in this report)

DHW: Department of Health & Wellness, Government of Nova Scotia

HANS: Health Association of Nova Scotia

HHR: Health and Human Resources

IC Designate: A staff member at a facility who is responsible for infection control. This individual should not be confused with an IPAC Expert, as the IC Designate generally has basic knowledge of the principles of IPAC versus formal education in IPAC.

ICP: Infection Control Practitioner

IPAC: Infection Prevention and Control

IPAC Drop Team: A multidisciplinary team (i.e. IPAC, PH, Department of Environment, OHS, DHW etc.) who provides onsite expertise that will vary depending on size and individual needs of the facility

IPAC Zone Lead: ICP working for the NSHA IPAC program that is dedicated to work with LTC facilities within the zone

LPN: Licensed Practical Nurse

LTC: Long-Term Care

NSHA: Nova Scotia Health Authority

OHS: Occupational Health & Safety

PPE: Personal Protective Equipment

PH: Public Health

RN: Registered Nurse

The Sector: The collective body of LTC facilities in the province and their linked stakeholders

Zone: There are four health zones within the Nova Scotia Health Authority in the province, Western, Central, Northern and Eastern.

Acknowledgements

The LTC IPAC Reviewers would like to show our gratitude to those facilities that have participated in this process in completing surveys and speaking with our team over the phone. The long-term care residents and staff have been disproportionately affected by COVID-19, and your feedback has shaped the direction of this report. Our goal is to strengthen the supports that were put in place for the first wave and mitigate the impact of a pandemic's negative effect on the sector in the future.

We would like to thank the IPAC Review Project Team for their work on this project.

The intent of this document is not to diminish the commitment and dedication of the staff who worked hard to support residents and their families, but rather attempt to identify the sector challenges and create solutions to better support them.

Finally, we would like to express our gratitude to our Advisory Committee, a group composed of industry professionals with experience across the sector. We are grateful for the feedback you have provided us to ensure that our identified considerations and solutions are not just words on paper but are initiatives that can be implemented with tangible benefit.

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Executive Summary

Nova Scotia's LTC facilities are home to approximately 8,000 citizens. Most residents are seniors who are susceptible to acquiring communicable diseases such as COVID-19 and suffering related complications due to increased frailty and underlying chronic conditions. They are also vulnerable to infection with COVID-19 due to behavioural factors and shared spaces.

The intent of this document is to present the analysis, findings and considerations based on the survey responses, evidenced based practice, virtual site visits, discussions with sector representatives and a literature review.

During the first wave of COVID-19, DHW, NSHA and the IWK, worked collaboratively with the sector to ensure LTC facilities received funding and resources necessary to support residents and staff. The list below represents examples of actions taken as a result of this collaboration:

- Development of processes/funding to support acute oxygen therapy in LTC
- Financial support to LTC for COVID-19-related expenses (such as enhanced environmental cleaning, additional staffing, PPE, etc.)
- Development of process through HANS to supply PPE to continuing care providers
- Provision of iPads to LTC facilities to support online visitation
- Development and distribution of LTC COVID-19 Outbreak Response Toolkit
- Regular sector-wide calls to facilitate information sharing
- Provision of additional OHS supports to the sector
- Development and revision of processes to adhere to PH directives
- Active participation in outbreak management, including the establishment of an HHR deployment centre to support facility staffing needs during critical shortages
- Development of IPAC Best Practice Guidelines for LTC and Home Care
- Rapid response to assist in the outbreak management in LTC facilities including onsite ICP support and training, consultation and attendance at outbreak management meetings.
- Development and online delivery of tools and materials to support response

It was recognized by the reviewers that these approaches made a significant impact on LTC residents and staff and these processes should be formalized to continue through to the second wave.

All provinces that reported COVID-19 cases in LTC reported similar themes and challenges:

- COVID-19 was introduced by a staff member usually with no symptoms
- Infrastructure differences contributed to prominence of the role of IPAC; i.e., in older buildings with shared rooms and bathroom facilities, IPAC practices were critical in controlling spread
- Residents' personal belongings and care equipment made both cleaning and cohorting challenging
- Complex care residents have co-morbidity factors that made them more vulnerable
- Residents with cognitive and memory impairments made isolation challenging
- Lengthy staff testing wait times and inability of staff to work at more than one facility created human resourcing challenges
- Lack of formalized IPAC education and policies

The IPAC review focused on six key elements:

- Access to IPAC expertise specific to LTC
- Access to IPAC education and tools specific to LTC (including virtual tools and resources)
- On-site systems, standards, processes and leadership that support the prevention and management of infectious disease via consistency in practice and documentation of measures
- Equipment and material resources that support the prevention and management of infectious disease
- Monitoring and reporting mechanisms
- Infrastructure/space design and usage that supports the prevention/reduction of the spread of infectious diseases

During this pandemic, DHW, together with NSHA, IWK and the Continuing Care sector, moved promptly and effectively to minimize impacts of this infectious disease, and contributed to the rapid response of COVID-19 based on evolving evidence.

DHW leveraged valuable partnerships with NSHA, IWK IPAC and OHS experts during the pandemic to better support the sector.

This document will outline several considerations, both immediate and future, to help prepare the LTC sector for the second wave along with other infectious disease outbreaks during and after the pandemic.

Purpose

The 2020 COVID-19 pandemic highlighted the importance of IPAC to ensure the health and safety of LTC residents/clients/staff in our province.

The purpose of this project was to conduct a review of IPAC policies, processes, practices, resources, and accountability in Nova Scotia's LTC sector to strengthen the sector's preparedness for, and response to, infectious disease outbreaks.

