

# Practice Points

Volume 10

May 2023



Proud partner of Choosing Wisely Canada  Choosing Wisely NL

The right treatment, for the right patient,  
at the right time.



Supporting patient-oriented research  
in Newfoundland and Labrador.





## Who We Are

Quality of Care NL is an applied health and social systems research and evaluation program aimed at improving social and health outcomes in Newfoundland and Labrador. A collaborative effort between the leading health care entities in the province, our goal is to improve the quality of care by facilitating change to ensure the right treatment gets to the right patient at the right time.

Our partnership with Choosing Wisely Canada (Choosing Wisely NL) enables the promotion of established national guidelines and recommendations that cross all disciplines to support the reduction of low-value health care, including, unnecessary tests and treatments, particularly where harms outweigh benefits.

Quality of Care NL leads the learning health system component of NL SUPPORT, one of 10 SPOR SUPPORT Units across Canada under the Strategy for Patient-Oriented Research (SPOR).

## Learning Health and Social System

Quality of Care NL operates on the principles of a learning health and social system. One that continuously improves through a culture of best practice, evaluation, equity, openness and collaboration – the system learns and gets better, resulting in better care and health for all.

A learning health and social system is one in which science, education, informatics, incentives, and culture are aligned for continuous improvement, innovation, and equity. Best practices are seamlessly embedded in the delivery process, individuals and families are active participants in all elements, and new knowledge is generated as an integral by-product.

(Source: Our Province. Our Health. Our Future. A 10-year health transformation. The Report, Health Accord NL, 2022)

## Our Mission

By building on the premise of a learning health and social system, and with the support and engagement of our partners, leaders in care, and the public, Quality of Care NL is committed to improving social and health outcomes in Newfoundland and Labrador through research and evaluation using strategies such as data interpretation, knowledge translation, public engagement, and solutions implementation.

## Working Together

As the province undergoes a significant transformation of its health and social systems, our team remains dedicated to providing evaluation of relevant topic areas and newly implemented programs and policies.

Do you have an idea for delivering improved quality of care? Let us help.

For more information on our projects and what we can do to move your idea forward, please contact:

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# Practice Points

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# Table of Contents

## 1. SYSTEM PERFORMANCE AND QUALITY

1.1. Implementing a Learning Health and Social System in Newfoundland and Labrador .....	6
1.2. Digital Technology Committee – Care Pathways .....	10
1.3. Digital Technology Committee – Key Informants and Key Takeaways .....	13
1.4. Analysis of Clinical Service Levels and Workforce Alignment in Newfoundland and Labrador.....	15
1.5. Analysis of Medical Imaging Services and Workforce Alignment in Newfoundland and Labrador .....	17
1.6. Analysis of Internal Medicine Services and Workforce Alignment in Newfoundland and Labrador .....	19
1.7. Analysis of Obstetrics Services and Workforce Alignment in Newfoundland and Labrador.....	21
1.8. Analysis of Sexual Assault Services and Workforce Alignment in Newfoundland and Labrador.....	23
1.9. Analysis of Acute Stroke Services and Workforce Alignment in Newfoundland and Labrador.....	25
1.10. Analysis of General Surgery and Anesthesiology Services and Workforce Alignment in Newfoundland and Labrador.....	27
1.11. Analysis of Emergency Medicine Services and Workforce Alignment in Newfoundland and Labrador .....	30
1.12. Comparison of Stroke Care Indicators in Eastern Health to Three Regions of Canada.....	32
1.13. Acute Care Expenditures in Newfoundland and Labrador and Canada .....	34
1.14. Health Care Processes and Experiences in Newfoundland and Labrador Compared to Canada and Australia .....	36
1.15. Corporate Services Expense in Newfoundland and Labrador and in Regional Health Authorities .....	39
1.16. Impact of the COVID-19 Pandemic on Acute Care Occupancy .....	41
1.17. Control of the Omicron Variant in Newfoundland and Labrador.....	44
1.18. Effect of the Omicron Variant on COVID-19 in Newfoundland and Labrador.....	47
1.19. Omicron Disease Severity and Mitigation of Restrictions in Newfoundland and Labrador and the Other Canadian Provinces.....	49

## 2. COMMUNITY CARE

2.1. Barriers to Implementing Collaborative Community Teams in Newfoundland and Labrador .....	51
2.2. Collaborative Community Teams in Newfoundland and Labrador .....	53
2.3. Quality and Accessibility of Early Childhood Education and Child Care in Newfoundland and Labrador .....	55
2.4. Investigating Newfoundland and Labrador Primary Care Physicians' Knowledge of Basic Dental Care.....	57
2.5. Choosing Wisely in Primary Care: Do Not Routinely Offer Imaging for Uncomplicated Low Back Pain.....	59

## 3. HOSPITAL SERVICES

3.1. Antimicrobial Stewardship Audits in Central Health: De-Escalation of Meropenem.....	62
3.2. Patterns in Pre-Operative Testing for Low-Risk Surgery During a Medical Directive and COVID-19 .....	64
3.3. Emergency Surgery by Season in Small Hospitals in Newfoundland and Labrador .....	66
3.4. Improving Access and Efficiency of Ischemic Stroke Treatment Across Four Canadian Provinces Using a Stepped Wedge Trial .....	68
3.5. The Use of Urinary Catheters in Eastern Health .....	71

## 4. AGING AND LONG-TERM CARE

4.1. Development of a Comprehensive Seniors Care Program for Newfoundland and Labrador .....	72
4.2. Age-Friendly Communities in Newfoundland and Labrador: Clarenville .....	75
4.3. Evaluating the Provincial Home Dementia Care Program in the Eastern Health Region .....	77
4.4. Undertriage of Older Adults with a Low-Acuity Triage Score in the Emergency Department .....	79
4.5. Clinical Characteristics and Quality of Care in the Long-Term Care Facilities of Newfoundland and Labrador.....	81
4.6. Antibiotic Usage in Long-Term Care Facilities.....	86
4.7. Inappropriate Antibiotic Use for Urinary Tract Infections in Western Health Long-Term Care Facilities.....	89
4.8. Predicting Future Use of Psychotropic Drugs in Long-Term Care Residents.....	90

## 5. SOCIAL DETERMINANTS OF HEALTH AND SOCIAL CARE

5.1. Impact of the COVID-19 Pandemic on Social Determinants of Health.....	92
5.2. Understanding the Influences on Older Adult Nutrition in Western NL and Promoting Positive Nutritional Change.....	95
5.3. Non-Medical Determinants of Health and Health Outcomes in Newfoundland and Labrador Compared to Canada .....	97
5.4. Household Food Insecurity in Newfoundland and Labrador, 2021 .....	100
5.5. Food Costs in Newfoundland and Labrador in Comparison to Other Provinces in 2021 .....	102
5.6. A Holistic Approach to the Social Determinants of Health .....	104
5.7. Social Prescribing – A Potential Way to Achieve Better Health Outcomes in Newfoundland and Labrador .....	107
5.8. The Well-Being of Newfoundland and Labrador Prior to Implementation of Health Accord NL .....	109

# Implementing a Learning Health and Social System in Newfoundland and Labrador

## Objective

To implement a Learning Health and Social System (LHSS) in Newfoundland and Labrador (NL) in which knowledge generation processes are embedded in daily practice to produce continual improvement in care.

## Practice Points

1. The vision of Health Accord NL (HANL) for better health in the province links action on the social determinants of health (SDH) and a reimagined health system. To achieve this new and broader vision, HANL proposes a LHSS.
2. A LHSS embeds iterative processes to facilitate a culture of learning and improvement, engaged patients/clients/residents as well as members of the public, digital capture, linking and timely sharing of relevant data, timely production of research and evaluation evidence, appropriate decision supports and knowledge translation, competencies for rapid learning and improvement informed by implementation science, aligned governance, financial resources, and delivery arrangements.

## Data

As highlighted by HANL, the SDH have more impact on a person's health than health care provision does. Indeed much of the inequity we see in health results from inequities in the SDH. For a LHSS to be effective it must be rooted in aggregate data on social, economic, and environmental factors within regions and specific data on the individual characteristics and behaviours of persons.

There are several processes within hospitals that are already involved in evaluation, decision supports, and quality control with attendant accountability structures that will more easily enable health system engagement.

## Results

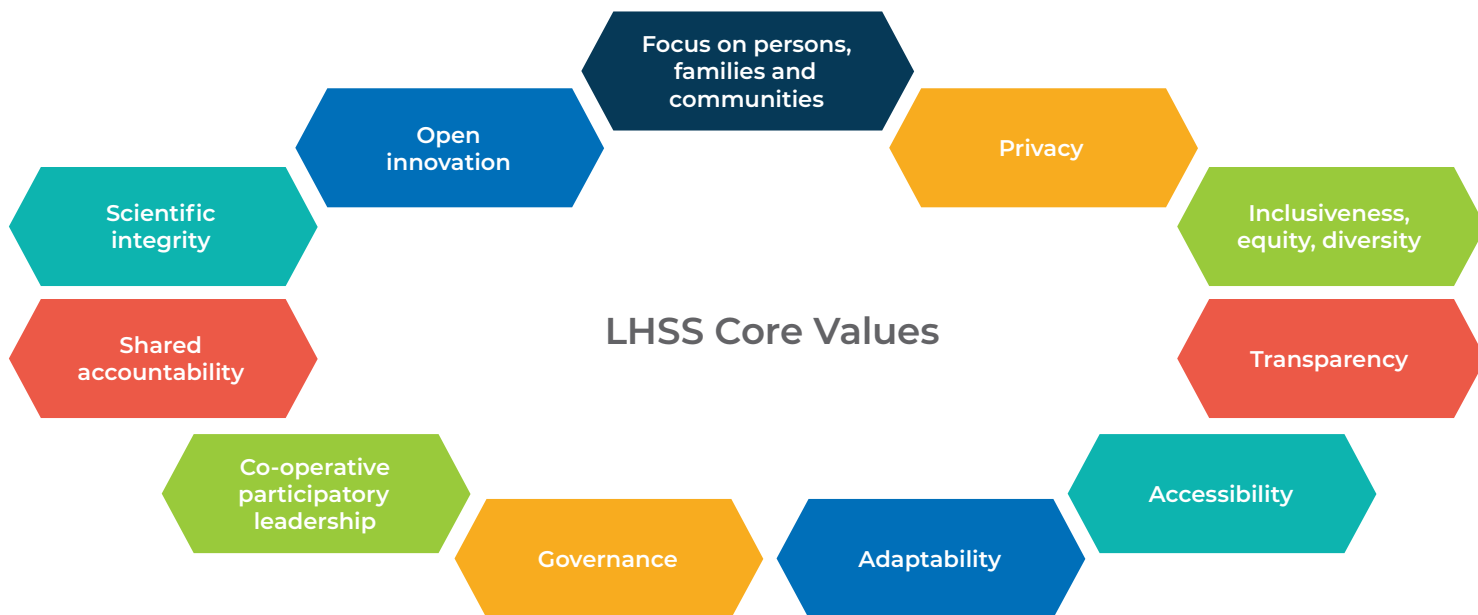


Figure 1. LHSS Core Values

- Maintaining focus on the core values of the LHSS will be imperative.
- Shared understanding of the core values among the partners engaged in a LHSS will enable interventions to remain effective.

### LHSS Outcomes

- A LHSS, if fully implemented and supported by all partners in the health and social care ecosystem, will address some of the key health and social challenges faced by the province.

Health crisis
Substantial demographic change
Sustainability of the current model of health care
Fiscal crisis
Climate change
Rising cost of care
Increasing digitization, but not necessarily full compatibility, integration and coordination
Complex care systems
Many faceted provider groups
More people with multi-morbidity
An expectation and ability to provide more interventions
Lack of information about what is working well versus not
An aging population

- In so doing, the LHSS will also address the Quintuple Aim.



Figure 2. The Quintuple Aim

- The Quintuple Aim builds upon the previously established Triple Aim and Quadruple Aim to include health equity.
- The addition of health equity highlights the role the SDH have on our overall health outcomes placing a focus on reducing disparities.

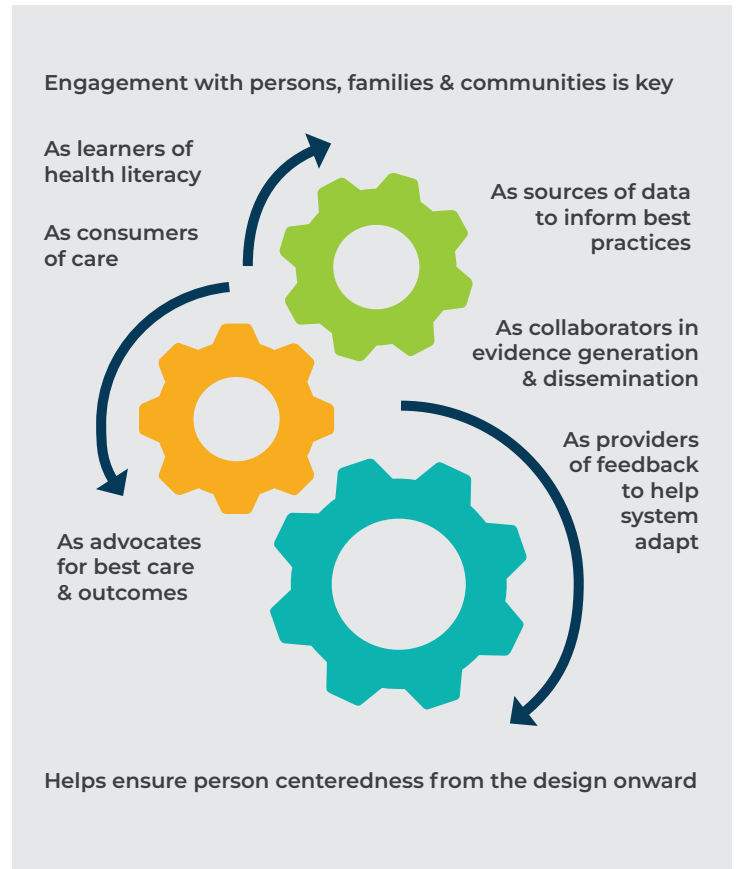


Figure 3. Roles for Persons, Families & Communities

- Engagement with persons, families, and communities will help develop the partnerships necessary to meaningfully engage and change.
- Acknowledging the important roles played by consumers of the health and social systems will allow knowledge to be gained from those with varied perspectives.

## A LHSS in Practice

The diagram below sets out how the elements of a LHSS come together and the steps taken within the cycle of a LHSS to bring about change at policy and practice level and achieve improvements in the delivery of the health and social care systems.

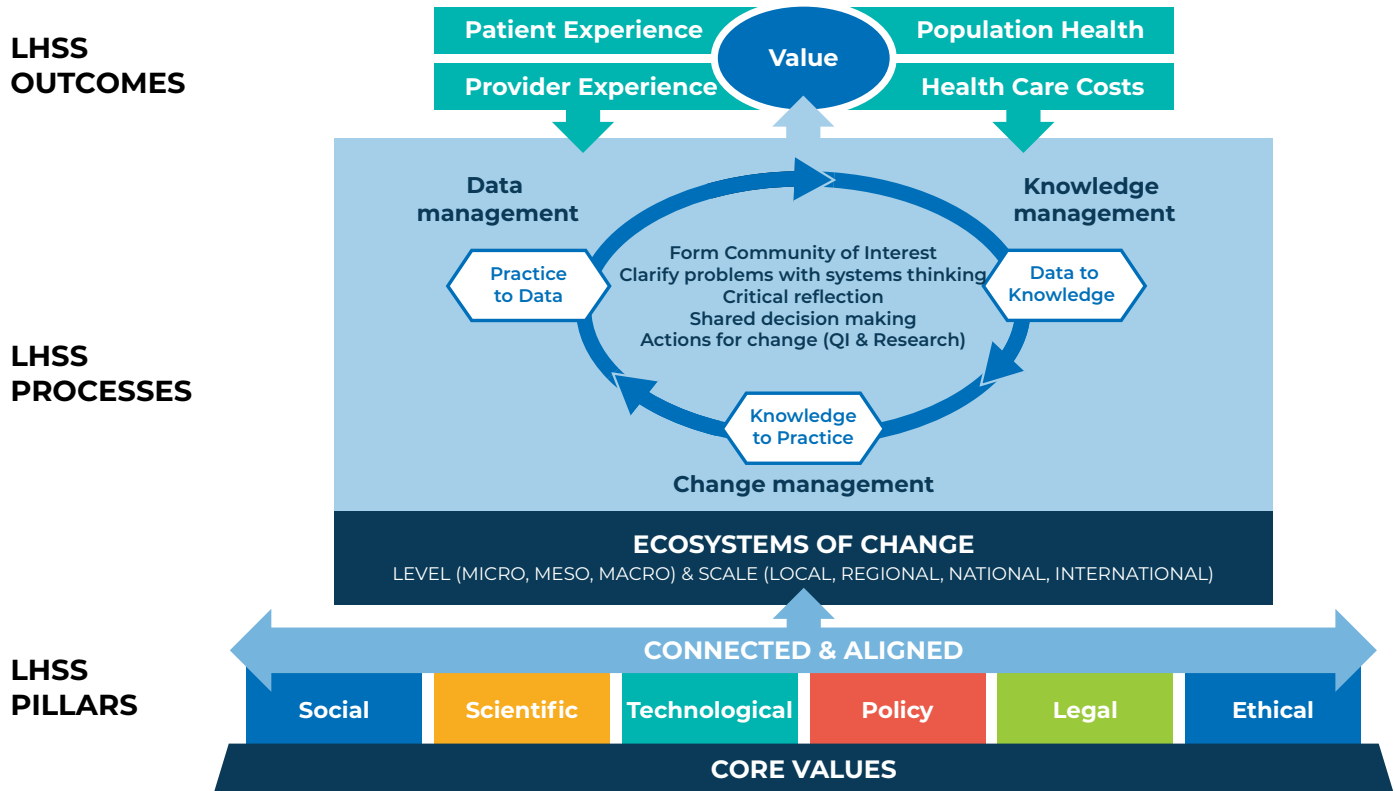


Figure 4. A LHSS in Practice

## Implementing a LHSS

Implementation of a LHSS requires:

<b>Leadership &amp; engagement</b>
A way to identify issues, problems or gaps: need to bridge the persons/families/communities and workers, decision makers and researchers
Managed data/information to understand the issues identified
Systems to embed learning cycles (research included) in system processes
Data and analytics to understand what is working (or not) and why
Dissemination mechanisms to scale best practices
A supportive culture where this has benefits for all

## Implementation Challenges

Key Challenges to a LHSS	
Organizational culture	Limited supply of skilled individuals
Data systems and data sharing	Managing competing priorities
Funding learning activities	Regulatory challenges



## Conclusions

1. Implementation of a LHSS is recommended by HANL as a pathway for change in achieving better health outcomes in NL.
2. HANL also recommends that support and advocacy for a LHSS be part of the mandate of a NL council for health quality and performance.
3. NL SUPPORT will play a critical role in executing a LHSS as implementation is a core requirement of Canadian Institute of Health Research funding.
4. The elements of a LHSS already exist in the province, but creating a culture of quality throughout the health and social systems will be essential.
5. A learning social system is a novel challenge particularly as the integration of health and social systems is envisaged as essential in improving health and health outcomes. Consequently, development of expertise on evaluation of the SDH in regions and aggregation of individual measures will be necessary.
6. A focus on improving health outcomes, developing competencies for using evidence for learning and improvement, and provider accountability for better utilization of health resources is necessary.

# Digital Technology Committee – Care Pathways

## Objective

One of the major benefits of modernizing the Health Information System (HIS) will be the upgrading of the communication, integration, and flow of care pathways for both patients and providers.

## Methods

The Digital Technology committee of Health Accord NL engaged with key informants on existing care pathways and what an upgraded care pathway would provide.

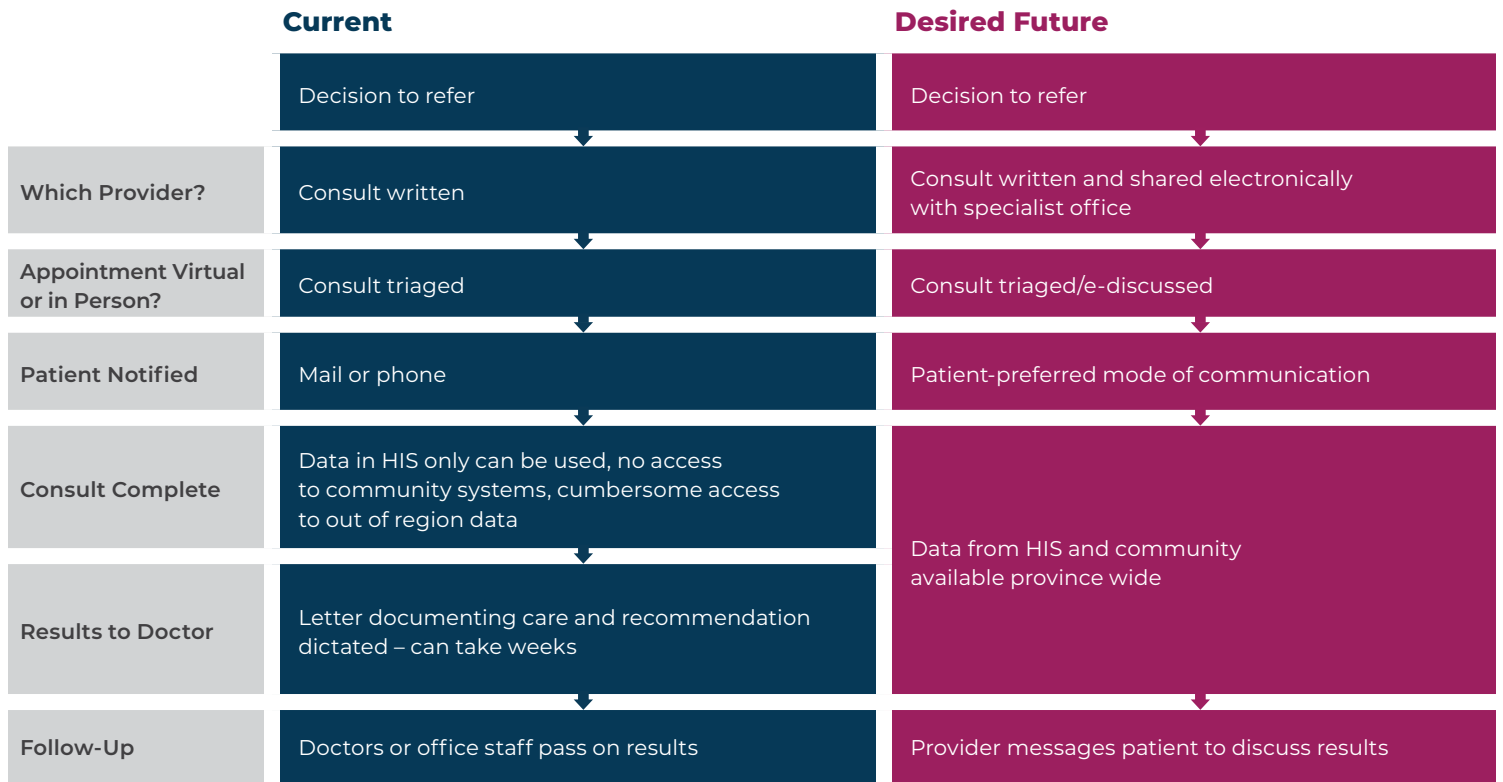
## Results

### Person in Community

	Current	Desired Future
Which Provider?	Contacts primary care office	Contacts community team electronically
Appointment Virtual or in Person?	Get appointment	Patient/client/resident notified electronically
Needs Test or X-Ray	Lab requisition to patient, x-ray requisition faxed to hospital	Electronic order from EMR to care site
Lab Appointment	Lab appointment	Appointment booked
Results to Doctor	Paper or electronic medical record (EMR)	To provider's EMR and to the patient portal
Follow-Up	Doctors or office staff pass on results	Provider messages patient/client/resident to discuss results

Pain Points	Advantages to Desired Future
May only be able to enter care path via a family physician (FP) or nurse practitioner (NP)	Less delay
Getting through to a clinic can be a challenge	Less manual processing
Setting up a virtual visit other than by telephone is not easy	More flexibility in timing
Regional Health Authorities' (RHA) systems can't accept electronic orders, lots of paper requisitions and faxes, sometimes misplaced leading to delay	Avoids paper, faxes and possible lost requests
Booking systems are inefficient, there is either no or a cumbersome triage process	At all points in the process all users are aware of the status
Providers are not usually made aware of when tests are booked – patients waiting to hear often call FP offices for this information	Patient has ready access to appointments
Patients cannot easily track their own results	Patients have ready access to results

## Patient Requires Specialist Care



Pain Points	Advantages to Desired Future
Non-interactive referral process inhibits best triage & early feedback to referring provider (how necessary, what to do while waiting, how urgently this can be dealt with)	Opportunity for interaction to facilitate triage and timeliness of appointments
Referring provider often not aware of when the appointment is booked	Providers and patients aware at all points of where they are in the process
Not all relevant data easily available at time of assessment	Automation: no need for transcription, filing, or scanning
Time delays in exchange of information	All necessary data available to assist in the specialist assessment
Laborious process in ensuring all health care records have a copy of the consult	Timely and complete filing of consults in patient records

## In-Patient Medication Prescription

	Current	Desired Future
Med Order	Written on carbon copy forms	Electronic by FP
Drug Order	Taken off by nurse	Decision support for dosing/allergy and drug interaction
Pharmacy Received Order	Form sent	Nurse notified of change
Prescription Filled	Drug delivered to unit Pyxis	Drug delivered to unit Pyxis
Nurse Retrieves	Drug when needed	Barcoded dose when needed
Drug Given	To patient	To patient after cross-checking barcode against identification (ID)
Drug Administration	Drug administration or not noted on paper medication administration record (MAR)	Drug administration or not noted on electronic MAR

Pain Points	Advantages to Desired Future
Handwriting and transcription error risks	Reduction in errors due to handwriting
Lack of built-in decision support around drug dosing/interactions/allergy checks	Elimination of paper and associated inventory management
Cumbersome process for cross-checking orders versus drug administration	Decision support at point of order may reduce drug adverse effects
Large volume of paper used, requires clerical inventory management	Opportunity for closed loop medication controls reduces risk for administration errors
Time delays between order writing and pharmacy receipt of prescription	Facilitates review of medication use and adjustments
Lack of closed loop identification from order to drug administration	

## Conclusions

1. Many current digital health records are not designed for data extraction or analysis.
2. A Learning Health and Social System relies on accurate point of care data to support analyses of patterns of care and outcomes both to identify opportunities for improvements and to assess the impacts of any changes.
3. A fully integrated data system is required for care teams and broader systems to operationalise a Learning Health and Social System.

# Digital Technology Committee – Key Informants and Key Takeaways

## Objective

Digital technology will improve health and health outcomes in the province by empowering people with information, access, and choice. By embracing digital technologies, we will connect people and integrate systems, and we will link health and social factors. Using an agile, iterative, and evidence-based approach, we will spur leading innovation and a culture of exploration, which will become a driving force for inclusion.

## Methods

The Digital Technology Committee cast a broad net engaging key informants from Newfoundland and Labrador (NL), Canada, and internationally. These discussions informed the committee on what is necessary to have a modern, effective, and secure infrastructure for the Health Information System (HIS) of NL. These key informants were:

Local Stakeholder/Implementer		Canada	International
The Health Accord Committees	Department of Industry, Energy and Technology	Universal Broadband Fund	United Kingdom – The Organization for the Review of Care and Health Applications (ORCHA)
Eastern Health	Eastern Health Clinical Services	Nova Scotia Health Authority	Netherlands – Rijnstate Hospital
Central Health	Eastern Health's Remote Patient Monitoring Program	Alberta Health Services	Amazon Web Services
Western Health	Newfoundland and Labrador Medical Association (NLMA)	Ontario – Sunnybrook Hospital	
Labrador-Grenfell Health	Newfoundland and Labrador Centre for Health Information (NLCHI)		

## Major Takeaways/Results

### Local

- Fax machines, posted letters, paper charts, and phone calls are commonplace, while in some areas automation and online processes are impossible with current infrastructure.
- Many aspects of the HIS are outdated; Meditech (hospitals) is 40 years old.
- Patient information is fragmented and in silos.
- You cannot easily track care pathways when the patient goes through multiple systems.
- Data custodianship and governance issues cause challenges. Slower to adopt emerging technologies and modern solutions. Difficult to align strategies.
- Administrative systems are just as outdated as the health system. There is an opportunity for efficiency for province-wide HR, finance, procurement, etc.
- Many objectives of the Health Accord are not attainable without full replacement and upgrades to the HIS.
- Modernizing the digital technology infrastructure of the province will allow for greater transparency, evidence, and identification of areas for improvement. Further, transparency is critical to system improvement.

## Canada

- Acceptable broadband internet is on target for 98% of Canadians to have access by 2026, 100% by 2030 (50/10 Mbps).
- Compared to other provinces in Canada, modern solutions for both patients and providers are unavailable in NL. This affects both quality of care and clinical efficiency, both critical components when recruiting and retaining health care providers.
- NL's dedicated budget percent for Information Technology (IT) is low compared to other provinces.
- Nova Scotia is in the process of evaluating the replacement of their HIS. Alberta has recently replaced theirs.
- Alberta hired a consultant firm to make the business case for the replacement of their HIS, including the cost to maintain/upgrade the existing system vs. a full replacement. The full replacement came out less expensive even without considering any other potential savings (such as clinical efficiencies, paper reductions, etc.).
- You need the stakeholders in full agreement to achieve the full benefits – involving user community (which includes patients, practitioners, and other stakeholders) is key to selecting and implementing the right solutions.
- The core foundation (IT infrastructure, core health information system, etc.) is critical. You can layer solutions on top if your core is solid. It is important to keep yourself vendor agnostic, considering all possible solutions. Standardizing on one HIS and driving toward one unified health record is paramount – avoid disparate systems. Implementation and change management is critical.

## International

- Biggest change is internal – technology is the easy part. Cut through your own red tape to find a path forward.
- Developing the strategy and process together with stakeholders in an iterative way, one care pathway at a time.
- Make sure the solution is cloud-enabled so you can scale up and down.
- Many countries have pathways to ease the barriers to using digital health apps, and automated review processes for regulatory tiers for these apps (UK). Canada has lost momentum developing these standards.
- The goal of virtual care is not to reduce beds, it is to expand it. By supporting virtual care and home care, you can move your system from having 500 hospital beds to 500,000 beds – one at the home of each resident. Of course, there is a need for beds in hospitals, but a care at home first strategy benefits all when done appropriately.
- Virtual care can leverage consumer level monitoring technology into remote monitoring. As the technologies become more seamless and integrated, at home care continues to improve. This can reduce the need for physical visits, improve patient outcomes, and improve the patient experience.

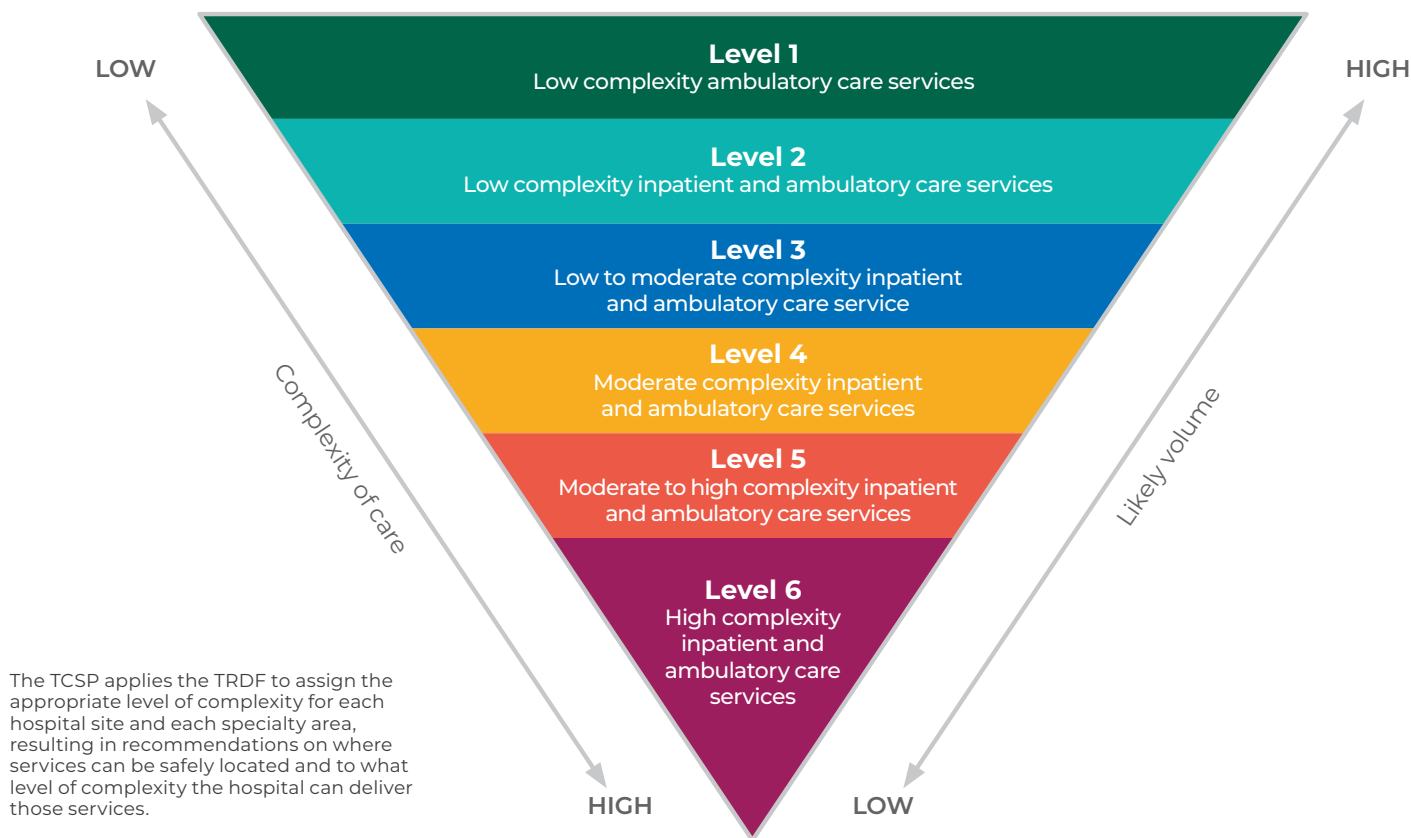
## Conclusions

1. Modernize foundational IT systems.
2. Adopt and leverage virtual care technologies – while virtual care cannot replace all use cases, it benefits all to leverage where possible. Note that choice must be protected for those that wish for in-person services.
3. Develop a Provincial Digital Technology Strategy and Policy to guide e-technology development and implementation.

# Analysis of Clinical Service Levels and Workforce Alignment in Newfoundland and Labrador

## Background

- Tasmania is an island state of Australia (AUS) comparable in population size to Newfoundland and Labrador (NL).
- The Tasmanian Role Delineation Framework (TRDF) and Clinical Services Profile (CSP) is the principal, clinical service planning document for Tasmania's public health system. It is an evidenced-based and transparent statewide framework for safe and sustainable services that informs effective statewide coordination of health services and provides a framework within which models of care can be delivered.
- The TRDF is a planning document used to ensure safe and appropriately supported clinical service delivery. It is responsible for delineating the level of clinical services, not the facilities themselves (this is achieved through the CSP).
- The TRDF categorizes levels of service into up to six levels of service provision with increasing acuity, as outlined in the diagram below, for 47 clinical areas. Levels of service are cumulative and build on each previous level's capability requirements.
- The CSP delineates which services and levels of service will be delivered at each site to ensure safe and sustainable services are being provided to the community based on the needs of the population. Tasmania has four hospitals that provide higher levels of care, with one generally up to level 6, one up to level 5, one up to level 4, and one up to level 3 services. These hospitals are supported by 13 rural inpatient facilities that provide primarily level 1 and 2 services in a limited selection of clinical areas.



**Figure 1. Tasmanian Role Delineation Framework Service (TRDF) Complexity Levels**

## Survey Development

- A survey of clinical service levels in NL was developed based on the TRDF. Respondents had to identify if each criteria for the levels of service in each clinical area was provided or was not provided at a hospital or health centre, as well as the requirements and workforce for the service levels.
- Workforce rating was based on usual staffing. Therefore, unusual staff level on date of survey completion and chronically vacant positions that were budgeted for were not counted in the survey results.

## Survey Distribution

- The survey was distributed to regional health authorities (RHAs) for completion for each hospital and health centre in the province in Jan 2021.

## Analysis

- Responses from RHAs to each level criteria were coded to assign a level of service and a workforce level for each clinical area in each hospital and health centre.
- If a service did not have an exact fit for a level, then it was assigned to the best fit, with items describing the actual service delivered to patients assigned greater weight than other items (e.g., personnel, access to other clinical services).
- If a service workforce did not have an exact fit for a level, then it was assigned to the best fit, with trainees assigned less weight. If one workforce component (i.e., medical/nursing/allied health) was discrepant from the overall best fit workforce level for that site, it was identified separately (abbreviated as M/N/A in results).
- The following seven summaries (pages 17–31) examine NL's health system structure in select clinical areas in comparison to that of Tasmania and how NL's workforce in these clinical areas aligns with the workforce requirements to provide safe and high quality care.

- The analysis presented in comparison to Tasmania excludes NL health centres without acute beds for comparability to Tasmanian data, which includes only hospitals and rural inpatient facilities. The analysis of NL's clinical service levels and workforce comprises all NL hospitals and health centres, including health centres without acute beds.

## Conclusion

There is a need to develop NL equivalents to TRDF and CSP as part of acute care standards, as recommended by Health Accord NL. Such equivalents would allow transparent alignment of the clinical services to be provided at each facility with staffing models. In addition, service provision would be designed to meet the needs of the local population up to the level of complexity assigned to each site. A properly networked acute care system with clear lines of responsibility even if not on site, would lead to greater sustainability (not trying to staff everywhere, not trying to provide services beyond skill leading to burnout), and improved quality of care.



# Analysis of Medical Imaging Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of medical imaging services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

- NL has among the highest use of CT imaging in Canada.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of Medical Imaging Services**

Level	Description	TAS	NL
1	Low-risk ambulatory care services during business hours and may provide some limited after-hours services	10	0
	Has access to or on-site single, mobile or fixed, general x-ray unit which is delivered by licensed operator		
2	Provides a low-risk inpatient service	3	17
	May provide a low-risk ambulatory care service		
	Service is predominantly delivered by a sole radiographer and support may be provided by licensed operators		
	Designated room on-site with a fixed x-ray unit and may also include digital radiography; however, depending on the range of services provided at the facility, a mobile image intensifier may be the only modality available		
	May also have access to ultrasound for non-complex conditions		
3	On-site ultrasound and Computed Tomography (CT) services	1	8
	Performs examinations involving contrast, such as intravenous pyelograms		
	On-site radiologists able to perform some biopsies and procedures		
4	On-site Magnetic Resonance Imaging (MRI) services	1	2
5	Limited range of specialized interventional radiology and nuclear medicine services	1	2
6	Provides complex, on-site interventional and neurointerventional procedures	1	1
	MRI available on-site		
	Interprovincial referral role		

- There are many more facilities providing Level 2 and Level 3 medical imaging services, including CT services, in NL compared to TAS.