DHW implemented this review in much the same way as it did in 2018 in response to the prevalence of pressure injuries in LTC. The review and response taken to pressure injuries resulted in a decrease in pressure injuries over 12 months, and the collaborative process undertaken is now viewed as a best practice in responding to sector issues. Therefore, in similar fashion, the Project Team completed a comprehensive review of the current state, identified sector challenges, and, through collaboration with sector partners, developed solutions to address the challenges.

This document highlights several considerations for supporting the sector to improve IPAC both now and into the future to prepare for a second wave of COVID-19, in addition to other infectious disease outbreaks.

Report Process

A | Survey Overview

In an effort to obtain information related to IPAC capacity within the provincial LTC sector, two surveys were distributed to the management of the 133 licensed facilities across Nova Scotia.

Survey one, the LTC Infrastructure Survey, was designed to gather key information about the physical layout (space and design) of LTC facilities that pose risks to Infection Prevention and Control (IPAC). The response rate was 98%, with 131 of the 133 facilities responding.

Survey two, the LTC Pandemic Planning and IPAC Survey, was designed to gather key information about the challenges and experiences of LTC facilities with respect to: (a) accessing IPAC expertise and education; (b) developing on site systems, standards and processes to manage IPAC; (c) IPAC monitoring and reporting mechanisms; (d) access to IPAC equipment and material resources; and, key concerns/insights of residents, families, staff, and administrators. The response rate was 97%, with 130 of the 133 facilities responding.

B | Virtual Visits: Overview, Facility Selection and Feedback

Beginning on August 19 and completing on August 31, members of the Project Team had conversations and virtual facilities tours with 24 LTC facilities in the province. The purpose of these discussions was to learn more about the unique needs and challenges of the sector, and to better understand where gaps exist related to outbreak management.

The Project Team identified the need to interview a group of facilities that would provide us with a fair representation of the sector as a whole. Despite the hastened timelines associated with the project to ensure findings were presented in advance of a potential second wave, 24 facilities were interviewed, with each discussion lasting approximately one hour.

Selection criteria included facilities that experienced a resident or staff case of COVID-19, space and design and/or infection surveillance processes, among others.

We have categorized feedback according to the six elements outlined earlier. Facility staff went into great detail when answering interview questions, which provided the Project Team with more clarity regarding certain survey questions, as well as learning new information that has helped to shape the considerations highlighted in this report.

C | Literature Review Overview

A literature review was conducted to synthesize available and emerging evidence to identify best practices associated with IPAC in the LTC sector. Moreover, this review sought to identify IPAC practices as related to IPAC Education and Training including cohorting of residents and staff, utilization of PPE and alcohol-based hand sanitization stations, and monitoring IPAC compliance. The review also sought to understand how to improve IPAC compliance by addressing human resources and infrastructure design challenges.

Elements of the Assessment

This report has been segmented into six major elements of IPAC in LTC. Answers from the survey and virtual visits, as well as components of the literature review have been categorized to reflect current realities and challenges faced by the LTC sector.

The challenges found within Nova Scotia's LTC sector require evidence-based, multi-faceted solutions. NSHA, DHW and Public Health and the sector collaborated on a number of effective initiatives during the first wave of COVID-19. Through this work, it became evident that there is room for continuous quality improvement to provide LTC with a formalized and enhanced approach to IPAC planning, management of outbreaks, education and communication.

We have mapped the elements of the assessment back to the challenges we heard from the sector and have provided solutions that fit into two categories; immediate and future.

1 | Access to IPAC Expertise in LTC

A | Survey: Key Findings

- 98% of LTC facilities know which department to contact in the event of an outbreak
- 78% of facilities reported the COVID-19 Outbreak Response Toolkit the most helpful form of communication
- 50% of facilities report not having an IC Designate or someone assigned to be accountable for IPAC issues in a facility
Note: We believe this question was misinterpreted on the survey. The Investigation and Compliance team made calls to 128 facilities in April and May 2020 and not one home identified not having a designate for Infection Control. We do know that the "designates" are not dedicated to this role, but rather it is an added function to their other core duties
- 72% of facility IC Designates have not completed an accredited program nor do they have certification in IPAC

B | Virtual Visits: What We Heard

Highlights

- All facilities have reported that additional IPAC expert resources are required
- In all cases, staff in charge of Infection Control are also juggling either one or multiple additional roles
- All facilities reported the need for a consistent and clearly identified contact for IPAC and PH

Facilities consistently noted that they require additional access to IPAC expertise. While facilities are mandated to have an IC Designate at their facility, it is worth noting that these staff are juggling multiple other roles and/or have no formal education in IPAC. More often than not, this role was filled by the Director of Care, who may also hold another one or two roles at their facility. Many of those tasked with being IC Designate reported that their knowledge and capacity may be sufficient when not experiencing an outbreak; however, the access to formally trained expertise during a pandemic and through flu season, would be welcomed.

Furthermore, every facility emphasized their desire to have one consistent point-of-contact within PH. Although facilities knew they should call PH in the event of an outbreak (the standard practice in non-COVID-19 times), many reported having inconsistent experiences depending on who answered the phone. This led to confusion for facilities.

C | Literature Review: What We Learned

A significant amount of research exists on the disproportionate burden of COVID-19 related mortality among LTC residents ¹⁰. Although current guidelines in Canada outline the need for LTC facilities to have a designated person trained in infection prevention and control ^{4, 5, 12, 13, 18}, the vast majority also have other duties. This contributed to many facilities across Canada struggling during the first wave of COVID-19 to control virus transmission among residents and staff. Factors including lack of access to testing, lack of early testing strategies, inadequate access to PPE, as well as inadequate IPAC education and training for LTC facility staff contributed to increased COVID-19-related morbidity and mortality within facilities ^{11, 15, 25}. Findings highlight that current IPAC protocols and practices are designed for ideal environments and are not representative of the actual environment and infrastructure of many LTC facilities in Canada, consisting of shared resident rooms, large communal spaces, and shared bathrooms, which make it difficult for staff to implement best IPAC practices ¹⁵.