**Table 2. Description of Workforce Requirements to Provide Each Level of Medical Imaging Services**

Level	Workforce Description
1	Access to a radiographer or if no radiographer available, then a licensed x-ray operator with 24 hour access to an appointed radiographic advisor for supervision
	Medical imaging interpreted by physician/health professional
	Radiologist readily contactable to discuss findings and provide a report
2	On-site radiographer available during business hours
3	Radiographer in attendance who has regular access to radiological consultation
	Physician must be on-site at all times when procedures involving contrast are performed
	Ultrasound performed by a sonographer or physician trained in ultrasound
4	After-hours access to consultant radiology for reporting
	On-site radiographer on-call 24 hours
	Registered radiographers and sonographers
	Registered Nurse (RN)/Licensed Practical Nurses (LPN) as required
5	Clinical Director of medical imaging and lead radiographer
	Radiologist on-site and on-call 24 hours
	May have radiology resident
	Registered and licensed nuclear medicine specialist present during radiopharmaceutical administration and available for consultation 24 hours
	Full-time supervision during procedures by a nuclear physician or radiologist with nuclear medicine qualification
	RN with evidence of ongoing clinical competency and experience appropriate to the service being provided on-site during the hours of operation of the department and available after-hours
	Access to an appropriately credentialed anesthesiologist as required
Registered nuclear medicine technologists	
6	Business hours access to a radiochemist/radiopharmacist
	Business hours access to technical support staff
	On-site imaging modality specialists during business hours
	Has radiology residents (2 minimum) and postgraduate fellows
	One or more full-time medical physicists
	A full-time radiopharmacist/radiochemist available if radiopharmaceuticals are manufactured inhouse
	An experienced/suitably qualified RN

**Table 3. Level of Medical Imaging Services and Level of Workforce Providing Medical Imaging Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	6
St. Clare's	4	4
Janeway	4	4
Carbonear	3	4
Burin Peninsula	3	4
Dr. G.B. Cross	3	4
Waterford	2	2
Miller Centre	2	2
<b>Central Health (CH)</b>		
James Paton	5	4
Central NL	3	4
<b>Western Health (WH)</b>		
Western Memorial	5	4
Sir Thomas Roddick	3	3
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	3	4
Labrador	3	4
Labrador West	3	4

- Two hospitals outside St. John's provide Level 5 medical imaging services, but do not have the workforce required for this level of service.

**Table 4. Level of Medical Imaging Services and Level of Workforce Providing Medical Imaging for Each Health Centre in NL**

Health Centre	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Dr. Walter Templeman	2	2
Dr. William H. Newhook	2	2
Placentia	2	1
Dr. A.A. Wilkinson	2	2
Bonavista	2	2
US Memorial	2	2
Grand Bank	2	2
<b>Central Health (CH)</b>		
Connaigre	2	2
Dr. Y.K. Jeon Kittiwake	2	2
Fogo Island	2	2
Notre Dame Bay	2	2
Lewisporte	1	2
Dr. Hugh Twomey	1	2
Green Bay	2	2
Baie Verte	2	2
A.M. Guy	2	2
<b>Western Health (WH)</b>		
Calder	2	2
Dr. Charles L. Legrow	2	4
Bonne Bay	2	2
Rufus Guinchard	2	2
<b>Labrador-Grenfell Health (LGH)</b>		
White Bay Central	1	2
Strait of Belle Isle	1	2
Labrador South	1	2

- With the exception of the Placentia Health Centre, all health centres have an adequate workforce for the level of medical imaging service provided.

## Conclusions

1. Access to medical imaging is more widespread in NL than in TAS.
2. In many cases the workforce appears to be at a higher level than the service provided. However, the same personnel may acquire images and also run laboratory tests in the smallest sites. It is not clear if this influences the data. This should be reviewed when planning services for each site.

# Analysis of Internal Medicine Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of internal medicine services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital.

## Practice Points

1. Many hospitals in the province currently have difficulty in maintaining consistent on site coverage by specialists in internal medicine.

## Results

**Table 1. Number of Facilities in Tasmania and NL Providing Each Level of Internal Medicine Services**

Level	Description	TAS	NL
2	Low-acuity medical care service	13	2
	Nurse-led service		
	Has the ability to monitor patients, with 24 hour access to a Licensed Practical Nurse (LPN) and access to a physician or family physician (FP)		
3	Has the ability to provide acute resuscitation prior to transfer	0	15
	Low-acuity, multi-system medical condition ambulatory and/or inpatient service		
4	Outpatient care provided by a visiting physician practicing in internal medicine/ internal medicine specialist, including by telehealth	1	1
	Has established linkages to a higher level internal medicine inpatient and ambulatory care service		
5	Inpatient care provided by a physician practicing in internal medicine supported by inpatient and outpatient consultations for a (limited) range of medicine subspecialties	1	5
6	Multidisciplinary team approach to treat complex and critically ill medical patients	2	4
	Inpatient care provided by a team of on-site physicians practicing in internal medicine with on-site access to a comprehensive range of sub-specialty medicine expertise		

- Compared to Tasmania, many more hospitals in NL provide higher complexity internal medicine services requiring support by medicine subspecialties.

**Table 2. Description of Workforce Requirements to Provide Each Level of Internal Medicine Services**

Level	Workforce Description
2	24 hour access to a Registered Nurses (RN); nursing services also provided by Licensed Practical Nurse (LPN)
	Inpatient care by a physician
3	May have access to allied health professionals, as required
	Visiting physician practicing in internal medicine
4	Specialist dietetics and nutrition, podiatry, social work, physiotherapy and occupational therapy services (visiting or on-site)
	RNs with experience and/or post graduate qualifications in nursing on-site
5	24 hour on-call roster for physicians practicing in internal medicine
	Physician on-site 24 hours
	Nursing staff with appropriate experience and post graduate qualifications
6	Full range of generalist allied health services
	Medical resident on-site 24 hours
	Sub-specialists available on-site for consultation
	Residents in majority of sub-specialist medicine services
6	Specialized allied health services on-site
	May have on-site Nurse Practitioners (NPs) to supplement sub-specialty medicine roles

**Table 3. Level of Internal Medicine Services and Level of Workforce Providing Internal Medicine Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	6
St. Clare's	5	6 (5A)
Janeway	-	-
Carbonear	5	5
Burin Peninsula	5	5
Dr. G.B. Cross	6	5 (4M)
<b>Central Health (CH)</b>		
James Paton	6	5
Central NL	6	5
<b>Western Health (WH)</b>		
Western Memorial	5	5 (3A)
Sir Thomas Roddick	5	5
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	3	3A; 4M; 5N
Labrador	3	3A; 4M; 5N
Labrador West	3	3A; 4M; 5N

- Three hospitals located outside St. John's report providing the highest level (Level 6) of internal medicine services. None of those hospitals have the workforce required to provide this complexity of care.
- Nineteen health centres provide a lower-acuity ambulatory or inpatient service and all have the appropriate workforce level to provide that service.

## Conclusions

1. Some hospital sites in NL report being able to deliver more complex care than they would be expected to do given staffing levels. These survey data do not allow a distinction between what sites reported as their complexity of care and the actual complexity of care provided.
2. As recommended by Health Accord NL, acute care standards should be developed for NL to ensure a match between expected service delivery at each site and staffing patterns.

# Analysis of Obstetrics Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of obstetrics services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

1. Low birth rate and low population density contribute to a small volume of births in several hospitals providing obstetrics services.
2. Workforce sustainability has been a problem in several sites across the province.
3. Travel distance impacts obstetrical outcomes.
4. Midwifery introduced in Gander but hasn't expanded to other locations despite demand for services.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of Obstetrics Services**

Level	Description	TAS	NL
1	Community antenatal and/or postnatal care for women and infants who have normal care needs for antenatal and postpartum care	7	0
	Outpatient and ambulatory obstetrics care		
	Capacity to provide emergency resuscitation and care for critically ill mothers and babies until transfer or retrieval takes place		
2	Antenatal, intrapartum and postnatal inpatient services for women with uncomplicated pregnancy from 37 weeks gestation	0	0
3	Services for planned normal births for women ≥37 weeks gestation where the mother and baby have uncomplicated care needs	0	0
4	Intrapartum care for low and moderately complex mothers and babies with pregnancy ≥34 weeks gestation	1	6
5	Intrapartum care for low, moderate and high complexity mothers and babies with gestation ≥32 weeks gestation	1	2
	Multidisciplinary service		
6	Capacity to manage all unexpected pregnancy and neonatal emergency presentations	1	1
	Provides all levels of care (LOC), including the highest level of complex care for women with serious obstetric and fetal conditions that require high-level multidisciplinary care		
	Clinical advice and support provided by a specialist credentialed in obstetrics 24 hours		

- There are triple the number of hospitals in NL that provide services for births compared to Tasmania even though Tasmania had almost 60% more births in 2021 than NL.

**Table 2. Description of Workforce Requirements to Provide Each Level of Obstetrics Services**

Level	Workforce Description
1	Registered midwives or registered nurse (RN) with access to midwifery support where registered midwives are not available
	Visiting family physician (FP)
	Access to an obstetrician via telehealth
	Access to allied health professionals including physiotherapy, social work, continence advisors, and dietitians
	Access to maternal and child health nurses and perinatal mental health services
	Access to Child Protection and Child Health and Parenting Services
	Access to lactation consultants
2	Registered midwives available on-site and on-call 24 hours
	24 hour on-site access to a FP with obstetrics/gynecology training who is able to attend within 30 minutes
3	24 hour access to a physician with credentials in anesthesiology who can attend within 30 minutes
	24 hour access to a physician credentialed to provide care to the neonate and who can attend within 30 minutes
4	Appointed FRCPC – Obstetrics and Gynecology or equivalent specialist with credentials in obstetrics on-site and on-call 24 hours who can attend within 30 minutes
	Nominated obstetric clinical leader for the service
	Obstetric residents
	On-site specialist anesthesiologist on-call 24 hours and able to attend within 30 minutes
	On-site specialist pediatrician with experience in neonatal care on-call 24 hours and able to attend within 30 minutes
	24 hour access to Level 4 or above General Surgery Service in the network
	Resident on-site 24 hours
	Registered midwives on-site 24 hours
	Access to allied health professionals as required, including physiotherapy and social work
On-site access to perinatal mental health professionals able to provide perinatal mental health assessment and support for perinatal loss	
5	Nominated midwifery clinical leader
	Access to a midwifery educator

**Table 2. continued**

<b>5</b>	Clinical leadership roles in obstetrics, midwifery, nursing and neonatology
	Obstetric residents
	Pediatrics residents
	Anesthesiology residents
	On-site allied health professionals including occupational therapy, continence advisors, dietitians, and drug and alcohol services
<b>6</b>	Specialist neonatologists on-site and on-call 24 hours
	Obstetricians with certification or special interest in maternal fetal medicine and obstetric ultrasound
	24 hour on-site access to specialist-level medical imaging, pediatrics, anesthesiology and adult ICU staff

- Other than Gander, no sites had midwives. Workforce levels were assigned without reference to midwives to better describe the level of other staffing but because levels are intended to have midwives this means that even if service and workforce levels align, staffing may not be appropriate.
- Most hospitals had an adequate workforce, other than midwives, for the LOS provided, with the exception of hospitals in the Labrador-Grenfell region. In some sites the call burden on the few obstetricians could be high, although the delivery numbers were small.
- Nineteen health centres provide Level 1 obstetrics services. Sixteen of these health centres had an adequate workforce, other than midwives, for this service.

**Table 3. Level of Obstetrics Services and Level of Workforce Providing Obstetrics Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6 (shared with Janeway)	6 (shared with Janeway)
St. Clare's	-	-
Janeway	6 (shared with Health Sciences)	6 (shared with Health Sciences)
Carbonear	4	4
Burin Peninsula	5	4
Dr. G.B. Cross	5	4
<b>Central Health (CH)</b>		
James Paton	4	5 (3 midwives)
Central NL	4	5
<b>Western Health (WH)</b>		
Western Memorial	4	5
Sir Thomas Roddick	1	1
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	4	3
Labrador	4	3
Labrador West	-	2

## Conclusions

1. Some NL sites report providing more complex care than they are staffed to deliver. Acute care standards are required in the province to ensure a match between staffing and service provision.  
  
The Society of Obstetricians and Gynecologists of Canada have published such standards. (J Obstet Gynaecol Can 2019;41(5):688-696 <https://doi.org/10.1016/j.jogc.2018.12.003>.)
2. The number of sites delivering obstetric care in NL has been reviewed as part of the Health Accord NL report.

# Analysis of Sexual Assault Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of sexual assault health care services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

1. A Sexual Assault Nurse Examiner (SANE) is a registered nurse with advanced training and education in medical and forensic assessment of sexual assault survivors. These nurses conduct medical and forensic examinations, provide options for medical care and police reporting, and connect patients with counselling services.
2. St. John's has a coordinated SANE Program centralized at St. Clare's Mercy Hospital. In 2007, Western Health implemented a SANE program and in 2021, education by the St. John's program was provided to 12 nurses located in Western Health Memorial Hospital, Sir Thomas Roddick Hospital and all rural sites to support care of patients requiring the necessary care in the region. Most other regions of the province, including Labrador, which has a higher average of sexual assaults per capita, often do not have SANES.
3. Health Accord NL has identified that there are gaps in sexual assault nurse examiner service delivery and that a provincial program for assessment and treatment of sexual assault survivors is needed.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of Sexual Assault Services**

Level	Description	TAS	NL
3	Provides an integrated assessment and management of children, young people and/or adults prior to referral to higher level sexual assault service, so as to preserve forensic evidence and provide psychosocial crisis response	13	7
	Has formal network linkages with a higher level sexual assault service, including agreed protocols, referral processes, clinical advice and support (may include telehealth)		
4	Undertakes forensic medical exams on adults who have experienced a recent sexual assault (within the preceding 7 days)	2	15
	Facilitates access to initial and follow-up medical care and counselling services		
5	Undertakes forensic medical exams on children and adults who have experienced a recent sexual assault (within the preceding 7 days)	1	2
6	Provides a province-wide service and accepts referrals from a level 5 service	1	1

- Compared to TAS, NL has many more locations conducting sexual assault examinations.

**Table 2. Description of Workforce Requirements to Provide Each Level of Sexual Assault Services**

Level	Workforce Description
3	N/A
4	Qualified sexual assault nurse examiner
5	Qualified sexual assault forensic medical examiner or sexual assault nurse examiner
6	Designated coordinator (can be a nurse)
	Province-wide clinical director

**Table 3. Level of Sexual Assault Services and Level of Workforce Providing Sexual Assault Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	-	-
St. Clare's	4	5
Janeway	6	5
Carbonear	3	3
Burin Peninsula	4	3
Dr. G.B. Cross	3	3
<b>Central Health (CH)</b>		
James Paton	4	3
Central NL	4	3
<b>Western Health (WH)</b>		
Western Memorial	5	5
Sir Thomas Roddick	3	3
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	4	3
Labrador	4	3
Labrador West	4	3

- Hospitals outside St. John's and Corner Brook that offer a level of service including examinations that requires a sexual assault nurse examiner are lacking staff with this specialized training.

**Table 4. Level of Sexual Assault Services and Level of Workforce Providing Sexual Assault for Each Health Centre in NL**

Health Centre	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Dr. Walter Templeman	-	-
Dr. William H. Newhook	3	3
Placentia	5	3
Dr. A.A. Wilkinson	3	3
Bonavista	-	-
US Memorial	5	3
Grand Bank	4	3

**Table 4 continued**

Health Centre	Service Level	Workforce Level
<b>Central Health (CH)</b>		
Connaigre	4	3
Dr. Y.K. Jeon Kittiwake	4	3
Fogo Island	4	3
Notre Dame Bay	4	3
Lewisporte	4	3
Dr. Hugh Twomey	4	3
Green Bay	4	3
Baie Verte	4	3
A.M. Guy	4	3
<b>Western Health (WH)</b>		
Calder	4	3
Dr. Charles L. Legrow	4	3
Bonne Bay	3	3
Rufus Guinchard	3	3
<b>Labrador-Grenfell Health (LGH)</b>		
White Bay Central	-	-
Strait of Belle Isle	-	-
Labrador South	-	-

- 14 of the 23 health centres in NL provide a level of sexual assault services including examinations that require a qualified sexual assault nurse examiner, however none of these health centres have a sexual assault nurse examiner.

## Conclusions

- It is important that access to services nearby is available for vulnerable patients at a traumatic time.
- Access needs to be balanced with level of services to ensure qualified staff to provide quality care. Without proper support and care, people who have been sexually assaulted will experience even greater impacts on their mental and physical health outcomes.
- A provincial program for assessment and treatment of sexual assault survivors is needed. Within that program, which would provide provincial standards for care, there would be SANEs with appropriate training located in each region and available to all hospital emergency departments in that region of the province.



# Analysis of Acute Stroke Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of acute stroke services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

- NL has the highest mortality rate among the ten Canadian provinces for stroke.
- Reduction in stroke incidence rates depends upon improvement in the social determinants of health and prevention, but better stroke outcomes can be achieved with better care, reducing mortality and disability.
- Health Accord NL has recommended creating a Provincial Stroke Program for optimal treatment of ischemic stroke and dedicated regional stroke units.

- NL provides basic and specialist stroke care in significantly more facilities compared to TAS.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of Acute Stroke Services**

Level	Description	TAS	NL
3	Assessment and basic hospital care for a stroke patient, either who has presented to the service or who has been transferred from another service, for which the stroke results in the patient requiring end-of-life care	1	17
	Non-palliative acute strokes are transferred to a designated stroke unit		
4	Specialist hospital care for stroke patients	1	3
	Moderate complexity patients are transferred to a higher level acute stroke service		
5	Designated primary stroke centre	1	5
	>75 stroke admissions per year		
6	Designated comprehensive stroke centre, providing comprehensive care for acute stroke admissions	1	1
	Provides province-wide specialist stroke support to all lower level facilities in the network		
	Responsible for establishing province-wide protocols for stroke assessment and management		
	>350 acute stroke admissions per year		
	Well organized systems to link emergency services, acute care, coordinated processes for ongoing inpatient rehabilitation, secondary prevention (e.g. clinic or follow up service), and community reintegration (e.g. early supported discharge)		

**Table 2. Description of Workforce Requirements to Provide Each Level of Acute Stroke Services**

Level	Workforce Description
3	Informal caregivers
	Physician on-site
	Access to specialist palliative care services in the network 24 hours
	Registered Nurses (RNs) on-site 24 hours; RNs may be supported by Licensed Practical Nurses (LPNs) in providing care to patients
4	Physician practicing in internal medicine on-site and on-call 24 hours
	Access to a pharmacist
	Access to specialist stroke unit, specialist Neurology, designated allied health, and rehabilitation services in the network
5	RNs with appropriate post graduate qualifications and/or extensive experience in stroke care
	Access to clinical nurse specialist providing leadership in stroke management
	Dedicated medical lead who has primary focus on stroke (stroke centre director)
	Clinical psychologist
	Access to specialist rehabilitation services
6	Access to early supported discharge team comprising of a physiotherapist, occupational therapist, nurse, speech pathologist, physician, social worker and administrative support person
	Access to allied health services with special expertise in stroke/rehabilitation
	Access to neurosurgeons and neuro-intensive care staff
	On-site clinical neuro-psychologist

**Table 3. Level of Acute Stroke Services and Level of Workforce Providing Acute Stroke Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	6
St. Clare's	5	5
Janeway	4	3
Carbonear	5	4
Burin Peninsula	5	4
Dr. G.B. Cross	5	3
<b>Central Health (CH)</b>		
James Paton	4	3
Central NL	4	3
<b>Western Health (WH)</b>		
Western Memorial	5	4
Sir Thomas Roddick	3	3
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	3	3
Labrador	3	3
Labrador West	3	3

- Hospitals outside St. John's that are providing Level 4 and 5 do not have the required workforce to provide these services safely and appropriately.
- All health centres in CH and WH, as well as two in EH provide Level 3 acute stroke services. These health centres have the appropriate corresponding workforce for this level of service.

## Conclusions

1. Lack of resources including skilled providers in locations where patients require complex stroke care could contribute to poor outcomes.
2. Create a provincial stroke program with the objective of matching actual practice with best practice, and developing/creating dedicated regional stroke units. Relocate specialized acute stroke services to hospitals where the required resources and skilled workforce are available to ensure best possible patient outcomes.
3. Provide better stroke care across the continuum: early recognition by the public of symptoms indicating stroke, improved thrombolysis rates, initiation of endovascular treatment (EVT) in ischemic stroke, regional stroke units, rehabilitation, and reintegration of patients with community teams.

# Analysis of General Surgery and Anesthesiology Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of general surgery and anesthesiology services in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

1. Sustainability is a challenge for workforce adequacy especially in smaller hospitals.
2. In NL, most emergency surgeries do not occur in small hospitals.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of General Surgery Services**

Level	Description	TAS	NL
2	Low complexity surgery is performed on low to medium-risk patients undergoing ambulatory procedures requiring local anesthetic, but not sedation	0	9
3	Surgery is performed on patients undergoing ambulatory or day surgery procedures	1	0
4	Surgery is performed on low to medium risk patients undergoing major surgical procedures with low to medium anesthetic risk	1	3
5	A combination of procedures with a moderate to high level of complexity and risk are performed	1	7
	Management of some patients with comorbidities and risk of intra- and post-operative complications occurs		
	Ability to support patients in the post-operative stage 24 hours		
	Has the ability to undertake most emergency surgeries		
6	Manages the most complex and highly specialized surgical presentations with the highest level of risk in specified areas of expertise	1	2

**Table 2. Number of Facilities in TAS and NL Providing Each Level of Anesthesiology Services**

Level	Description	TAS	NL
2	Analgesia/minimal sedation performed by a physician credentialed to provide anesthesiology services	8	9
3	Low to medium-risk local anesthetics, neuraxial block and regional block for low to medium anesthetic risk patients undergoing procedures that do not require general anesthesia	1	0
	Low to medium-risk general anesthetics are provided to patients (ASA 1–3) undergoing Surgical Complexity III (SCIII) procedures		
4	General anesthetics on moderate to high anesthetic risk patients (ASA 1–4) undergoing day surgery or major surgical procedures	1	1
	Anesthesia is administered by a specialist anesthesiologist		
5	Surgery is performed on low to high anesthetic risk patients (ASA 1–4) undergoing complex major surgical procedures	1	9
	A combination of procedures with a moderate to high level of complexity and risk are performed		
	Management of some patients with comorbidities and risk of intra- and post-operative complications occurs		
	Anesthesia is administered by a specialist anesthesiologist with support from anesthesiology residents		
6	Manages the highest level of anesthetic risk in a range of specialties in conjunction with the most complex surgical and medical presentations that have a high level of complexity or risk to patients with an extensive range of comorbidities requiring specialist staff	1	3

- Many more hospitals in NL compared to TAS provide complex surgical procedures and the corresponding level of anesthesiology services.

**Table 3. Description of Workforce Requirements to Provide Each Level of General Surgery Services**

Level	Workforce Description
2	Physician to coordinate care
	Registered nurses (RNs) with appropriate post graduate qualifications and/or experience; RNs may be supported by Licensed Practical Nurses (LPNs) in providing care to low complexity general surgical patients
	General surgeon available for consultation
3	Visiting specialist with credentials in general surgery or other surgical specialties may be available
	Physicians credentialed to administer anesthesia
	RNs with appropriate post graduate qualifications and/or experience in perioperative nursing; RNs may be supported by LPNs
	Medical, anesthesia and nursing pre-admission services
	Access to allied health services, as required
4	Specialist surgeons, specialist anesthesiologists, critical care specialist on-site; and on-call 24 hours
	Surgical and anesthesiology residents on-call 24 hours
	RNs with appropriate post graduate qualifications and/or extensive experience in perioperative nursing on-call 24 hours
	RNs with appropriate post graduate qualifications and/or experience in post-operative nursing; RNs may be supported by LPNs in providing care to inpatients
	Clinical nurse specialist providing leadership in perioperative and postoperative care
	Clinical nurse educator
	Access to designated allied health services appropriate to the level of general surgical services being provided
5	Access to specialized allied health services
	Access to multiple surgical sub-specialties on-site; and on-call 24 hours
6	Broad range of surgical sub-specialists available on-site
	Dedicated surgical staff with clinical competency in a range of sub-specialty areas available at close proximity 24 hours
	Allied health professionals available 24 hours, as required

**Table 4. Level of General Surgery Services and Level of Workforce Providing General Surgery Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	6 (5A)
St. Clare's	6	6 (5A)
Janeway	-	-
Carbonear	5	5
Burin Peninsula	5	4
Dr. G.B. Cross	5	4
<b>Central Health (CH)</b>		
James Paton	5	6 (5A)
Central NL	5	6 (5A)
<b>Western Health (WH)</b>		
Western Memorial	5	4
Sir Thomas Roddick	5	4 (3M)
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	4	4 (2M)
Labrador	4	4 (3M)
Labrador West	4	4 (2M)

- Most hospitals do not have the full required workforce for the level of surgical services being provided.

**Table 5. Description of Workforce Requirements to Provide Each Level of Anesthesiology Services**

Level	Workforce Description
2	Physician credentialed to provide anesthesiology services
	Access to specialist anesthesiologist for consultation
	Must be a minimum of three appropriately trained staff present: the proceduralist, the practitioner administering sedation and monitoring the patient, and an assistant
	The assistant must be exclusively available to the practitioner administering sedation at induction of and emergence from sedation, and for general anesthesia throughout the procedure
3	RN with experience/post graduate qualifications in anesthesiology nursing
4	Specialist anesthesiologists on-site
	Specialist anesthesiologists on-call 24 hours
	Anesthesiology residents on-call 24 hours
5	Specialist anesthesiologist on 24 hour roster for low, moderate and high risk patients
6	Anesthesiology resident on-site 24 hours
	Broad range of surgical sub-specialties services on-site and available at close proximity 24 hours

**Table 6. Level of Anesthesiology Services and Level of Workforce Providing Anesthesiology Services for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	6
St. Clare's	6	5
Janeway	6	4
Carbonear	5	2N; 5M
Burin Peninsula	5	5
Dr. G.B. Cross	5	5
Waterford	2	-
Miller Centre	2	-
<b>Central Health (CH)</b>		
James Paton	5	5
Central NL	5	5
<b>Western Health (WH)</b>		
Western Memorial	5	5
Sir Thomas Roddick	4	3
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	5	-
Labrador	5	2
Labrador West	5	-

- Hospitals in Eastern, Central, and Western Health generally have an appropriate workforce for the level of anesthesiology services being provided, however hospitals in the Labrador-Grenfell region do not have an adequate workforce to provide the higher risk and complexity anesthesiology services in those hospitals.

## Conclusions

Given the lower need for complex surgeries at smaller sites in NL, it may make more sense to limit the complexity at such sites to match the available workforce than to try to bring the workforce level to where it should be for the more complex cases.

# Analysis of Emergency Medicine Services and Workforce Alignment in Newfoundland and Labrador

## Objective

To compare the level of emergency medical services (EMS) in Newfoundland and Labrador (NL) to those in Tasmania (TAS) and to assess the alignment of the workforce and level of service provided in each hospital and health centre.

## Practice Points

1. In health centres in NL service is unsustainable and unstable, closures have become common.
2. Health centres are predominantly used for primary care rather than emergency care. Health centres better meet population needs providing primary care or urgent care.

## Results

**Table 1. Number of Facilities in TAS and NL Providing Each Level of EMS**

Level	Description	TAS	NL
1	Basic life support provided by an Registered Nurse (RN)	7	0
	Access to a physician or family physician for attendance at the facility within 30 minutes		
2	24 hour advanced life support provided by an RN	6	0
	Access to a physician and/or paramedic for attendance at the facility within 15 minutes		
3	On-site emergency treatment for low-risk patients with uncomplicated minor acute illnesses without the need for referral to a higher level EMS	1	12
	On-site emergency treatment for the initial management of sick patients pending referral and transport to a higher level facility		
	Ambulance patients are not managed on-site with the exception of suspected acute coronary syndrome and subacute patients		
4	Medically staffed by emergency physicians	1	10
	On-call access to emergency physicians 24 hours		
5	Access to on-site interventional cardiology and critical care medicine services 24 hours	1	0
6	Capacity to manage complex trauma	1	6
	Provides a full range of time-critical medical services 24 hours		

- In TAS, only hospitals provide emergency treatment, along with life support available at rural inpatient facilities.
- Emergency treatment is provided in all hospitals and health centres with acute beds in NL.

**Table 2. Description of Workforce Requirements to Provide Each Level of EMS**

Level	Workforce Description
1	On-site RN 24 hours for basic life support
	Access to a physician
2	On-site RN 24 hours for advanced life support
3	Medically staffed by family physicians, rural and remote medicine specialists, rural and remote medicine trainees or physicians with postgraduate training in emergency medicine
	Fellow of the Royal College of Physicians and Surgeons of Canada (RCPSC), emergency medicine for clinical governance and education and training on-site during business hours
	Resident in emergency department 24 hours on-site
4	On-site RNs with emergency medicine experience available 24 hours
	Emergency physicians on-site 16 hours a day and on-call 24 hours
	RNs with experience and/or post graduate qualifications in emergency nursing on-site 24 hours
	Emergency medicine residents on-site 24 hours
5	General surgeon on-site and on-call 24 hours
	Internal medicine specialist on-site and on-call 24 hours
	Critical care medicine specialist on-site/on-call after-hours
	On-site intervention cardiology services on-call 24 hours
	Clinical nurse specialist providing clinical leadership in emergency care
6	Clinical nurse educator to support undergraduate and post-graduate nursing students and skill development of nurses
	Specialist pharmacist, emergency
6	On-site medical and surgical sub-specialists to support emergency service, including neurosurgery, cardiothoracic surgery, vascular surgery, and angiography

**Table 3. Level of EMS and Level of Workforce Providing EMS for Each Hospital in NL**

Hospital	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Health Sciences	6	5 (6M)
St. Clare's	4	3
Janeway	6	4 (2M)
Carbonear	4	4
Burin Peninsula	4	2
Dr. G.B. Cross	6	4
<b>Central Health (CH)</b>		
James Paton	6	4
Central NL	6	4
<b>Western Health (WH)</b>		
Western Memorial	6	4
Sir Thomas Roddick	4	2
<b>Labrador-Grenfell Health (LGH)</b>		
Charles S. Curtis	4	4
Labrador	4	2
Labrador West	4	4

- Most hospitals in NL do not have the workforce required to support the level of emergency services being provided.

**Table 4. Level of EMS and Level of Workforce Providing Emergency Medicine for Each Health Centre in NL**

Health Centre	Service Level	Workforce Level
<b>Eastern Health (EH)</b>		
Dr. Walter Templeman	3	2
Dr. William H. Newhook	3	2
Placentia	3	2
Dr. A.A. Wilkinson	4	2
Bonavista	3	2
US Memorial	3	2
Grand Bank	1	2

**Table 4 continued**

Health Centre	Service Level	Workforce Level
<b>Central Health (CH)</b>		
Connaigre	3	3
Dr. Y.K. Jeon Kittiwake	3	3
Fogo Island	3	3
Notre Dame Bay	3	3
Lewisporte	1	3
Dr. Hugh Twomey	1	3
Green Bay	3	3
Baie Verte	3	3
A.M. Guy	3	3
<b>Western Health (WH)</b>		
Calder	4	2
Dr. Charles L. Legrow	4	2
Bonne Bay	3	2
Rufus Guinchard	3	2
<b>Labrador-Grenfell Health (LGH)</b>		
White Bay Central	3	2
Strait of Belle Isle	3	2
Labrador South	3	2

- Health centres in Eastern, Western, and LGH do not have the workforce required to support the level of emergency services being provided.

## Conclusions

1. If the workforce was not spread so thin, it would be better able to staff core facilities and potentially provide better quality care with improved outcomes for patients. This will need an improved ambulance system to transport emergencies to locations where the resources and skills to provide the care needed are located while paramedics provide care during transport without need to delay ultimate care by receiving initial care in health centres.
2. CH reports they have the required workforce in health centres, but since the survey has been completed, there have been many ER closures in the region so this is probably no longer the case.

# Comparison of Stroke Care Indicators in Eastern Health to Three Regions of Canada

## Canadian Stroke Best Practice Recommendation

Administer intravenous thrombolytics within 4.5 hours of ischemic stroke onset.

## Practice Points

1. Thrombolysis with tissue plasma activator (tPA) is a proven intervention that will improve outcomes in ischemic stroke but needs to be provided within 4.5 hours of symptom initiation.
2. Thrombolysis rates were poor (<10%) in Newfoundland and Labrador (NL) prior to 2017. Knowledge translation efforts by Quality of Care NL, implementation team visits to Regional Health Authorities (RHAs) by content experts, and initiation of an e-record for stroke patients in emergency rooms occurred in 2017–19 with the objective of improving thrombolysis rates to over 20%.
3. The pathway to thrombolysis involves multiple steps: recognition of symptoms, paramedics and transport, ER response, CT to support a diagnosis of ischemic stroke, and administration of tPA. Delay in any step can limit thrombolysis use.

## Data (PI: P.B. Parfrey)

Aggregate data were obtained from CIHI on ischemic stroke care indicators for comprehensive stroke centres and primary stroke centres in 4 regions of Canada: Eastern Health (EH) Newfoundland, Central Zone Nova Scotia, Southeastern Ontario, and Calgary Zone Alberta for the 5 years from 2016/17 to 2020/21.

## Results

Table 1. A Summary of the 2020/21 Ischemic Stroke Care Indicators for the Four Comprehensive Stroke Centres

Metrics	QEII	Foothills	Kingston	HSC
Ischemic Strokes	561	1252	487	332
7-Day Mortality	9.3%	5.7%	5.7%	6.3%
30-Day Mortality	16.8%	10.0%	12.3%	13.9%
TLOS	8	7	7	7
Discharged Home	37.4%	58.2%	36.8%	54.5%
Arriving by Ambulance	77.7%	83.7%	81.3%	75.9%
CT/MRI Scan	93.6%	96.6%	96.7%	97.1%
Thrombolysis Rate	21.2%	15.1%	21.8%	19.0%
Anti-Thrombotics	82.1%	90.5%	92.5%	95.4%

- In 2020/21, stroke care at NL's Health Sciences Centre (HSC) was similar when compared to the three comprehensive stroke centres of NS (QEII), Calgary (Foothills), and southeastern ON (Kingston) in 7-day mortality, 30-day mortality, length of stay, percentage discharged home, thrombolysis rates, and the use of anti-thrombotics.

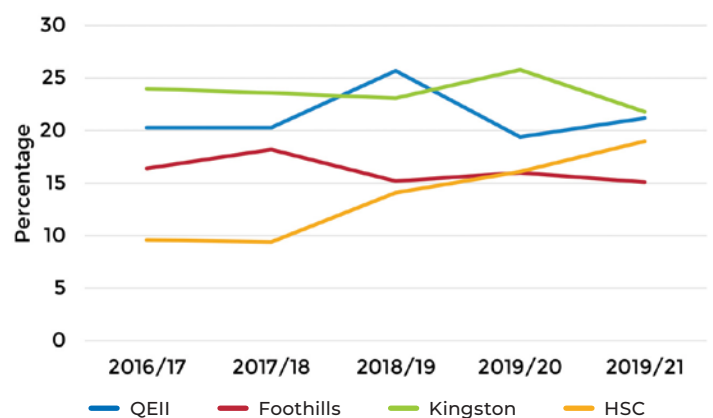


Figure 1. Percentage of Ischemic Stroke Patients Who Received Thrombolytic Therapy by Comprehensive Stroke Centre

- HSC has shown that they can improve their ischemic stroke care as they have steadily improved in thrombolysis rate from 9.6% in 2016/17 to 19% in 2020/21. In 2020/21, HSC had a thrombolysis rate just below the target of 21%. Kingston (21.8%) and QEII (21.2%) were above the target, but Foothills (15.1%) appeared to be lower.

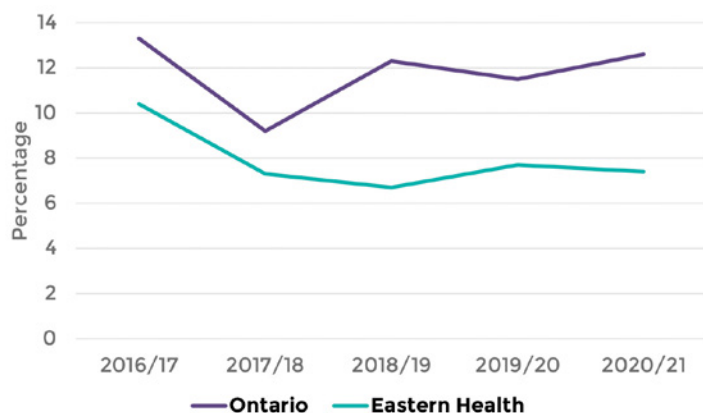


**Table 2. A Summary of the 2020/21 Ischemic Stroke Care Indicators for the Primary Stroke Centres**

Metrics	NS	AB	ON	EH*
Ischemic Strokes	99	311	452	243
7-Day Mortality	12.1%	7.6%	6.0%	5.8%
30-Day Mortality	18.2%	12.0%	9.5%	14.0%
TLOS	8	7.4	5.5	8.4
Discharged Home	34.3%	52.7%	52.9%	51.0%
Arriving by Ambulance	73.7%	60.5%	79.6%	74.5%
CT/MRI Scan	93.5%	96.0%	98.0%	95.1%
Thrombolysis Rate	N/R	N/R	12.6%	7.4%
Anti-Thrombotics	79.0%	73.7%	90.2%	95.5%

\*HSC is not included as it is a Comprehensive Stroke Centre (CSC).

- In 2020/21, stroke care at the Primary Stroke Centres (PSC) in EH was comparable to the other three health regions. EH was highest in total length of stay (TLOS), the lowest in 7-day mortality, but only below NS in 30-day mortality. The PSCs were similar in the proportion of their ischemic stroke patients discharged home, arriving by ambulance, receiving a CT/MRI scan within 24 hours, ON and EH were the highest in the proportion of their ischemic stroke and tPA patients receiving anti-thrombotics. The PSCs in AB and NS had non-reportable cells for thrombolysis. The PSCs in EH had a low thrombolysis rate of 7.4%.



**Figure 2. Percentage of Ischemic Stroke Patients Who Received Thrombolytic Therapy by Primary Stroke Centre**

- Throughout the five years thrombolysis rates were low and did not improve over time in the 4 primary stroke centres in EH. The primary Central NS reported a thrombolysis rate of 14% in 2018/19 but all other years were non-reportable by CIHI due to the low cell counts. Calgary were either non-reportable or 0.0% each year.

## Conclusions

- Improvement in thrombolysis rates at HSC occurred over 5 years achieving rates comparable to other comprehensive stroke centres in Canada (CA).
- Ranking among the top quartile of hospitals in CA would target a rate of greater than 21%.
- Rates in the 4 primary stroke care centres in EH are low. A comprehensive provincial stroke program, with a Learning Health System approach, should be instituted as soon as possible to target improvement in thrombolysis rates.

# Acute Care Expenditures in Newfoundland and Labrador and Canada

## Objective

To examine costs and utilization of acute care facilities in NL compared to other Canadian provinces.

## Practice Points

1. The 2021 provincial budget was \$9.3 billion. Health was the largest component of the budget accounting for more than a third of expenditures.
2. Provincial government spending on health in Newfoundland and Labrador (NL) was \$3.7 billion in 2021, with 36% of that spending being for acute care hospitals.

## Data

Data on health system metrics and expenditures were obtained from Canadian Institute for Health Information (CIHI).

## Results

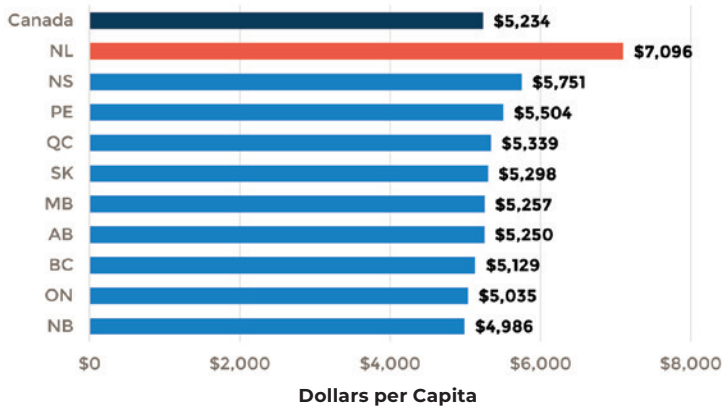


Figure 1. Provincial Government Per Capita Health Expenditure, 2021-22

- Per capita provincial government health spending is by far the highest in the country, at over \$7,000, and is 36% higher than the Canadian average.