Innovative approaches have been employed in both Ontario and Washington state in the U.S.A. to manage extensive outbreaks within LTC facilities ^{16, 22}. For example, both jurisdictions employed a three-phase approach, which consisted of a partnership between a hospital (Ontario) and hospital care network (Washington) and the affected LTC facility.

This three-phase approach consisted of the hospital/hospital care network employing “interdisciplinary drop teams” of IPAC experts and clinical operation supports to the affected LTC site to conduct a rapid assessment of facility’s needs, support facility-wide testing and provide IPAC education, and establish temporary infrastructure to support proper PPE utilization. This approach created the opportunity for open and ongoing communication for the facility and staff, allowing the support network to proactively address concerns and work collaboratively with front line staff to identify meaningful solutions ^{16, 22}.

D | Immediate & Future Solutions

Sector Challenge	All facilities reported the need for a consistent IPAC contact and access to additional IPAC expertise
Lead(s)	NSHA, DHW
Immediate Solution(s)	• DHW to support NSHA in developing an IPAC program to support LTC during the second wave. • At least one ICP Resource must be assigned to LTC within each of the four zones. This resource can be shared across zones to support LTC when required during times of outbreak.
Future Solution(s)	• DHW to support NSHA in developing an IPAC program specifically for LTC. The model will have provincial IPAC oversight that will enhance consistent application of IPAC principles and will include accountabilities and reporting to DHW. • In addition, there should be dedicated leadership to this program ensure coordination and integration to maintain consistency in IPAC practices across the LTC sector and within the health system. The program will be responsible for: - IPAC education - Establish train-the-trainer models to build capacity within the sector - Researching best practices - Provision of IPAC guidance during outbreaks and surveillance - Provision of additional IPAC tools and resources

Sector Challenge	50% of facilities that reported identified not having an IC Designate within their facility
Lead(s)	LTC
Immediate Solution(s)	• All facilities are to designate a staff member to lead IPAC (referred to as IC Designates), as per LTC Program Standard 8.4 Infection Prevention and Control.

Sector Challenge	Facility staff who are an IC Designate are juggling multiple roles and some reported lack of access to computers in their facility
Lead(s)	DHW, NSHA
Immediate Solution(s)	• NSHA IPAC to provide updated standardized guidelines and tools that are easily accessible for all LTC staff to better support the IC designate. • IC Designates must have dedicated computer access in the facility. For facilities that report no computer access, further analysis is required by DHW as some facilities were provided with computers during the first wave of COVID-19.
Future Solution(s)	• Support LTC facilities in building dedicated champions in IPAC. This will require further analysis and resourcing. It may include education sessions on various platforms and the requirement for facilities to share resources.

Sector Challenge	A coordinated approach between DHW and NSHA needs to be clearly established.
Lead(s)	DHW, NSHA
Immediate Solution(s)	• Collaborate with NSHA, PH, and key stakeholders to create a “one-stop-shopping” online presence for information that is easily accessible and consistent across all the LTC sector, including NSHA LTC facilities. • Update the LTC COVID-19 Toolkit to include current information and education to support the staff within LTC facilities. • DHW to support NSHA in developing an IPAC program specifically for LTC. The model will have provincial IPAC oversight, which will enhance consistent application of IPAC principles and will include accountabilities and reporting to DHW. • Each zone will have an identified IPAC resource to support LTC.

2 | Access to IPAC Education & Tools

A | Survey: Key Findings

- 94% of facilities host IPAC-focused in-service training for staff
- 77% of facilities have an IPAC committee
- 25% of IC Designates reported not having access to a computer and therefore cannot access updated policies and procedures
- 52% of facilities identify the need for additional IPAC training but aren't clear on how to acquire/identify training
- 45% reported an inconsistent delivery of IPAC education
- 18% said that IPAC resources/policies were not accessible to staff

B | Virtual Visits: What We Heard

Highlights

- In all cases, facilities noted that additional IPAC education was required
- Education content and module delivery method is not consistent amongst facilities
- The delivery of staff education is inconsistent
- The delivery of memos from departments to facilities on Friday afternoons, and lack of identified changes, presented challenges related to timely implementation
- Email and online hubs are the preferred communication methods
- Departments/Organizations should be aligned and have consistent information from DHW, HANS, PH, NSHA, 811, etc.

Similar to the need for additional expertise, all facilities voiced their need for additional IPAC education. For almost every facility, the IC Designate is delivering all education modules to staff. While there is a similarity in the modules taught by facility IC Designates (generally focused on preparing for flu season, including hand hygiene, outbreak management and using PPE appropriately), the content, methods and frequency they are delivered differs greatly by facility. The first challenge identified by facilities was not having the ability to gather all staff at once for education in-services. Much of the education is not delivered in a consistent manner, which means there is no guarantee that all staff will receive the same training. Some facilities have turned to online education as their delivery method of choice.

The COVID-19 Outbreak Toolkit was universally described as the best tool received by facilities to help mitigate the effects of the pandemic on their facility's residents and staff. Facilities reported using the toolkit as a foundation for their own outbreak plan. Facilities also validated that the guidelines specific to LTC, online delivery of tools, posters and materials from the NSHA IPAC program were extremely helpful to assist them to develop their facility plans.

Facilities preferred email as a communication medium over any other as it provided management with the ability to quickly share pertinent information with their staff. The DHW and NSHA online hubs were also seen as useful tools – with some facilities noting the checking of these hubs became part of their morning routine. While email was seen as most useful and effective, a major detriment was the lack of consistency in messaging that was received. DHW, Public Health, NSHA, HANS, and 811 (via phone) all provided their own communication to facilities, and in some cases the difference in messaging was frustrating for those looking for information.

C | Literature Review: What We Learned

Lessons learned from the first wave of COVID-19 highlight the need for LTC facilities and regulating bodies to provide comprehensive, interactive, and ongoing IPAC education and training packages for LTC facility management and staff to develop internal IPAC capacity and competencies. This training must be applicable to current LTC facility infrastructure and provide evidence-based education on handwashing and PPE utilization. This training should also support the use of early testing strategies and stress the need for strong team communication strategies to better support staff ^{1, 5, 10-12,15, 26}. Together these actions have the potential to reduce COVID-19 transmission within facilities and support improved resident safety and quality of care.

D | Immediate and Future Solutions

Sector Challenge	Facilities report needing additional IPAC training and a lack of consistency in IPAC education
Lead(s)	NSHA, DHW
Immediate Solution(s)	• NSHA IPAC to lead webinars and create recorded sessions/modules to enable staff to obtain standardized education during their shifts. • NSHA IPAC to provide updated IPAC information that is easily accessible for all LTC staff.

Future Solution(s)	• NSHA IPAC to lead the establishment of a “train-the trainer” approach for IPAC education to support building capacity and standardizing education within LTC. DHW used this approach in the Wound Care Initiative and it was positively received by the sector and improved outcomes for residents in LTC. • DHW to support NSHA in developing an IPAC program specifically for LTC. The model will have provincial IPAC oversight that will enhance consistent application of IPAC principles and education and will include accountabilities and reporting to DHW. • Each zone will have an identified IPAC resource to support LTC. • Investigate the implementation of online learning platforms to standardize education and delivery methods across the sector.
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Sector Challenge	IPAC resources/policies are not always easily accessible to staff
Lead(s)	LTC
Immediate Solution(s)	• LTC to take responsibility for their sites and guarantee IPAC resources and policies are accessible to staff 24/7. • LTC leaders to take responsibility of creating a culture that supports IPAC.

Sector Challenge	Communication timing and lack of clarity regarding changes
Lead(s)	DHW, NSHA
Immediate Solution(s)	• Develop a coordinated and timely approach to communications as the sector has identified that communication on Fridays is problematic. If necessary, communication sent on a Friday should have the effective date to reflect Wednesday of the next week to give homes sufficient time to implement changes.

3 | On Site Systems, Standards and Processes

A | Survey: Key Findings

- 99% have a process for screening staff, visitors and clients for signs of infectious disease symptoms
- 98% have a hand hygiene program
- All use hand hygiene and PPE as measures for outbreak control
- 93% have IPAC policies that have been developed within their organization
- 10% do not have a policy to exclude staff from the workplace due to illness
- 31% did not update their business continuity plan based on lessons learned from the pandemic

B | Virtual Visits: What We Heard

Highlights

- Facilities were left under-resourced while front-line staff awaited testing results
- Facilities reported some front-line and leadership staff are resigning, and they are finding it difficult to fill these roles due to competing priorities with IPAC management
- Facilities share staff with each other; a practice that mostly paused during COVID-19
- All reported hosting hand hygiene and PPE education sessions
- All facilities reported a similar approach to managing outbreaks

All facility administrators with whom we spoke had either experienced a staff shortage during the pandemic and/or referenced fear of losing staff that are symptomatic during the next wave. When staff presented as symptomatic, the wait times for results to return after testing were reported to be between 48 hours and a week, with 4-5 days being the most frequently mentioned. Facilities that are smaller and/or located in an isolated part of the province are disproportionately affected by this, as they cannot find replacement staff, and current staff cannot make up for the lost capacity.

Many facilities have lost staff in senior leadership roles through the pandemic and have had difficulty filling these roles. Some of these were planned retirements that coincided with the pandemic, while other departures were reported to be a surprise and seemingly related to the pressure placed upon them within their facilities. In some cases, the vacant role was also the IC Designate for the facility, leaving other members of the management team to piece together IPAC strategies on-the-fly.

The sharing of staff between facilities was common practice prior to COVID-19, particularly with CCAs. While this was acknowledged by nearly every facility interviewed, all facilities with the exception of one stopped sharing staff with others. The facility that continued to share a limited number of staff is located in an isolated part of the province and reported that they would have had a challenge continuing to operate were it not for this arrangement.

Facilities reported a common approach to managing an outbreak situation. Isolating the resident, calls to Public Health, swabs, droplet precautions, signage and line lists were all consistently mentioned. Minor variances were noted between institutions, such as the duration of isolation (all meeting the minimum 14 days), and the implementation of contact tracing mechanisms. The biggest challenge reported was the cohorting of residents and/or staff, particularly in smaller facilities. Some facilities identified it would be nearly impossible, with one saying, “they can’t make it work”. Larger facilities with multiple wings/floors, provided a detailed isolation plan that included a set of rooms, or in some cases, an entire wing/unit that would be staffed by the same set of people. These wings/units often had a separate entry/exit to prevent staff from having to move through the rest of the facility.

C | Literature Review: What We Learned

Existing research and guidelines stress the need to cohort COVID-19 positive residents in order to reduce the risk of transmission within facilities^{12, 13, 17, 26}. Research has identified various strategies facilities can employ to ‘cohort’ residents, which range from the simple separation of residents in common rooms with structural dividers^{12, 13}, to the compartmentalization of facilities into zones based on COVID-19 status using physical separation by floors and/or wards^{17, 26}, to having separate, stand-alone isolation units built to house COVID-19 positive residents^{6, 11, 17}. Findings also identify the need to control potential transmission between staff and residents by assigning all staff, including care aids, physicians, environmental staff, and allied healthcare providers, to work exclusively within dedicated COVID-19 positive or negative zones²⁶.