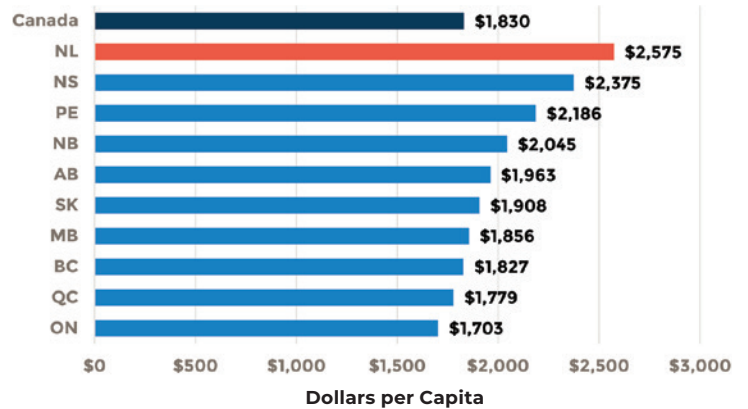


Figure 2. Provincial Government Per Capita Hospital Expenditure, 2021-22

- Hospital spending in NL is the highest in the country, and is 41% higher than the Canadian average.

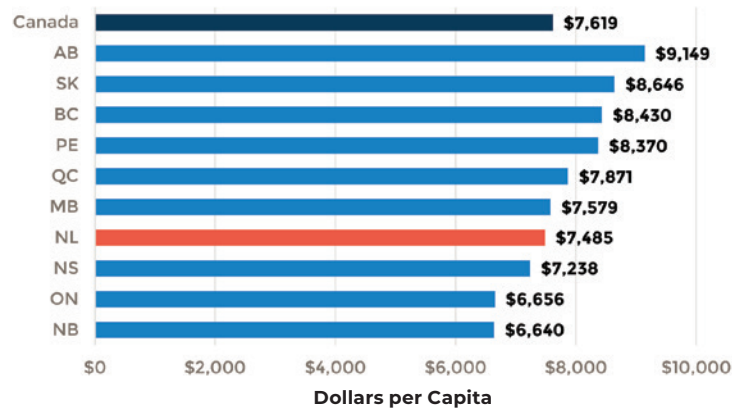


Figure 3. Cost of a Standard Hospital Stay, 2020-21

- The cost of a standard hospital stay in NL is 2% lower than the Canadian average.

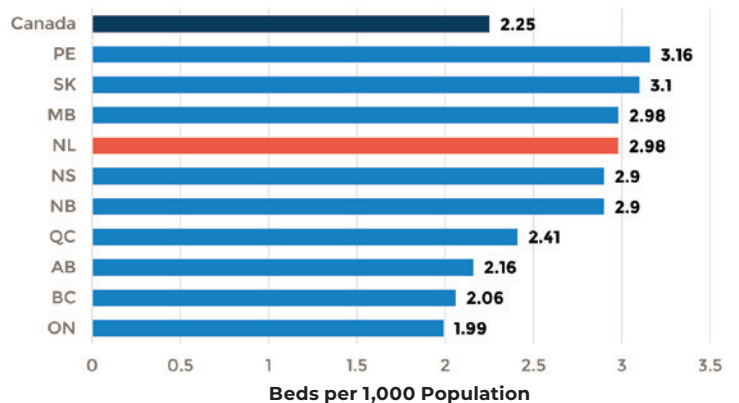
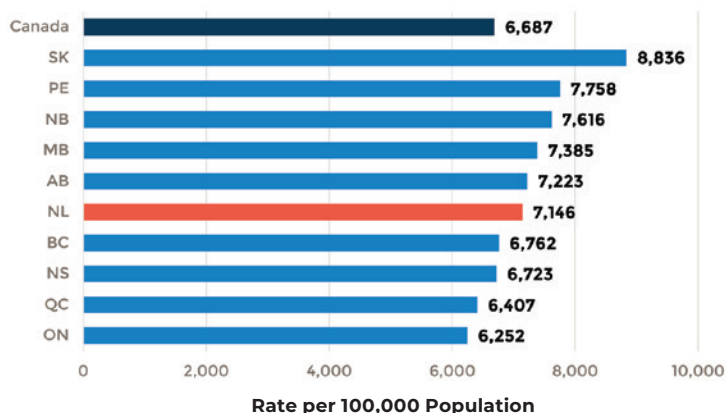


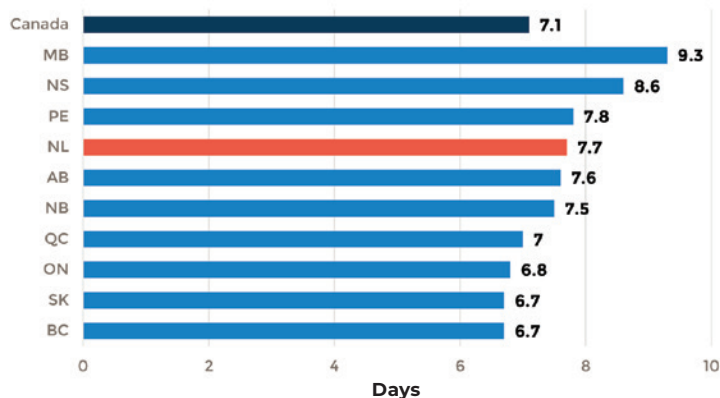
Figure 4. Acute Beds Per 1,000 Population, 2020-21

- There are 32% more beds per 1,000 population in NL than the Canadian average.



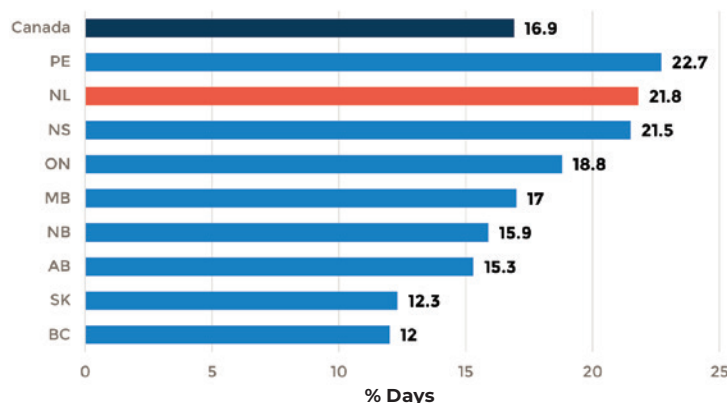
**Figure 5. Age-Sex Standardized Hospitalization Rate Per 100,000 Population, 2020-21**

- The standardized hospitalization rate per 100,000 population is 7% higher than the Canadian average.



**Figure 6. Age Standardized Average Length of Stay, 2020-21**

- The standardized length of stay in NL is 8% longer than the Canadian average.
- Length of stay includes both acute and alternate level of care days.



**Figure 7. Percent Patient Days in Alternate Level of Care (ALC), 2020-21**

- The percent ALC days is 30% higher in NL compared to the Canadian average.

## Conclusions

1. In NL, health spending, including hospital spending specifically, is much higher than the Canadian average. This is primarily due to the high number of acute beds and high ALC. The somewhat higher number of hospitalizations and length of stay also contribute to higher spending on hospitals.
2. In order to reduce use of ALC, hospitalizations, and length of stay, as well as the resulting high number of acute beds, investments will be required for community care, primary care, and long-term care.

# Health Care Processes and Experiences in Newfoundland and Labrador Compared to Canada and Australia

## Objective

To compare health care processes and experiences as self-reported by the public in Newfoundland and Labrador (NL) compared to other Canadian provinces and Australia (AUS).

## Practice Points

1. The Commonwealth Fund undertakes a survey of the public in 11 Organization for Economic Cooperation and Development (OECD) countries for international comparisons of health care systems. In Canada (CA), this survey is conducted in collaboration with the Canadian Institute for Health Information (CIHI) and includes oversampling in smaller provinces to allow for provincial comparisons.

## Methods

1. Data were obtained from CIHI for the results of the Commonwealth Fund 2020 survey of the general population and the Commonwealth Fund 2021 survey of older adults.
2. For each metric, NL was ranked in comparison to the other provinces with 1 as the best performance/outcome and 10 as the worst. In the tables, rank 1–3 is coloured green, rank 4–7 is yellow, and 8–10 is red.

### Legend For Tables 1–8

NL Rank	1–3	4–7	8–10
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## Results

Table 1. Preventative Care Reported by the Public

	AUS	CA	NL	NL Rank
<b>Among all adults, during the past 12 months, % who talked with their health care provider about:</b>				
Healthy diet and healthy eating	36.4	32.1	36.3	1
Exercise or physical activity	41.3	38.6	38.5	4
Alcohol use	10.4	8.7	2.6	9
Health risks of smoking and ways to quit	55.0	48.6	69.0	1

- NL was comparable to Canada on rates of discussion of preventative care issues, with the exception of alcohol use, where NL ranked as the second worst province, despite high rates of heavy drinking.

Table 2. Chronic Disease Management in Adults

% who:	AUS	CA	NL	NL Rank
Have ≥2 chronic conditions	33.1	32.3	42.1	10
Take ≥4 medications on a regular basis	14.7	20.2	26.0	9
<b>In the past year, % who had seen any health care professional for their chronic conditions:</b>				
Discuss their main goals and priorities	59.0	55.8	57.2	2
Discuss treatment options	54.1	55.0	58.4	5
Provide a written plan to manage own care	29.7	30.9	28.2	8
Review all medications being taken	74.6	75.3	76.5	5

- There are high rates of chronic disease and polypharmacy in NL, and very few individuals with a chronic disease receive a written plan to manage their own care.

Table 3. Health Status Reported by Adults ≥65 Years

% who:	AUS	CA	NL	NL Rank
Describe health as very good/excellent	48.3	45.1	48.1	3
Have chronic conditions	85.0	85.1	93.1	10
Have ≥2 chronic conditions	59.6	58.8	62.0	8
Take ≥5 prescription medications on a regular basis	28.2	33.2	35.6	5
Were admitted to hospital overnight in the past 2 years	32.5	19.9	20.4	7

- There is a high rate of chronic disease among seniors in NL, but almost half of seniors describe their health as very good or excellent.

**Table 4. Patient Engagement and Satisfaction**

	AUS	CA	NL	NL Rank
<b>Among all adults who were in hospital, during the last hospital stay, % who were:</b>				
Always treated with courtesy and respect by doctors	75.4	74.0	64.0	10
Always treated with courtesy and respect by nurses	73.5	71.3	72.8	6
Definitely involved as much as they wanted in decisions about care and treatment	55.0	55.9	54.3	6
<b>Among adults ≥65 years, % who were:</b>				
Completely/very satisfied with the quality of health care received in the past 12 months	72.9	55.8	49.1	10

- The proportion of patients in NL who felt they were not always treated with courtesy and respect by doctors is poor, with NL ranked as the worst province on this metric.
- Quality of health care in NL is ranked as the worst in Canada by seniors.

**Table 5. End-of-Life Care for Adults ≥65 Years**

% who:	AUS	CA	NL	NL Rank
Discussed with family, a close friend, or a health care professional what health care treatment is wanted if they became very ill or injured and cannot make decisions for themselves	62.4	66.3	57.9	10
Have a written plan or document describing the health care treatment wanted at the end of life	29.7	45.6	31.0	10
Have a written document that names someone to make treatment decisions if they cannot make decisions for themselves	56.7	63.2	51.7	9
Ever talked to a health care provider about access to medical assistance in dying	N/A	14	7.0	9
Are very confident they will have enough services in the community to support them at the end of life in their location of choice	N/A	34	24.9	10

- Planning for end-of-life care is very poor in NL compared to other Canadian provinces

**Table 6. Timeliness of Health Care Reported by the Public**

% who:	AUS	CA	NL	NL Rank
Were able to get an appointment on the same day if sick or needed medical attention	42.8	22.3	16.5	9
Always get a response on the same day when contacting a regular doctor's office	36.7	41.9	44.4	4
Getting medical care after hours without going Emergency Department (ED) is very difficult	15.6	28.1	44.6	10
Never used an ED in the past two years for own medical care	68.5	57.7	46.0	9
Went to ED but thought it could be treated by regular doctor	30.3	38.1	42.1	6
Went to ED and waited ≥4 hours for treatment	12.3	29.3	29.8	7
Waited ≥1 year for elective surgery	9.3	11.5	12.5	5
Waited ≥1 month to see a specialist	45.0	61.1	64.7	6

- As a country, Canada performs poorly on timeliness of care and there is further opportunity for improvement in NL, particularly in terms of patients being able to get same day or after hours care and not using an ED for care.

**Table 7. Cost Barriers Reported by the Public**

	AUS	CA	NL	NL Rank
<b>In the past 12 months, % who had a medical problem, but because of cost:</b>				
Did not visit a doctor	10.2	5.0	2.4	2
Skipped test/treatment/follow-up	13.7	5.2	3.8	2
Skipped doses of medicine or did not fill a prescription	8.3	8.9	8.1	2
Skipped dental care	31.7	26.8	29.6	8
Had serious problems paying medical bills	9.1	6.8	7.6	5

- In general, cost barriers to health care in NL are not a major issue, with the exception of accessing dental care. Because of cost barriers, 30% of adults skipped dental care, the third highest province for this metric.

**Table 8. Administrative Efficiency Reported by the Public**

% reporting:	AUS	CA	NL	NL Rank
In the past 2 years, test results/medical records not available at medical appointment	-	9.5	5.5	1
Doctor ordered an unnecessary test	-	8.0	4.5	2
<b>In the past 2 years when seeing a specialist:</b>				
The specialist did not have basic medical information or test results from the regular provider	13.4	15.0	11.6	3
After seeing the specialist, the regular family physician was not up to date on the care the specialist provided	18.4	20.2	21.1	5
<b>After leaving the hospital:</b>				
Hospital made arrangements for follow-up care	79.7	76.1	80.3	5
Patient received written information about symptoms or problems to watch out for	77.4	76.5	68.1	7
Regular provider seemed informed about care received in hospital	71.8	77.6	65.5	9

- For most of the metrics on administrative efficiency NL was comparable to Canada, except regular family practitioners did not seem informed about care received in hospital and patients did not receive written information about symptoms or problems to watch out for after leaving the hospital.

## Conclusions

- Health status and rates of chronic disease are poor in NL compared to CA and AUS. Addressing these issues will require prioritizing the social determinants of health and preventative care.
- Courtesy and respect toward patients in hospital by doctors needs to improve.
- Seniors' satisfaction with the quality of the health care they receive is low in CA compared to AUS and low in NL compared to CA. Factors contributing to low satisfaction in NL should be investigated and addressed.
- Improvement in planning and communication about end-of-life care is critical and should be emphasized in primary care and long-term care.
- Timeliness of primary care needs to be enhanced to include access to same-day and after-hours care without reliance on EDs to provide primary care services.
- Cost barriers to accessing dental care impact health equity in NL, requiring solutions to be identified.
- Administrative efficiency and electronic infrastructure should be enhanced to improve coordination and communication from hospitals and specialists to primary care providers.

# Corporate Services Expense in Newfoundland and Labrador and in Regional Health Authorities

## Objective

To compare the corporate expense ratio in Newfoundland and Labrador (NL) and the Regional Health Authorities (RHAs) to Canada.

## Practice Points

1. In Canada, health care administration costs are often assumed to be high and amenable to reduction.
2. Reduction in management at both senior and middle levels has the potential to limit efforts to improve quality and efficiency, slow the implementation of necessary change and consequently be counter-productive in terms of any savings achieved. This concern is particularly important now as change is occurring in the health system.

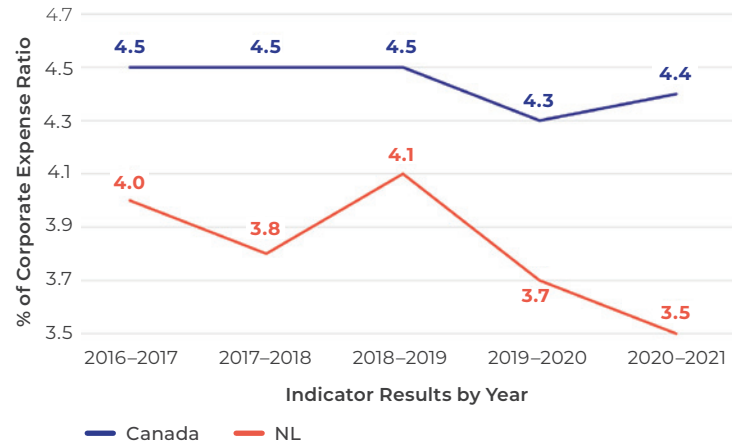
## Data

**Table 1. Corporate Expense Ratio, Canada versus NL and NL RHA, 2015/16 – 2020/21**

Comparator	Indicator Results					
	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
Canada	4.4	4.5	4.5	4.5	4.3	4.4
NL	3.9	4.0	3.8	4.1	3.7	3.5
Central Health (CH)	4.5	4.9	4.5	5.3	4.2	4.4
Eastern Health (EH)	3.5	3.6	3.5	3.6	3.3	3.0
Labrador-Grenfell Health (LGH)	5.7	6.1	5.7	6.1	5.8	5.7
Western Health (WH)	3.8	3.6	3.6	4.2	3.7	3.5

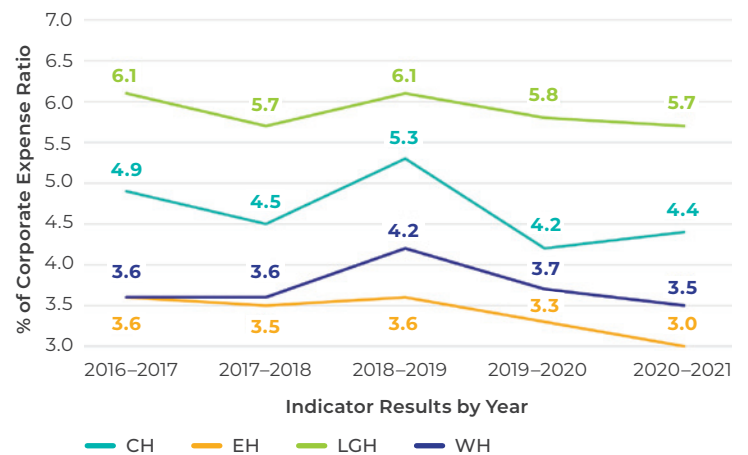
- Corporate services expense ratio was obtained from Canadian Institute for Health Information (CIHI) for Canada, NL, and the 4 RHAs from 2015/16 to 2020/21.
- This measures the percent of the legal entity’s total expenses that were spent in departments inclusive of administration, finance, human resources and communications.

## Results



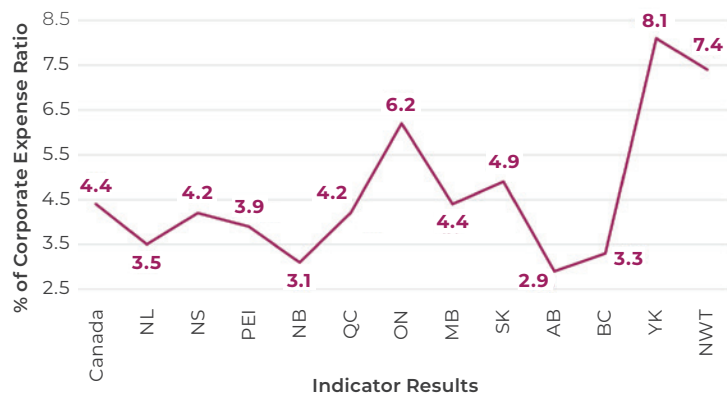
**Figure 1. Corporate Expense Canada versus NL and NL RHA, 2015/16 – 2020/21**

- Corporate expense ratio was consistently lower in NL compared to Canada.
- In 2020/21 corporate expense ratio was 3.5% of total expenses, 20% lower in 2020/21 compared to Canada.