There is strong evidence in the literature to support that staff shortages across the LTC sector contributed to reduced compliance with IPAC practices, potentially contributing to COVID-19 transmission within facilities^{11, 16}. Factors contributing to both staff shortages and transmission of COVID-19 within facilities include low wages among continuing care employees and lack of benefits, which have been found to encourage staff to both attend work while feeling ill and to work in multiple facilities^{11, 12, 15, 16}. Low staff-to-resident ratios have also been reported within LTC facilities, exacerbating the existing demands on staff and negatively impacting IPAC compliance^{5, 16}. Research identifies the need for policies for equitable pay among continuing care staff, as well as additional financial resources to support the sector in hiring additional staff in attempts to achieve IPAC best practices and limit workforce mobility to reduce the risk of COVID-19 transmission and improve resident care.

Research also identifies the benefit of strategies such as tandem testing strategies and point-of-care testing could have on reducing the transmission and early identification of COVID-19, if employed within LTC facilities in the future.

D | Immediate & Future Solutions

Sector Challenge	Difficulty cohorting residents in small facilities
Lead(s)	NSHA, DHW
Immediate Solution(s)	• NSHA IPAC to work with facilities to develop strategies for outbreak flow management, while establishing best practices for cohorting residents during an outbreak. • Create an IPAC drop team per zone who can assist a LTC facility if experiencing an outbreak/lack of available staff. This approach will leverage existing resources to come together and work with facilities to identify solutions. This approach was taken during the first wave and feedback was positive. DHW to support this approach for second wave, if required.

Sector Challenge	Facilities left understaffed due to prolonged testing times
Lead(s)	NSHA
Immediate Solution(s)	• DHW to support additional OHS to facilitate testing and a quicker return-to-work. • Collaborate with PH, 811 and key stakeholders to establish rapid turnaround for testing of staff and residents. Test results should become a priority and results shared in the same sequence as the acute care sector. • NSHA lab is currently working with facilities to explore on-site testing of staff, which should result in quicker results and expedite staff back to work.

Sector Challenge	No clear separation of puffers and/or creams to support infection control practices.
Lead(s)	NSHA, DHW
Immediate Solution(s)	• The dedicated IPAC resource to work with the facility to determine appropriate measures to address its individual needs.
Future Solution(s)	• DHW to support options such as individual lock boxes to contain medication at point-of-care and/or increase number of med carts in consultation with the facility.

Sector Challenge	Lack of access to OHS supports.
Lead(s)	
Immediate Solution(s)	• DHW to support dedicated OHS for LTC for the second wave. This will help to support OHS to: - Support rapid testing and results and advice to streamline the return-to-work process. - Ensure LTC staff have access to a dedicated line for testing and advice related to outbreak.
Future Solution(s)	• DHW to support dedicated OHS for LTC to maximize staff workforce during an outbreak. This could be based on a zone/hub model and would need to be explored further as to how to best support the sector.

Sector Challenge	Access and flow of residents to LTC
Lead(s)	DHW, NSHA
Immediate Solution(s)	• DHW and NSHA to continue working with facilities to reopen beds within the LTC system while meeting PH directives. • DHW to continue to explore best practices to support the care of Covid-19 positive residents • NSHA to establish a dedicated point of contact for IPAC expertise/support to work with facilities and PH regarding access and flow, while meeting PH directives. • Provide LTC facilities updated information related to admissions during a pandemic.

4 | Equipment & Material Resources

A | Survey: Key Findings

- All facilities have hand sanitizers at each outside entry/exit point
- 37% do not have hand sanitizers at Point of Care in resident rooms

B | Virtual Visits: What We Heard

Highlights

- All facilities reported having many hand sanitizing stations within facility; however, there is a lack of consistency in location
- Environmental staff remained confident in maintaining a clean facility
- No standardization in location of gloves
- Most facilities reported delivering medications using a medication cart system, with some reporting challenges containing larger items (i.e. puffers, medicated creams, eye drops, etc.) as they were often kept in a sealed bag in a drawer or bin

All facilities reported having many hand sanitizing stations and/or bottles of hand sanitizer available at a variety of locations. All reported facility entry and exit points, scattered wall units, nurses' stations, and medication carts as locations where hand sanitizer was available. Five facilities reported having hand sanitizer stations upon entry and/or exit to a resident's room.

Aside from being available at the nurse's station, the location of gloves was inconsistent between facilities. Some reported having glove dispensing stations in washrooms, others have them on walls around the facility, on the medication cart, and/or in the medical room. Some facilities noted that they prefer gloves to be used only when absolutely necessary (i.e. a washroom visit with a resident), and that they would much prefer staff maintain exceptional hand hygiene instead (while understanding that gloves would be a part of full PPE if required).

It was reported by all facilities that their environmental staff know what it takes to maintain a clean facility. This includes an understanding of the chemicals to use, depending on the current state of the facility (i.e. a flu outbreak vs. normal operations) and how to manage high touch surfaces.

Most facilities reported the delivery of medications using a medication cart system, and the challenge of storing large items (i.e. puffers, eye drops, medicated creams, etc.). A small number of facilities reported storing the medications in bins/drawers.

When asked about the viability of a locked cabinet located in the resident rooms that would contain all resident medications, the majority of facilities seemed to be in favour of the idea. Some facilities were unsure of this approach, citing already crowded rooms, boxes left unlocked, and residents are given medication in the dining room.

C | Literature Review: What We Learned

Research has identified the need to improve access to PPE and alcohol-based hand sanitization stations at resident point-of-care within LTC facilities to improve IPAC compliance, thereby reducing the risk of COVID-19 transmission in facilities. Findings highlight the need for a supportive built environment within facilities to facilitate easy, safe, and practical access to PPE for staff. The literature review identified strategies to achieve this is through the establishment of PPE donning/doffing zones with stabilizing supports located at the entrance of residence rooms, by using a colour coded system for all facility doors to indicate required PPE based on COVID-19 status, and by increasing access to alcohol-based hand sanitization stations ^{17, 20, 26}.

D | Immediate & Future Solutions

Sector Challenge	Location and storage of PPE and hand sanitizers are inconsistent amongst facilities
Lead(s)	NSHA, DHW
Immediate Solution(s)	• LTC facilities were given additional funding for staff and cleaning supplies during the first wave, and this should continue in the second wave. • Facilities should place hand sanitizer at point-of-care. • The dedicated zonal IPAC resource will work with the LTC facility to determine appropriate measures to address its individual needs (i.e. covered PPE system, disposable gloves available at point-of-care, closed lid hampers with pedals, review medication dispensing systems, etc.) in an effort to prevent cross contamination • The zone's dedicated IPAC resource to develop consistent guidelines (i.e. checklists, procedures, etc.) and standardized education to support facilities in the cleaning of high touch areas. • NSHA to share tools and resources outlining proper use of PPE.
Future Solution(s)	• Facilities must monitor IPAC processes with regular audits of practices (i.e. hand hygiene, cleaning/disinfection, etc.) for continuous quality improvement.

5 | Monitoring & Reporting Mechanisms

A | Survey: Key Findings

- 89% have surveillance for infections
- 94% report infections internally with 49% reporting quarterly
- 21% do not use infection reports for quality improvement initiatives
- 20% do not collect hand hygiene rates
- 49% do not post hand hygiene rates in facility
- 50% do not have access to support from occupational health or human resources for tracking and managing staff illness/absences during outbreaks

B | Virtual Visits: What We Heard

Highlights

- Most facilities reported a similar response to monitoring/reporting a potential outbreak within their facility (isolation/precautions, signage, report, line lists, swabs, ongoing monitoring)

The reporting of symptoms and tracking a potential outbreak was nearly identical at every facility, which included alerting PH, line listing, and precaution signage posted outside the infected resident's room. Contact tracing was used in some facilities, where staff would document how long they spent with a resident and what kind of PPE they were wearing.

C | Literature Review: What We Learned

There is mixed evidence to support the use of hand hygiene monitoring technology (HHMT) to improve compliance to hand washing within the healthcare setting ⁷. Currently, the gold standard for hand hygiene compliance monitoring is through direct observation of healthcare providers by trained observers ². Previous research comparing the use of direct observation vs. HHMTs has found hand hygiene compliance rates were significantly higher using direct observation ². This finding, coupled with other research, highlights the need for HHMT implementation to be coupled with thorough consultation with frontline providers in order to both improve staff buy in and in actively addressing staff concerns regarding environmental and process-related barriers to proper hand hygiene ^{2, 7, 9, 24}. For HHMT technologies to have a sustained impact on hand-washing compliance, there must also be a strong leadership and a hand hygiene culture within the facility ^{9, 24}.

D | Immediate & Future Solutions

Sector Challenge	11% of facilities reported not having a surveillance program
Lead(s)	DHW, NSHA, LTC
Immediate Solution(s)	Facilities without a surveillance program will immediately implement a program, as per LTC Program Standard 8.4, Infection Prevention and Control Requirements.
Future Solution(s)	The dedicated IPAC resource to work with facilities to develop and enhance a facility surveillance program that meets national benchmarks and definitions for LTC that is consistently applied across the province.

6 | Infrastructure & Space Design

A | Survey: Key Highlights

- 58% of rooms in the LTC system are single room with a private bathroom (toilet/sink or toilet/sink & shower/tub).
- The remaining 42% of rooms in the LTC system all require that residents share bathroom facilities, regardless of whether the rooms have single or multiple beds.
- There are 30 rooms that have three or more beds; 23 have three beds, seven have four or more beds.
- 62% of nursing homes do not have dementia units.
- 54% of smaller nursing homes (<40 beds) have only one dining room. 91% of nursing homes that have 40 beds or more have three or more dining room areas.
- Centralized meal preparation is preferred by the vast majority of LTC facilities, with 81% of NHs, and 100% of RCFs having this model in operation.
- Among NHs, offsite meal preparation appears to be more common among the smaller facilities, with 38% of small facilities (<40 beds) using the approach. The approach is less prevalent among larger facilities with 22% and 14% of medium and large NHs using it respectively. There is only one RCF that uses this service.

B | Virtual Visits: What We Heard

Highlights

- All facilities reported having designated rooms/units/floors for the purposes of outbreak management
- Homes with one floor seem to struggle most with cohorting resident and/or staff
- Facilities with units/floors with separate entry to outside found it easier to dedicate an isolation unit

Every facility has reported that they have either a room, unit or floor designated for the purposes of isolating symptomatic/COVID-19 positive residents. For facilities with a designated unit or floor, these spaces have their own entrance from the outside, allowing staff to easily cohort. Facilities that are smaller with only one floor reported that while they do have a room that they could use to isolate a resident, the cohorting of staff would be challenging.

Many larger facilities began cohorting staff without experiencing an outbreak by unit/wing/shift/floor. Facilities felt this strategy would ensure outbreaks would be contained within a small group of people, versus the chance of it spreading rapidly throughout the facility absent of cohorting.

Facilities with a smoking room all reported having strategies to mitigate exposure and limit the number of residents in the space at any given time, while others encouraged smoking outside versus using the smoking room.

C | Literature Review: What We Learned

There is significant evidence in the literature review to support the association between poor LTC facility infrastructure design, resident crowding, and increased risk for COVID-19 morbidity and mortality within LTC facilities. In the articles reviewed of outbreaks and guidance documents all highlight the importance of properly cleaning and disinfecting resident rooms and common areas helped reduce the transmission of COVID.