**Figure 2. Corporate Services Expense Ratio in the Four RHAs, 2015/16 – 2020/21**

- Eastern Health (EH) consistently had the lowest corporate expense ratio among the 4 RHAs and Labrador-Grenfell Health (LGH) the highest.
- In 2020/21 the ratio in EH was 3.0% and in LGH it was 5.7%.



**Figure 3. Corporate Services Expense Ratio in the 10 Provinces**

- Among the 10 provinces, NL had the 4th lowest corporate expense ratio.
- In the Yukon (8.1%) and North West Territories (7.4%) the ratio was higher than LGH (5.7%).

## Conclusion

1. Relative to Canada, NL has low administrative costs.
2. Within NL, EH has the lowest corporate services expenses as proportion of total budget (3.0%) which has decreased in recent years.
3. Corporate expense ratios in Atlantic Canada are lower than the Canadian average.
4. In the current time of change in the health care system low management expenditure may limit interventions related to change management, implementation of new programs, and development of a Learning Health System.



# Impact of the COVID-19 Pandemic on Acute Care Occupancy

## Objective

To identify changes in occupancy rates in acute care hospitals and health centres during the COVID-19 pandemic.

## Practice Points

1. Beginning in Mar 2020, strategies were implemented to reduce occupancy in acute care facilities to ensure capacity for potential admissions of patients due to COVID-19. Designated facilities reserved beds/units specifically for COVID-19 patients.

## Data

Data on occupancy rates and acute bed numbers were obtained from the Department of Health and Community Services.

## Results

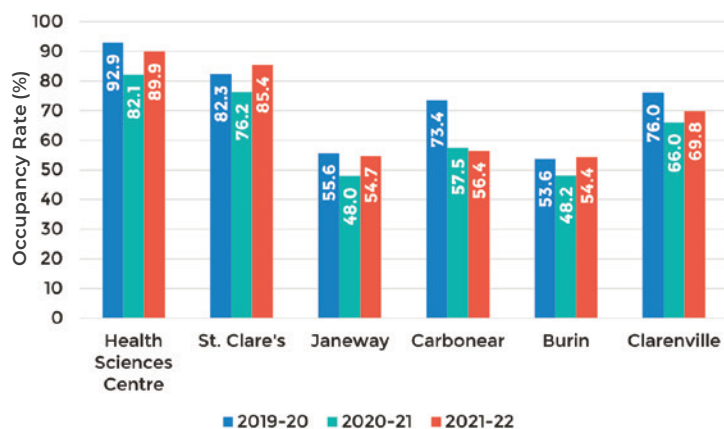


Figure 1. Occupancy Rates in Eastern Health Hospitals Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)

- St. Clare's had 192 acute beds in 2019–20, which were reduced to 182 acute beds in 2020–21 and 2021–22.
- In Eastern Health (EH), occupancy rates decreased by about 5 to 15% in the first year of the pandemic. Occupancy increased in the second year of the pandemic to approximately pre-pandemic levels in all hospitals in EH except Carbonear and Clarenville.

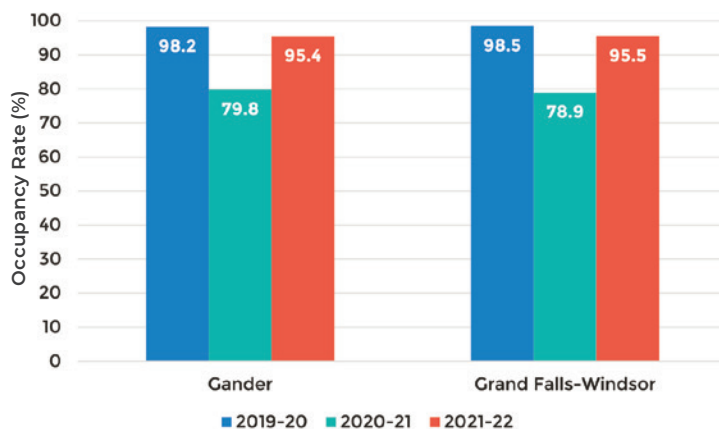


Figure 2. Occupancy Rates in Central Health Hospitals Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)

- Occupancy rates in both Central Health (CH) hospitals decreased by about 20% in the first year of the pandemic. Occupancy rates returned to almost pre-pandemic levels in the second year of the pandemic.

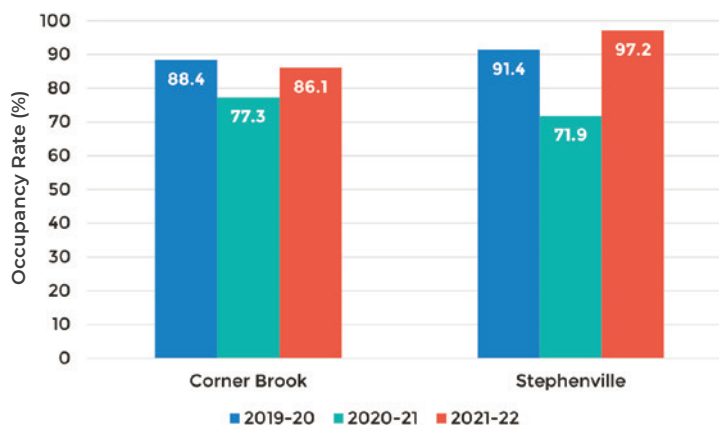
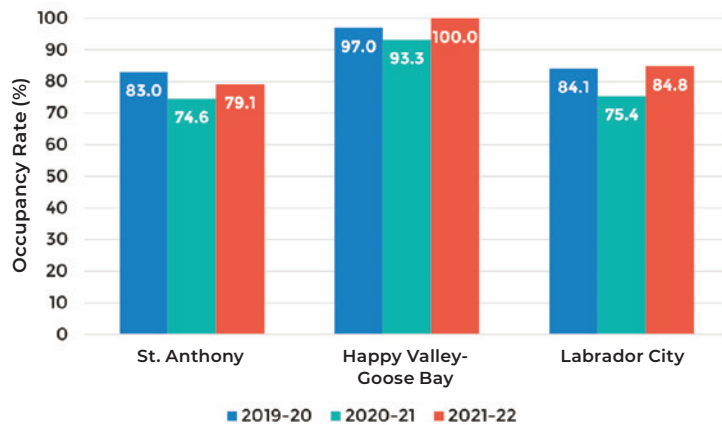


Figure 3. Occupancy Rates in Western Health Hospitals Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)

- Corner Brook had 201 acute beds in 2019–20, which were reduced to 165 acute beds in 2020–21 and 2021–22.

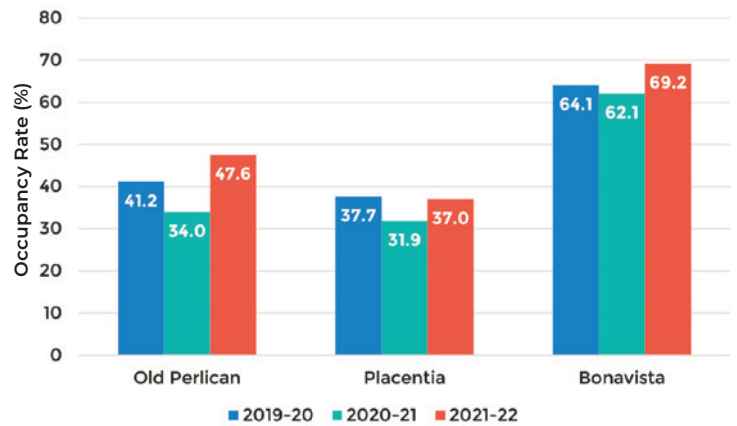
- In Western Health (WH), the occupancy rate in the hospital in Corner Brook decreased by 10% in the first year of the pandemic, but if the bed numbers had not also been reduced (as was not done at other sites), the occupancy would have fallen to 64.4%. The occupancy rate in the hospital in Stephenville decreased by about 20%. In the second year of the pandemic, the occupancy rate in Corner Brook increased to almost the pre-pandemic level, while in Stephenville the occupancy rate increased by 25% to exceed the pre-pandemic level.

Note: The occupancy in 2020–2021 was impacted by operational readiness of the new Western long-term care facility. 18 beds at Western Memorial Regional Hospital were closed in June 2020 as a result of this transition.



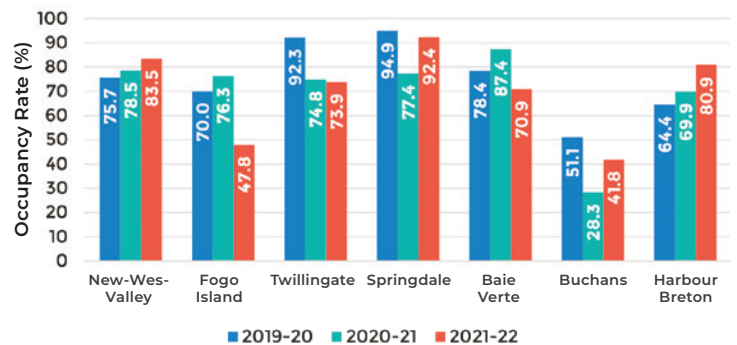
**Figure 4. Occupancy Rates in Labrador-Grenfell Health Hospitals Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)**

- In Labrador-Grenfell Health, occupancy rates in hospitals were reduced by 5–10% during the first year of the COVID-19 pandemic but returned to approximately pre-pandemic levels during the second year of the pandemic.



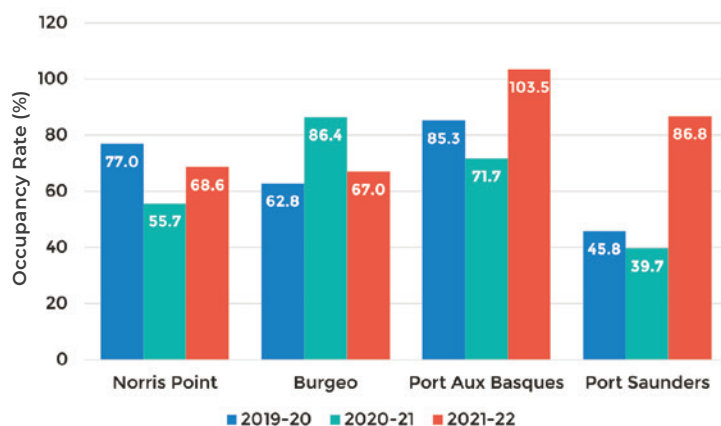
**Figure 5. Occupancy Rates in EH Health Centres Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)**

- In EH, occupancy rates in health centres decreased in the first year of the pandemic. Occupancy rates increased in the second year of the pandemic to above pre-pandemic levels in Old Perlican and Bonavista and to approximately the pre-pandemic level in Placentia.



**Figure 6. Occupancy Rates in CH Health Centres Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)**

- Changes in occupancy rates in health centres in CH during the pandemic were inconsistent across sites.



**Figure 7. Occupancy Rates in WH Health Centres Pre-COVID (2019–20) and During the COVID-19 Pandemic (2020–21 and 2021–22)**

- Occupancy rates decreased in the first year of the pandemic in most health centres in WH. Occupancy rates increased in most health centres in the second year of the pandemic, remaining below the pre-pandemic level in Norris Point but rising 20–40% above the pre-pandemic rates in Port Aux Basques and Port Saunders. The opposite pattern occurred in Burgeo, where the occupancy rate increased almost 25% in the first year of the pandemic and then decreased to just above pre-pandemic levels in the second year.

## Conclusions

1. Prior to the COVID-19 pandemic, several hospitals, particularly in the CH and WH regions, were operating above optimal occupancy levels and would not have had capacity for a surge of COVID-19 admissions.
2. All hospitals in the province and some health centres decreased occupancy rates during the first year of the pandemic. In the second year of the pandemic, occupancy rates returned to approximately pre-pandemic levels in most acute care facilities.
3. The types of initiatives employed to reduce occupancy rates should be examined to explore if occupancy was reduced through a reduction in care (e.g., postponing elective procedures) which should not be continued longer than necessary, or through improved efficiency/care processes (e.g., supporting patients with home care rather than as alternate level of care patients) which could improve the quality and efficiency of the health care system if maintained long term.

# Control of the Omicron Variant in Newfoundland and Labrador

## Objective

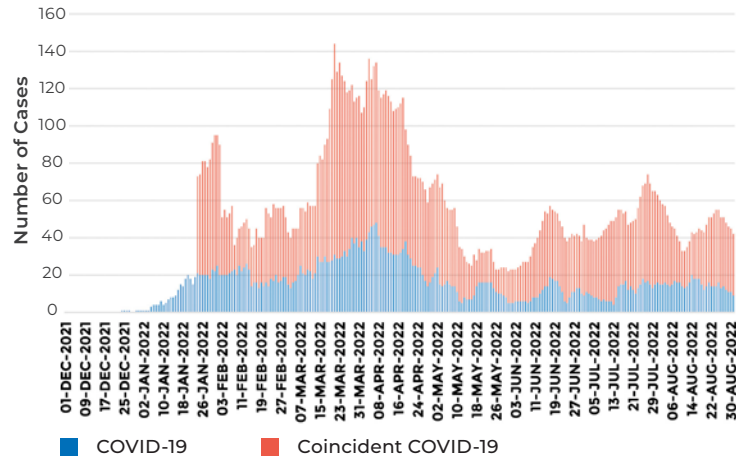
To describe COVID-19 interventions undertaken to control the Omicron wave in Newfoundland and Labrador (NL).

## Practice Points

1. On 26 Nov 2021, the World Health Organization named the Omicron variant of the coronavirus a new variant of concern. Travel to Canada (CA) (and around the world) from certain countries was banned.
2. Observational data suggested the Omicron variant was less severe but more transmissible and could still be severe in certain high-risk groups.
3. Initial COVID-19 vaccines protected against severe disease, hospitalizations and death due to infection with the Omicron variant. However, breakthrough infections and reinfection after prior infection with other variants did occur.
4. The Omicron variant was first reported in NL on 15 Dec 2021.

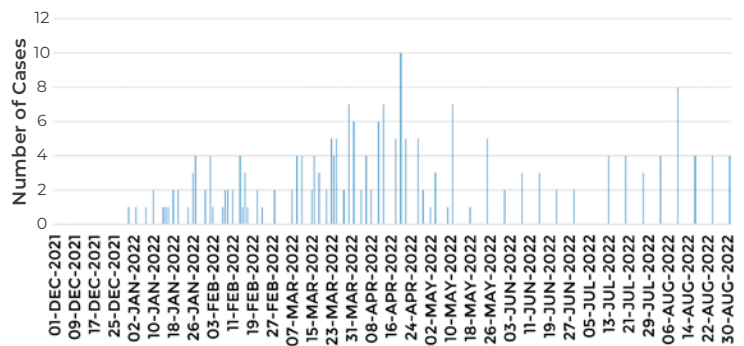
## Methods

1. Data on hospital occupancy and death was obtained from the provincial government COVID-19 dashboard from 01 Dec 2021 to Sep 2022. Hospital occupancy included two groups: those admitted due to COVID-19 and those with coincident COVID-19. The number of new deaths was reported weekly as of 11 May 2022.
2. A description of the various types of interventions imposed and the mitigation of those restrictions was obtained from provincial government news releases from Dec 2021 to Mar 2022.
3. Lifting of restrictions was based on projected hospitalization rates.



**Figure 1. Hospital Occupancy (Includes Those Admitted Because of COVID-19 and Those With Coincident COVID-19), Dec 2021 – Aug 2022**

- From 3 Feb 2022, the definition of hospitalizations “with COVID-19” underwent some changes in method of determination/collection so the number of coincidental COVID-19 is less.
- On lifting restrictions, a projected increase in hospitalizations occurred but peaked by around mid-April 2022.



**Figure 2. Incidence of COVID-19 Associated Deaths, Dec 2021 – Aug 2022**

- The number of COVID-19 deaths increased for the month following lifting of restrictions on 14 Mar 2022.

Table 1. 2022 Reopening Plan, Jan – Mar 2022

Key Public Health Measures	Modified Alert Level 4 (4 Jan)	Modified Alert Level 3 (7 Feb)	14 Feb	21/28 Feb	14 Mar
<b>Informal Gatherings</b>	Limited to your Tight 10.	Limited to your household's Steady 20.	Limited to 20 people.	21 Feb – Limited to 25 people.	No restrictions.
<b>Gatherings at Funerals, Burials, Weddings, Religious &amp; Cultural Ceremonies</b>	Limited to no more than 50 people or 25% capacity, whichever is less.	No change.	12 Feb – Limited to 50% capacity; Faith based ceremonies 50% capacity with vaccine passport or 25% capacity without.	21 Feb – Faith based ceremonies 75% capacity with vaccine passport or 50% capacity without.	No restrictions.
<b>Public Visitations &amp; Wakes</b>	One household bubble can visit at a time.  23 Dec – Wakes prohibited.	No change.	No change.	21 Feb – Public visitations limited to 50% capacity per room; Wakes held outside of a funeral home/place of worship limited to 25 people.  28 Feb – Public visitations limited to 75% capacity per room.	No restrictions.
<b>Gym &amp; Fitness Facilities, Yoga Studios, Swimming Pools, Tennis and Squash Facilities, Arenas &amp; Dance Studios</b>	Limited to 50 people or 25% capacity per room or ice surface, whichever is less.	50% capacity per room or ice surface.	No change.	21 Feb – 75% capacity per room or ice surface.	No restrictions.
<b>Performance Spaces</b>	23 Dec – Closed.	Limited to 50 people or 25% capacity per room, whichever is less. No food or drink permitted.	50% capacity; Food or drink is permitted provided physical distancing maintained between bubbles.	28 Feb – 75% capacity.	No restrictions.
<b>Group &amp; Team Sport, Art &amp; Recreation Activities</b>	Group and team sport, arts and recreation activities suspended.	Practice and training permitted within the group or team, without the requirement to physically distance at all times. Competition between different teams not permitted.	Amateur sports and recreation can play games within their usual region; Competition permitted against one single team per day. Tournaments not permitted.	21 Feb – Out of region amateur sport and recreation activities permitted. Tournaments not permitted.	No restrictions.
<b>Visitor Restrictions for Acute Care, Long-Term Care (LTC), Personal Care Homes (PCHs), Community Care Homes &amp; Assisted Living Facilities</b>	15 Dec – Maximum of two visitors at a time; these can be different people for each visit.  27 Jan – One support person/visitor for each patient/resident.	No change.	10 Feb – Two support persons/visitors for each patient/resident; Residents allowed to leave the facility for family outings.	4 Mar – Multiple visitors/support persons allowed (but only two can visit at a time).	
<b>Retail Stores</b>	Open at reduced capacity with physical distancing.	No change.	No change.	21 Feb – No restrictions.	
<b>Restaurants</b>	50% capacity; Maximum of six people per table. Buffets are prohibited.	50% capacity; Maximum of 10 people per table.	No change.	21 Feb – 75% capacity.	No restrictions.

Table 1 continued

Key Public Health Measures	Modified Alert Level 4 (4 Jan)	Modified Alert Level 3 (7 Feb)	14 Feb	21/28 Feb	14 Mar
<b>Bars, Lounges, Bingo Halls &amp; Cinemas</b>	23 Dec – Closed.	Bars & Lounges – 50% capacity; Eating or drinking is only permitted while seated; No dance floors.  Cinemas & Bingo Halls – Limited to 50 people or 25% capacity per room, whichever is less; No food or drink permitted.	Bars and Lounges – no change.  Cinemas & Bingo Halls – 50% capacity; Food or drink is permitted provided physical distancing maintained between bubbles.	28 Feb – 75% capacity. Dance floors permitted.	No restrictions.
<b>Schools</b>	4 Jan – Return to virtual learning.  25 Jan – Move to in-person learning.	No change.	No change.	No change.	
<b>Childcare Services</b>	Can operate at full capacity.	No change.	No change.	No change.	
<b>Personal Service Establishments, Including Spas, Esthetic Services, Hair Salons, Body Piercing, Tattooing &amp; Tanning Salons</b>	Open in accordance with guidelines.	No change.	No change.	No change.	No restrictions.
<b>Border</b>	21 Dec – Fully vaccinated: Isolation for five days; Required to take a rapid test every day for five days.  Partially or unvaccinated: Isolate until receipt of a negative PCR test on day seven or later.	5 Feb – Fully vaccinated: No isolation; Mandatory rapid testing for five days.  Partially or unvaccinated: No change.	No change.	28 Feb – No isolation or testing for all travellers.	

## Conclusions

1. Although individual risk for severe disease was lower than with previous variants, the high number of cases caused by the Omicron variant resulted in a high number of COVID-19 associated hospitalizations and deaths.
2. The high rate of community transmission led to the closure of high-risk businesses and a large reduction in capacity limits. Mitigation of restrictions was done in a stepwise manner over a 5-week period and coincided with increased rates of booster vaccinations especially in those most vulnerable.
3. With the emergence of the Omicron variant and its high rate of transmission, eradication of the virus was no longer possible. Adherence to public health measures and high immunization rates prevented severe disease and death.
4. Projection of hospitalization rates were consistent with actual hospitalization rates, facilitating reduction of social and economic restrictions. The increase in hospitalization rate was such that it did not threaten the delivery of hospital services.

# Effect of the Omicron Variant on COVID-19 in Newfoundland and Labrador

## Objective

To examine the impact of the Omicron variant on the epidemiology of the COVID-19 pandemic in Newfoundland and Labrador (NL).

## Practice Points

1. The Omicron variant was first reported in NL on 15 Dec 2021.
2. Compared to other variants, Omicron has a greater ability to evade immunity provided by vaccination and earlier COVID-19 infection.
3. Observational data suggested the Omicron variant was less severe but more transmissible and could still be severe in certain high-risk groups.
4. The high number of cases due to the Omicron variant can still result in a cumulative excess of COVID-19 associated hospitalizations and deaths compared with other variants.

## Methods

1. Demographic and outcome data was obtained for each cohort of 5,000 PCR confirmed cases diagnosed with the Omicron variant from 01 Dec 2021 to end of April 2022.
2. Chronic disease data for those who died was obtained from the chronic disease registry.

## Results

**Table 1. Outcomes of Cohorts of 5,000 PCR Confirmed Cases, Dec 2021 – Apr 2022**

	Average Age	Age 50+ Years	Age 0–4 Years	Not Vaccinated	Hospitalized	ICU	Deceased
<b>1st 5,000</b>	37.8	1510 (30.2%)	114 (2.3%)	434 (8.7%)	16 (0.32%)	6 (0.12%)	8 (0.16%)
<b>2nd 5,000</b>	39.2	1637 (32.7%)	148 (3.0%)	427 (8.6%)	20 (0.40%)	7 (0.14%)	9 (0.18%)
<b>3rd 5,000</b>	38.8	1587 (31.2%)	294 (5.9%)	519 (10.4%)	35 (0.70%)	15 (0.30%)	21 (0.42%)

**Table 1 continued**

	Average Age	Age 50+ Years	Age 0–4 Years	Not Vaccinated	Hospitalized	ICU	Deceased
<b>4th 5,000</b>	35.9	1235 (24.7%)	253 (5.1%)	451 (9.0%)	46 (0.92%)	13 (0.26%)	15 (0.30%)
<b>5th 5,000</b>	37.3	1328 (26.5%)	161 (3.2%)	303 (6.1%)	38 (0.76%)	14 (0.28%)	11 (0.22%)
<b>6th 5,000</b>	39.7	1552 (31.0%)	144 (2.9%)	285 (5.7%)	37 (0.74%)	5 (0.10%)	17 (0.34%)
<b>7th 5,000</b>	47.4	2237 (44.7%)	104 (2.1%)	258 (5.2%)	56 (1.1%)	12 (0.24%)	21 (0.42%)
<b>8th 5,000</b>	53.1	2862 (57.2%)	142 (2.8%)	291 (5.8%)	84 (1.7%)	14 (0.28%)	30 (0.60%)
<b>Next 1,548</b>	55.1	953 (61.5%)	44 (2.8%)	102 (6.6%)	23 (1.5%)	3 (0.19%)	4 (0.26%)

- On 3 Jan 2022, due to the high demand for testing, public health revised the criteria for PCR testing. Anyone who was a close contact of a case and had symptoms of COVID-19 was considered a positive case and did not need testing to confirm. Those who tested positive on a rapid antigen test were also considered a positive case and did not need confirmation testing. PCR testing was still recommended for anyone who was a close contact and did not have symptoms, and anyone who had symptoms but who had not been identified as a close contact of someone who tested positive for COVID-19.
- On 17 Mar 2022, public health further revised the eligibility criteria for PCR testing to symptomatic individuals who were at an increased risk for severe disease, lived or worked in congregate settings, or were essential to keeping the health system running. Individuals who developed symptoms and were not eligible for PCR testing were asked to use rapid antigen tests.
- From the first cohort to the 8th, age increased, as did hospitalization rate and mortality, reflecting the change in eligibility criteria for testing and the impact of these criteria on mortality.

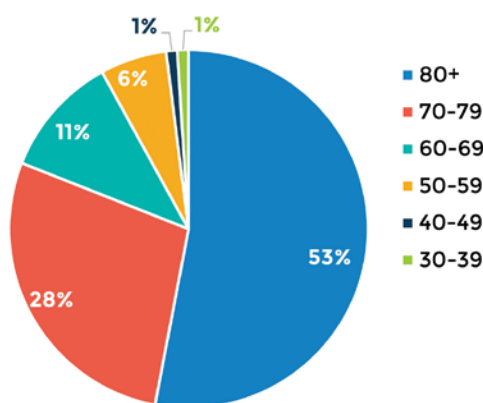


Figure 1. Age Breakdown for Those who Died (N=139), Dec 2021 – Apr 2022

- Over 80% of those who died were 70 years of age and older.

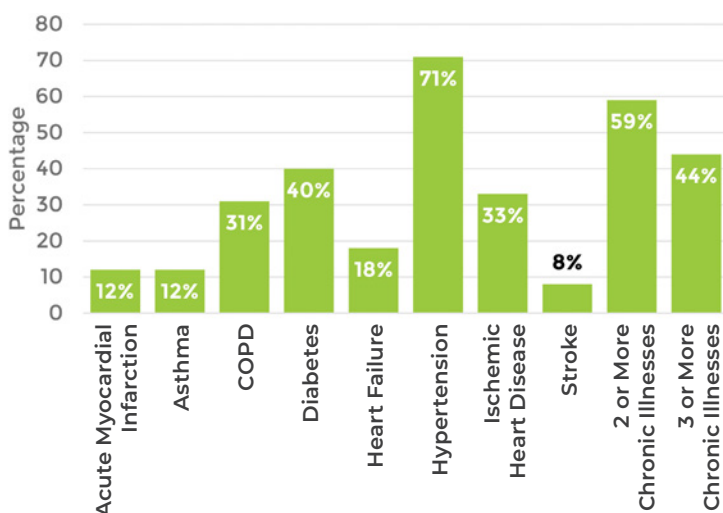


Figure 2. Chronic Disease Prevalence for Those who Died (N=139), Dec 2021 – Apr 2022

- Almost 60% of those who died had a history of two or more chronic illnesses and 44% had a history of three or more.

Table 2. Deaths of Residents in Long-Term Care Facilities (LTCFs) versus the Community by Hospital Setting (N=139), Dec 2021 – Apr 2022

	Deaths in Hospital		Deaths not in Hospital	
	N	%	N	%
LTCF	29 <sup>1</sup>	21	39	28
Not in LTCF	59	42	12	9
Total	88	63	51	37

<sup>1</sup>24 from personal care home or assisted living

- Twenty-nine of 68 LTCF residents (43%) died in hospital.

## Conclusions

- Over time, those diagnosed with PCR confirmed COVID-19 were seen to have higher rates of hospitalization and death. This was likely skewed by the change in eligibility criteria for PCR testing. Despite this selection bias, mortality in the 8th cohort of 5,000 patients was 0.6%.
- Older age and a history of chronic illness were associated with death from Omicron. Over 80% of those who died were 70 years or older and almost 60% of those who died had a history of two or more chronic illnesses.
- Forty-nine per cent of those who died were residents of a LTCF.



# Omicron Disease Severity and Mitigation of Restrictions in Newfoundland and Labrador and the Other Canadian Provinces

## Objective

To monitor COVID-19 events in Canada (CA) after the Omicron outbreak.

## Practice Points

1. The Omicron variant was first reported in CA on 28 Nov 2021. By mid-Dec 2021, all provinces had reported having cases with the Omicron variant.
2. The Omicron variant was first reported in Newfoundland and Labrador (NL), on 15 Dec 2021.
3. Compared to other variants, Omicron is more transmissible and better able to evade immunity than previous variants.

## Methods

1. Data on hospital occupancy due to COVID-19 was obtained from provincial websites from 01 Dec 2021 to 31 Aug 2022.
2. Information regarding mitigation of restrictions was obtained from provincial websites and government news releases.

## Results

Table 1. End of COVID-19 Restrictions in Canadian Provinces

Province	Date Omicron First Reported	No VaxPass	No Capacity Limits	No Masking <sup>1</sup>	No Isolation for Cases
NL	15 Dec	14 Mar	14 Mar	14 Mar	TBD
PE	14 Dec	28 Feb	6 Apr	6 May	TBD
NS	13 Dec	28 Feb	21 Mar	21 Mar	6 Jul <sup>2</sup>
NB	13 Dec	28 Feb	14 Mar	14 Mar	14 Mar <sup>2</sup>
QC	29 Nov	12 Mar	12 Mar	14 May	TBD
ON	28 Nov	14 Mar	14 Mar	21 Mar	31 Aug
MB	7 Dec	1 Mar	15 Mar	15 Mar	15 Mar
SK	8 Dec	14 Feb	Lifted Previously	28 Feb	28 Feb
AB	30 Nov	9 Feb	1 Mar	1 Mar	15 Jun
BC	30 Nov	8 Apr	17 Feb <sup>3</sup>	11 Mar	TBD

<sup>1</sup> Many provinces still require masks in high-risk settings & are strongly recommended in all public settings.

<sup>2</sup> 5-day isolation still required for those in vulnerable sectors.

<sup>3</sup> Capacity limits for long-term care (LTC), assisted living facilities and worship services removed 18 March.

- NL was the only province to lift all restrictions, including capacity limits, masking, and proof of vaccination requirements, on the same day.

Table 2. End of COVID-19 Masking Restrictions in Canadian Provinces

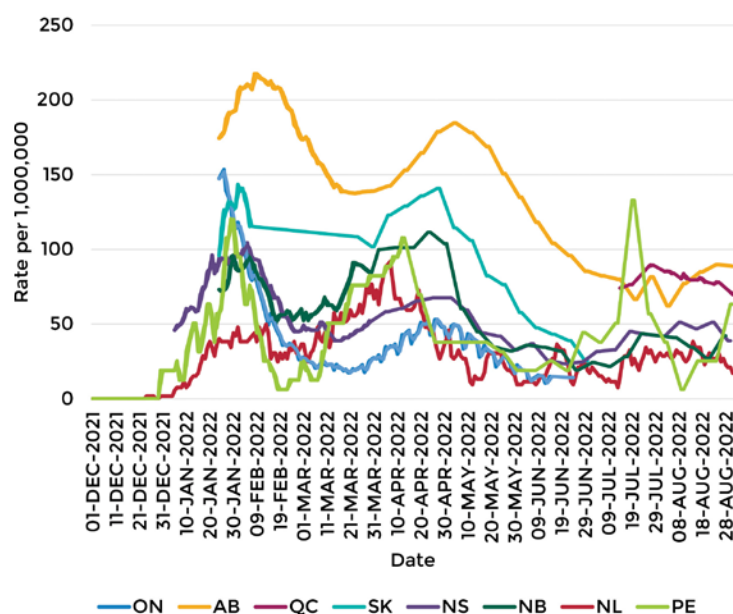
Province	Stores, Restaurants, Etc.	Schools	Public Transportation	Other High-Risk Settings (Such as Health Care)
NL	14 Mar	24 May	14 Mar	TBD
PE	6 May	23 May	3 Jun	TBD
NS	21 Mar	24 May	21 Mar	TBD
NB	14 Mar	14 Mar	14 Mar	TBD
QC	14 May	7 Mar <sup>1</sup> ; 14 May <sup>2</sup>	18 Jun	TBD
ON	21 Mar	21 Mar	11 Jun	11 Jun <sup>3</sup>
MB	15 Mar	15 Mar	15 Mar	TBD
SK	28 Feb	1 Mar	28 Feb	TBD
AB	1 Mar	1 Mar	TBD	15 Jun <sup>4</sup>
BC	11 Mar	~28 Mar	11 Mar	TBD

<sup>1</sup> No longer required while sitting in class but mask mandate still applies in common areas of elementary and high schools, while students are circulating and on school buses.

<sup>2</sup> Masks no longer required in common areas or on school buses.

<sup>3</sup> No longer required at hospitals & other health care spaces (however a number of major hospitals to keep their mandatory masking policy) but still required in LTC homes and retirement homes.

<sup>4</sup> Mandatory masking rules at Alberta Health Services and other health care facilities determined by individual sites.



**Figure 1. Hospitalizations Due to COVID-19 in Canadian Provinces (Rate Per 1,000,000 Population), Dec 2021 – Aug 2022**

- Data not available for MB and BC; QC data only available as of Jul 2022.
- Hospitalizations peaked in late Jan 2022 and rebounded a few weeks after end of restrictions in Mar 2022, but this ameliorated quickly.

## Conclusions

1. Some provinces lifted restrictions earlier than NL even though hospitalization rates were higher.
2. High immunization rates in NL likely prevented the higher rate of hospitalization seen in other provinces.

# Barriers to Implementing Collaborative Community Teams in Newfoundland and Labrador

## Objectives

To describe the potential barriers to implementation of team-based care via Collaborative Community Teams (CCTs) in the province.

## Practice Points

1. A CCT is an interdisciplinary group of health care providers who provide longitudinal, comprehensive, person-centered community care to all individuals in a region.
2. The structure is envisioned as follows:

Collaborative Community Teams
Team: Family physicians, nurse practitioners, allied health professionals including social workers, pharmacists, mental health professionals, etc.
Formal links with social program teams and community organizations
All providers for a catchment area digitally connected to each other and the people
Catchment population 6,000 – 7,000 and up
Approximately 35 CCTs to cover all areas of the province and all residents who so choose will be attached to a CCT

3. The benefits of team-based primary health care include improved access, continuity of care, better health outcomes, patient and provider satisfaction, as well as reduced emergency department visits and hospitalizations.
4. Identification and mitigation of barriers to implementation of CCTs will enable successful spread across the province.

## Data

The Health Transformation team with Government of Newfoundland and Labrador (NL) and Quality of Care NL investigated the barriers to implementing team-based care in the literature and through a series of stakeholder engagement sessions during summer 2022.

Stakeholders	
Regional Health Authorities (RHAs)	Department of Health and Community Services (HCS)
Family Practice Renewal Program (FPRP)	Newfoundland and Labrador Centre for Health information
Newfoundland and Labrador Medical Association (NLMA)	College of Family Physicians of NL
Registered Nurses Union NL	College of Physicians and Surgeons of NL
Health Accord Community Care Committee	

## Results

Table 1. Barriers to Implementation of Sustainable CCTs in NL

Literature	Stakeholder Engagement
Team composition-the right mix of providers to meet needs of the patient population.	Provider recruitment and retention has become more challenging globally since the COVID-19 pandemic and may affect CCT formation.
Role clarity-all providers must have clearly defined roles.	Change management <ul style="list-style-type: none"> <li>• Lack of shared vision</li> <li>• Lack of leadership</li> <li>• Time</li> <li>• Organizational differences</li> </ul>
Team collaboration <ul style="list-style-type: none"> <li>• Communication</li> <li>• Co-location</li> </ul>	Co-location is helpful but concerted team building must occur.
Information technology-electronic platforms enable communication and sharing of patient information among providers (i.e., a shared EMR).	Most Family Practitioners (FPs) are on electronic medical records (EMR) but other team members historically were not; there are still a number of different systems where valuable information is held (e.g., CRMS, Meditech). Not all providers have access to the information they need. Purchase of new Health Information System (HIS) that is ongoing should alleviate.
Governance model-accountability structures are enabled with a coordinated governance structure and provincial policy framework for teams with flexibility.	There is a need for a provincial framework with a longitudinal execution plan.
Funding model-fee-for-service provider remuneration does not support team-based care.	The new provincial framework needs to include how teams can work with all physician payment models.

- Academic and grey literature identified team composition, role clarity, team collaboration, information technology, governance models, and funding models as barriers to implementing team-based care.
- All stakeholders noted recruitment and retention of health providers and change management as the biggest barriers to implementation of CCTs in the province.

**Table 2. Strategies to Overcome Barriers to Implementation of CCTs**

Strategies to Mitigate Barriers	
Recruitment, recruitment, recruitment  <ul style="list-style-type: none"> <li>• Adjustments to Medical Act to support recruitment</li> <li>• More practice ready assessment streams for international medical graduates (IMGs) and options for training</li> <li>• Training – 5 family physician (FP) training seats for IMGs and 5 FP training seats for hospitalists</li> <li>• Enhanced incentives</li> </ul>	Provincial framework for CCTs
	Strong hubs and visiting FPs who provide virtual care to more isolated communities
	Engagement of providers and the public
	Focus on team building and collaboration
	Intentional, iterative process
Continuous Evaluation	

- Academic and grey literature support recruitment efforts, engagement of providers and patients, a focus on team building and collaboration, and an intentional and iterative process of creating teams as ways to mitigate the barriers to implementing team-based care. Incorporating these strategies in a Provincial Framework for CCTs may be influential in mitigating a number of barriers.

## Conclusions

1. Early implementation of mitigation strategies to overcome barriers will enhance the successful spread of CCTs across the province, which is pivotal to Health Accord NL's ten-year health transformation.
2. Learnings from Eastern Health's Collaborative Team Clinics can be utilized to enhance the implementation and operations of provincial CCTs.
3. NL needs a comprehensive recruitment and retention plan for CCTs and this plan must be adequately resourced.
4. While the Health Accord articulates a vision for CCTs, NL needs a comprehensive framework to propel the work forward.
5. New HIS will better integrate data and in turn make possible for providers to provide better support and care to patients.
6. FP payment models can be a barrier to team-based care. Physician remuneration methods must be developed to support optimal integration of salaried, fee-for-service and blended capitation paid FPs into CCTs.

# Collaborative Community Teams in Newfoundland and Labrador

## Objectives

To describe the implementation status of Collaborative Community Teams (CCTs) in Newfoundland and Labrador (NL).

## Practice Points

- A CCT is a multidisciplinary group of health care providers who provide longitudinal, comprehensive, person-centered community care to all individuals in a region.
  - CCTs are comprised of physicians, nurses, allied health (social workers, elder care, mental health, others) and have formal links with community organizations and programs.
  - Optimal catchment population of 6,000–7,000 and up.
  - Providers are digitally connected to each other and to patients.
  - Focused on health promotion, prevention, chronic disease, vulnerable children, and frail elderly persons.
  - Integration with 23 health centres and hospitals.
- Approximately 35 CCTs are needed to cover all areas of the province and all residents, who so choose, will be rostered to a CCT.
- The provider mix and rostering numbers are envisioned as follows:

### Provider Mix and Rostering Numbers

Depending on team size, a provider mix within the community team may comprise:

- 1,250–1,500 patients/1.0 full time equivalent (FTE)** (family physician (FP),
- An additional **800 patients/1.0 FTE** nurse practitioner (NP), and
- An additional **300–500 patients/1.0 FTE** registered nurse (RN).

Thus, each group of **one FP, one NP, and one RN** would roster **2,350–2,800 patients/clients**.

- Patients without a primary care provider may register with Patient Connect NL online or by phone to attach to a CCT when available.

## Data

Data on Patient Connect NL registrations were obtained from the Data and Information Services Department, NL Centre for Health Information.