Research highlights the benefits of using neighbourhood-based models consisting of single occupancy rooms, separate bathrooms, and small cohort-based common areas and dining areas^{3, 6, 10, 11, 15, 22} to mitigate the risk of COVID-19 transmission between staff and residents, potentially leading to better outcomes.

It is worth noting that the Nova Scotia Long-Term Care Facility Requirements provide direction to service providers on the design and general layout of new Nursing Home construction within Nova Scotia that further facilitates IPAC. Three key design elements are small households, private resident bedrooms and bathrooms, and readily accessible outdoor space. Other features include access to small kitchenettes for residents, and household living rooms. All new/replacement facilities since 2007 have followed these requirements.

D | Immediate & Future Solutions

Sector Challenge	Challenges within infrastructure to support IPAC principles
Lead(s)	DHW, NSHA
Immediate Solution(s)	• NSHA ICP to provide IPAC expertise/support to develop infectious disease outbreak and resident/staff flow strategies within individual facilities. • Facilities required to establish strategies to utilize during outbreaks, particularly in facilities with multilevel care units, no staff washrooms, communal dining rooms, elevators and/or smoke rooms. • DHW will create a Capital request process that is specific to infrastructure related to IPAC
Future Solution(s)	• The dedicated IPAC resource to work with facilities to assist them to identify projects to better support IPAC. Facilities to submit for funding through the yearly Capital submission as projects are identified.

Sector Challenge	While over half of our beds are in single rooms, 42% of rooms have shared bathrooms; 30 rooms have 3 or more beds.
Lead(s)	NSHA, DHW
Immediate Solution(s)	• Dedicated IPAC resource to discuss options and help develop strategies to create barriers in multi-bedrooms. • DHW to support additional environmental measures. There are a number of IPAC measures that assist in greatly reducing the risk of the potential for cross contamination in shared spaces. These include increased cleaning measures, adding dividers in rooms, installing handwashing and/or sanitizing stations, etc. • Reduce rooms with more than two (2) residents to two (2) residents per room. • The LTC Facility Requirements provide direction to service providers on the design and general layout of new Nursing Home construction within Nova Scotia. All new/replacement facilities since 2007 have followed these requirements. The LTC Facility Requirements document was updated in and can be found here: https://novascotia.ca/dhw/ccs/policies/Long-Term-Care-Facility-Requirements-Space-and-Design.pdf

Conclusion

The disproportionate effect COVID-19 has had on our LTC sector across Canada and in Nova Scotia has highlighted the need for the development of additional IPAC resources, education, strategies and practices. In advance of the second wave of COVID-19, it will be incumbent upon government, health authorities and sector stakeholders to align on priorities, direction, and information sharing.

Undoubtedly, the urgent response from DHW, NSHA, IWK and sector leadership during the first wave helped our LTC facilities to navigate an unprecedented situation. From additional funding to regular sector-wide calls, every touchpoint, initiative and resource allocated to mitigating the spread of COVID-19 was consistently cited as helpful by sector representatives.

Through our conversations and research, we know it is crucial to build capacity within LTC through standardized education, tools and access to dedicated IPAC experts. Our literature review for this report identified evidence-based recommendations for the re-design of existing LTC facility infrastructure in order to mitigate the risk of COVID-19 related morbidity and mortality among LTC residents. Additionally, this research identified approaches such as interdisciplinary drop teams, tandem testing strategies, and point-of-care testing that should be considered moving forward to support improved outbreak management and response and improved resident care and outcomes during the second wave of COVID-19.

Although the health and safety of residents is paramount, we must also reflect on the unique needs of LTC staff. OHS supports will be required to provide improved return-to-work policies while rapid testing and results for staff will be important to keep the workforce safe and at work. Strategies for cohorting staff and managing outbreak flow within facilities will need evaluation and the creation of additional IPAC resources, will help to further support our facilities when experiencing an outbreak.

COVID-19 has highlighted the fact that we will need to be creative and deliberate when developing strategies to mitigate transmission and maintain social distancing between residents within our aging LTC facilities.

Collaborative efforts between government departments, organizations and other sector stakeholders must continue, and a unified voice and source for information is essential.

We are confident that when all these priorities align, Nova Scotia's LTC sector will be in a strong position to mitigate the effects of the second wave and future infectious disease outbreaks.

Appendix

References

1. Blair, P.S. 2020. A Letter: Ontario Request for Assistance in Provincial Long Term Care Facilities, Federal Minister PS Blair to Ontario Solgen Jones. Print Report. Accessed from: <https://www.macleans.ca/wp-content/uploads/2020/05/JTFC-Observations-in-LTCF-in-ON.pdf>
2. Boyce, J.M., Laughman, J.A., Ader, M.H., Wagner, P.T., Parker, A.E., Arbogast, J.W. 2019. Impact of an automated hand hygiene monitoring system and additional promotional activities on hand hygiene performance rates and healthcare-associated infections. *Infection Control & Hospital Epidemiology*. 40: 741 – 747
3. Brown, K.A., Jones, A., Daneman, N., Chan, A.K., Schwartz, K.L., Garber, G., Costa, A.P., Stall, N.M. 2020. Association Between Nursing Home Crowding and COVID-19 Infection and Mortality in Ontario, Canada. *BMJ Yale*.
4. Brown-Sweeting, B.A. 2020. Continuing Care Legislative Architecture – Canadian Provincial Jurisdictional Scan. Government of Nova Scotia.
5. Brown-Sweeting, B.A. 2020. Continuing Care Legislative Architecture – Infection Prevention and Control. Government of Nova Scotia.
6. CADTH. 2020. Covid-19 Infection Prevention and Control Guidance for LTC Facilities – Round Up. Accessed from: <https://cadth.ca/sites/default/files/covid-19/er0010-ltc-infection-control-guidance-final.pdf>
7. Durant, D.J., Willis, L., Duvall, S. 2020. Adoption of electronic hand hygiene monitoring systems in New York state hospitals and the associated impact on hospital-acquired *C.difficile* infection rates. *American Journal of Infection Control*. 48: 733 – 739.
8. Dora, A.V., Winnett, A., Fulcher, J.A., Sohn, L., Claub, F., Lee-Chang, I., Ghadishah, E., Schwartzman, W.A., Beenhouwer, D.O., Vallone, J., Graber, C.J., Goetz, M.B., Bhattacharya, D. 2020. Using serologic testing to assess the effectiveness of outbreak control efforts, serial PCR testing, and cohorting of positive SARS-Cov-2 patients in a skilled nursing facility. *Clinical Infectious Disease*. ciaa1286, <https://doi.org/10.1093/cid/ciaa1286>
9. Ellingson, K., Polgreen, P.M., Schneider, A., Shinkunas, L., Kaldjian, L.C., Wright, D., Thomas, G.W., Segre, A.M., Herman, T., McDonald, C., Sinkowitz-Cochran, R. 2011. Healthcare Personnel Perceptions of Hand Hygiene Monitoring Technology. *Infection Control and Hospital Epidemiology*. 32(11): 1091 – 1096.
10. Estabrooks, C.A., Strau, S., Flood, C.M., Keefe, J., Armstrong, P., Donner, G., Boscart, C., Ducharme, F., Silvius, J., Wolfson, M. 2020. Restoring trust: COVID-19 and the future of LTC. Royal Society of Canada

11. Fisman, D.N., Bogoch, I., Lapointe-Shaw, L., McCready, J., Tuite, A. 2020. Risk factors associated with mortality among residents with coronavirus disease 2019 (COVID-19) in LTC facilities in Ontario, Canada. *JAMA Network Open*. 3(7).
12. Government of Canada. 2020. Infection prevention and control for COVID-19: Interim guidance for long term care homes. Accessed from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevent-control-covid-19-long-term-care-homes.html#a3>
13. Government of Canada. 2020. Interim guidance: Care of residents in long term care homes during the COVID-19 pandemic. Accessed from: <https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/residents-long-term-care-homes-covid-19.html#a2.1>
14. Holroyd-Leduc, J.M., and Laupacis, A. 2020. Continuing care and COVID-19: a Canadian tragedy that must not be allowed to happen again. *CMAJ*. 8(192): E632-633.
15. Inzitari, M., Risco, E., Cesari, M., Buurman, B.M., Kuluski, K., Davey, V., Bennett, D.L., Varela, J., Prvu Bettger, J. 2020. Nursing homes and long term care after COVID-19: A new era? *Journal of Nutrition, Health, & Aging*. <https://doi.org/10.1007/s12603-020-1447-8>
16. Kim, G., Wang, M., Pan, H., Davidson, G.H., Roxby, A.C., Neukirch, J., Lei, D., Hawken-Dennis, E., Simpson, L., Ong, T.D. 2020. A health system response to COVID-19 in LTC and Post-Acute Care: A Three-Phase Approach. *JAGS*. 68(6): 1155 – 1161.
17. Lester, P.E., Holahan, T., Siskind, D., Healy, E. 2020. Policy recommendations regarding skilled nursing facility management of Coronavirus 19 (COVID-19): Lessons from New York State. *Journal of the American Medical Directors Association*. 21(7): 888 – 892.
18. Office of the Auditor General of Nova Scotia. 2012. Summary of OAG and Program Standards. Internal Report.
19. O'Neill, D., Briggs, R., Holmerova, I., Samuelsson, O., Gordon, A.L., Martin, F.C. 2020. COVID-19 highlights the need for universal adoption of standards of medical care for physicians in nursing homes in Europe. *European Geriatric Medicine*. 11: 645 – 650.
20. Reddy, S.C., Valderrama, A.L., Kuhar, D.T. 2019. Improving the Use of Personal Protective Equipment: Applying Lessons Learned. *Clinical Infectious Diseases*. 69(3): S165 – S170.
21. Smith, P.W., Bennett, G., Bradley, S., Drinka, P., Lautenbach, E., Marx, J., Mody, L., Nicolle, L., Stevenson, K. 2008. SHEA/APIC Guideline: Infection prevention and control in long-term care facility. *AJIC Special Communication*. 504 – 535.
22. Stall, N.M., Jones, A., Brown, K.A., Rochon, P.A., Costa, A.P. 2020. For-profit LTC homes and the risk of COVID-19 Outbreaks and Resident Deaths. *CMAJ*. 192: 946 – 955.

23. Stall, N.M., Faequharson, C., Fan-Lun, C., Wisenfeld, L., Loftus, C., Kain, D., Johnstone, J., McCreight, L., Goldman, R.D., Mahtani, R. 2020. A hospital partnership with a nursing home experiencing a COVID-19 outbreak: Description of a multiphase emergency response in Toronto, Canada. *JAGS*. 68:1376 – 1381.
24. Tarantini, C., Brouqui, P., Wilson, R., Griffiths, K., Patouraux, P., Peretti-Watel, P. 2019. Healthcare worker's attitudes towards hand-hygiene monitoring technology. *Journal of Hospital Infection*. 102: 413 – 418.
25. Vogel, L. 2020. Is Canada ready for the second wave of COVID-19? *CMAJ*. 192(24):E664 – E665.
26. Yen, M-Y., Schwartz, J., King, C-C., Lee, C-M., Hsueh, P-R., Society of Taiwan LTC Infection Prevention and Control. 2020. Recommendations for protecting against and mitigating the COVID-19 pandemic in LTC facilities. *Journal of Microbiology, Immunology and Infection*. 53:447 – 453.