Data on CCTs were obtained from Regional Health Authorities (RHAs).

## Results

Table 1. Patient Connect NL, 26 Sep 2022

Eastern Health (EH)	Central Health (CH)	Western Health (WH)	Labrador-Grenfell Health (LGH)	Total Registrations
24,559	1,249	1,872	430	28,110
Attached to Clinic				4,740

- There are 28,110 registrations on Patient Connect NL since it was first launched in EH in Dec 2021.
- It was available in other regions in Jun 2022.

Table 2. CCTs and Team-Based Clinics in NL, 6 Oct 2022

Team	Date Opened	Annual Budget	Expected Patient/Provider Ratio with FTEs
St. John's City Centre	29 Jun 2020	\$2.2M	9,000/11
St. John's East	17 Jan 2022	\$1.3M	7,750/8
St. John's West	24 Jan 2022	\$1.5M	7,750/8
Community Walk-In Clinic Mundy Pond	12 Jan 2022	\$1.5M	NA
Coast of Bays	TBD	\$2.3M	7,000/7.5
Health Hubs in Central	May 2020	\$1.8M	NA
Bay St. George	Jun 2022	\$2.0M	11,500/14
Northern Peninsula	Early 2023	\$0.5M	TBD
Happy Valley-Goose Bay	Early 2023	\$1.2M	TBD

- While CCTs were first established in St. John's metro, plans for CCTs are underway in other regions and rural EH.
- St. John's East and West CCTs currently avail of allied health providers at St. John's Center.

**Table 3. Rostering in Current CCTs**

Teams	Current Patient to Provider Ratio	Patients Wait-Listed
St. John's City Centre	3,325/9	5,052
St. John's East	2,110/7.5	2,461
St. John's West	1,807/7	3,205
Bay St. George	5,635/10	1,954

- The number of patients rostered to the teams above are not at the level indicated in Table 2 because the teams are new, providers have been hired over time, and patients have been gradually rostered. It will take a couple of years before teams roster the number of patients expected.

Additional initiatives in team-based care include:

- Primary Health Care redesign work in Southern Avalon, Burin Peninsula, Bonavista, Downtown Health Care Collaborative, and Botwood.
- CCTs planned for Clarenville, Conception Bay North, Corner Brook and Deer Lake.
- Primary Care Hub in Gander and Grand Falls-Windsor.
- Collaboration in Sheshatshiu with Innu First Nation.

## Conclusions

1. The province continues to invest in team-based primary health care.
2. Patient Connect NL is a useful tool in planning and improving access to primary health care.
3. Funding announced for CCTs in 2021/22 and 2022/23 was \$14M and plans are underway for additional CCTs to open in the province in early 2023.
4. A comprehensive provincial framework currently under development is required to propel this work forward.
5. The process of building a team, adding providers, and rostering the expected number of patients takes time. As such, it will take time for teams to function at the expected level.

# Quality and Accessibility of Early Childhood Education and Child Care in Newfoundland and Labrador

## Objective

To determine the general quality and accessibility of early childhood education and child care in Newfoundland and Labrador (NL).

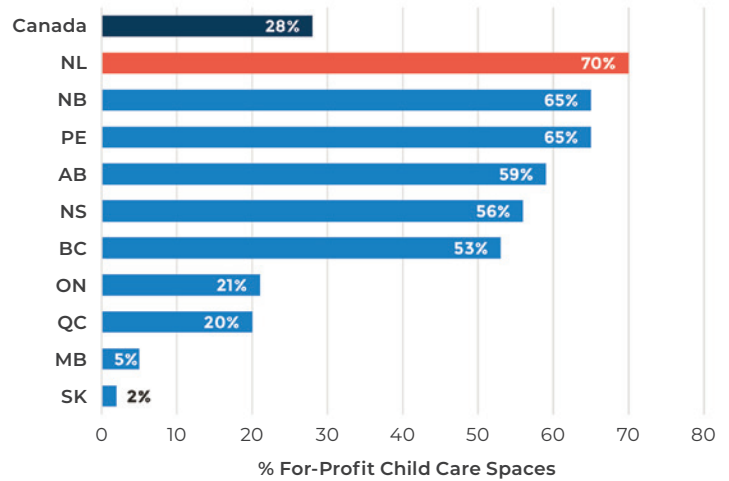
## Practice Points

1. Research conclusively demonstrates that good quality child care is beneficial for children while poor quality child care is detrimental.
2. Virtually all available research shows that for-profit operation is a key factor linked to poorer quality child care. Public and non-profit child care is significantly more likely to be better quality than for-profit child care, through its impact on program-related factors such as wages, working conditions, Early Childhood Educator (ECE) training, staff turnover, staff morale, staff/child ratios, and group size.
3. Evidence demonstrates that creating an adequate supply of accessible, equitable, and well-distributed early childhood education and child care services in a timely manner requires substantial public management of the process. Countries that have successfully developed accessible and equitable child care systems utilized public processes that ensure services are created where and when they are needed, similar to development of other community infrastructure, such as schools or roads.
4. A primary reason that accessibility of regulated child care is limited and inequitable in Canada is the reliance on the private market (non-profits and businesses) for decisions on creating and locating child care and early childhood education services, rather than utilizing a public process where the government takes responsibility.

## Data

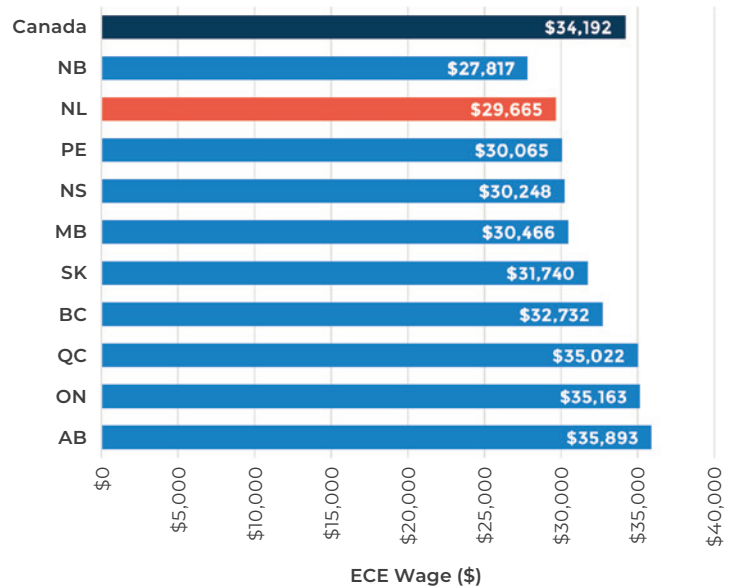
Data were obtained from the Early Childhood Education and Care in Canada 2019 report prepared by the Childcare Resource and Research Unit.

## Results



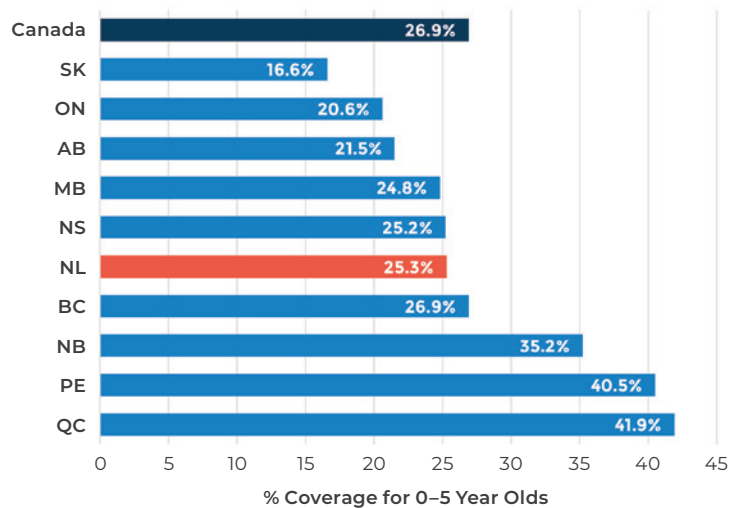
**Figure 1. Percent of Total Regulated Child Care Spaces Operated for Profit, 2019**

- Canadian child care overall is primarily not-for-profit but NL has the reverse pattern with the highest percentage of for-profit child care among all the provinces.



**Figure 2. Median Annual Full-Time Income for Early Childhood Educators and Assistants, 2015**

- Staff wages are a common indicator of child care quality. In 2015, NL had the second lowest wages for ECEs of all provinces, nearly 15% lower than the Canadian average.



**Figure 3. Percent of 0–5 Year Olds For Whom There is a Regulated Child Care Space Available, 2019**

- It is a characteristic of Canadian child care that the supply of regulated child care services is too limited to meet demand and is unevenly distributed and inequitable in terms of location, further limiting access for some underserved groups and rural communities.
- This pattern is also observed in NL, where there are regulated child care spaces available for only a quarter of preschool-aged children, which is slightly below the Canadian average.

## Conclusions

1. The high percentage of for-profit child care in NL and the low wages for ECEs in NL compared to other provinces indicate that child care in NL is likely lower quality than in other provinces in Canada.
2. For NL to most effectively address current problems with limited, inequitable early childhood education and child care accessibility, it should take a different approach than is the norm nationally, by systemically addressing it as a public responsibility, rather than continuing to rely on the private market to decide when and where to provide child care.



# Investigating Newfoundland and Labrador Primary Care Physicians' Knowledge of Basic Dental Care

## Practice Points

1. Most primary care physicians (PCPs) see patients for dental problems more than once a month; infection and pain are the most common presentations.
2. Most primary care physicians received <2 hours of education on dental problems during medical school and <2 hours during residency.
3. Most primary care physicians believe that dental problems should be within their scope of practice, and that there should be more formal education on dental care throughout medical training.

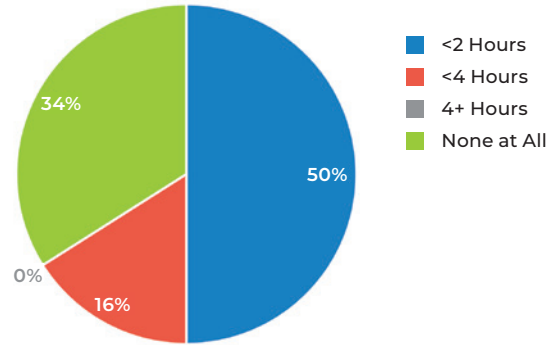


Figure 2. Hours of Formal Education on Dental Care During Residency

## Methods (PIs: J. Vokey, M. Price)

1. Informal interviews with multiple family physicians completed to gather background information to guide development of most relevant survey questions.
2. Anonymous standardized online questionnaire circulated to family physicians via the Newfoundland and Labrador Medical Association, the Family Practice Renewal Program, direct contact with community clinics, and by word of mouth.
3. Responses included linear numeric scales, frequency scales, and Likert scales.
4. Survey respondents had the opportunity to submit short answers when applicable.

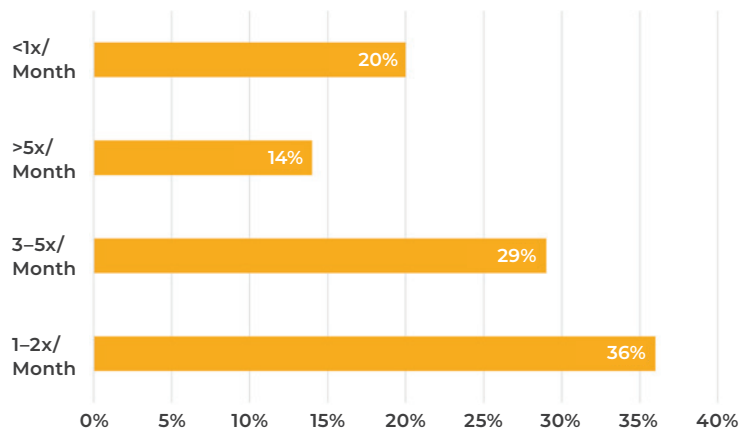


Figure 3. Frequency of Oral Health Concerns Presenting in Primary Care

## Results

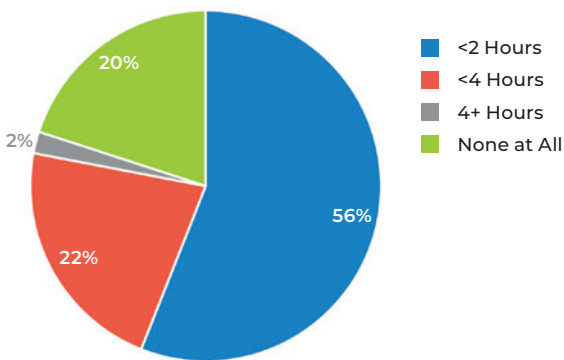


Figure 1. Hours of Formal Education on Dental Care During Medical School

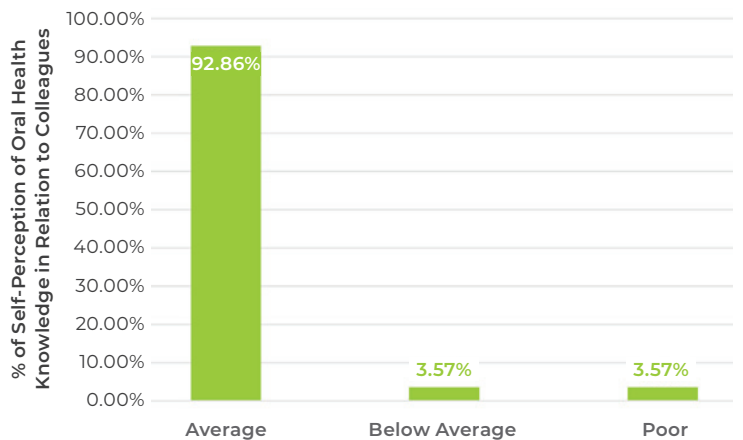


Figure 4. Self-Perception of Oral Health Knowledge in Relation to Colleagues

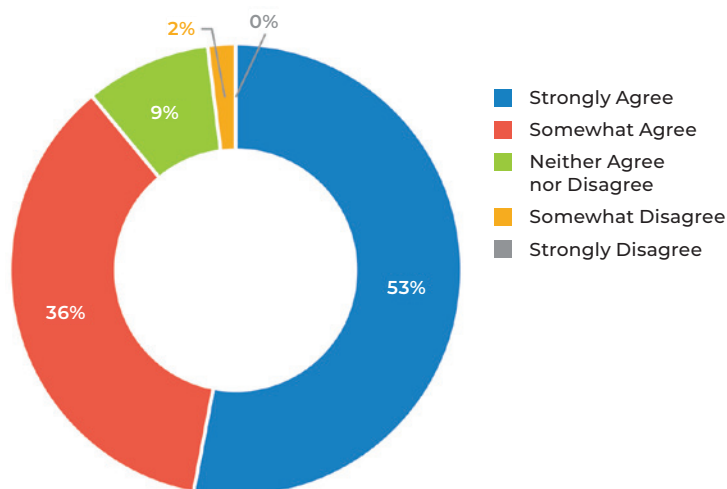


Figure 5. Should There Be More Formal Training in Dental Care for PCPs?

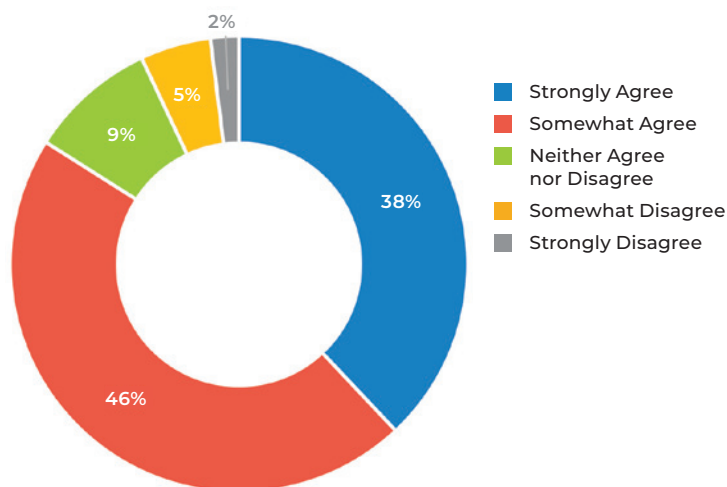


Figure 6. Should Dental Care be in the Scope of a PCP?

## Conclusion

1. Ideally, all Newfoundlanders and Labradorians would have affordable and timely access to a dentist. Although government is moving towards this, there may still be a large proportion of our population who will remain ineligible.
2. More education on dental care would benefit primary care providers and their patients. There is opportunity to add dental education at any stage of training.

# Choosing Wisely in Primary Care: Do Not Routinely Offer Imaging for Uncomplicated Low Back Pain

## Choosing Wisely Recommendation

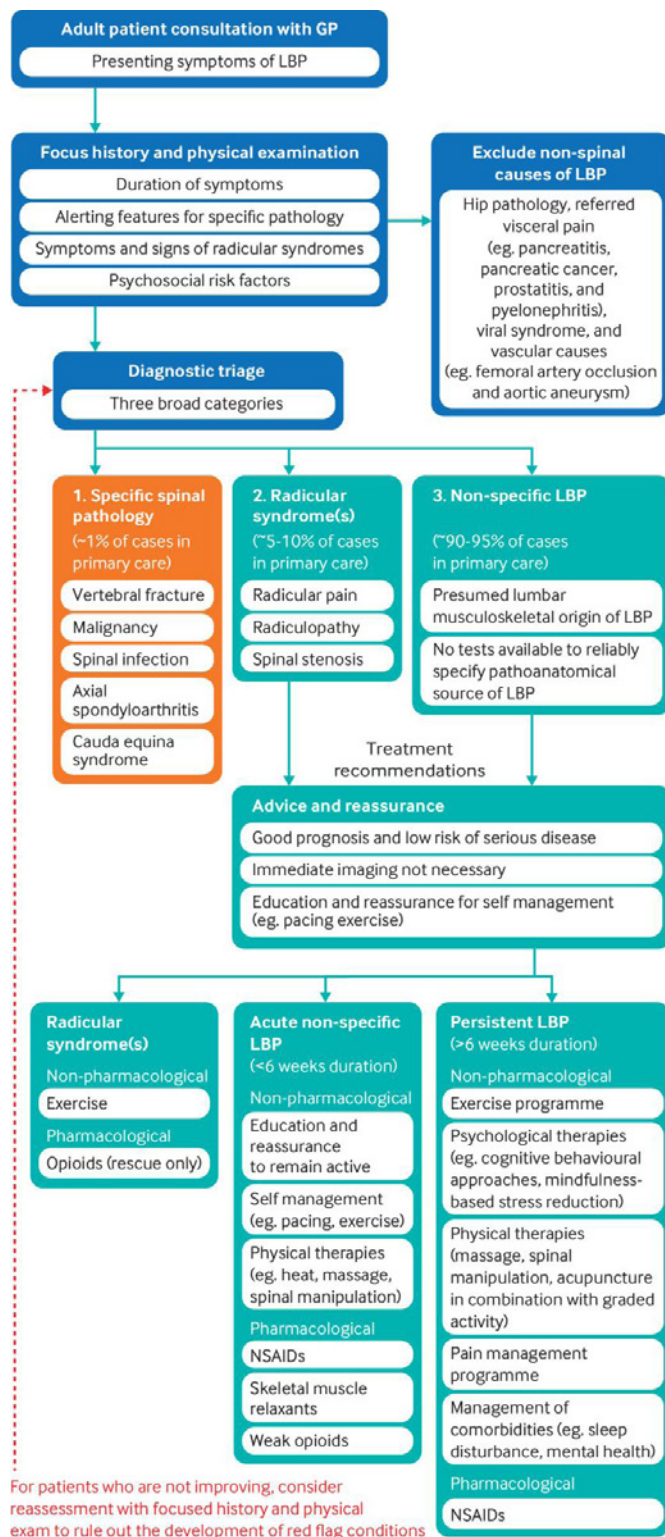
Don't routinely image patients with low back pain (LBP) regardless of the duration of symptoms unless: (a) there are clinical reasons to suspect serious underlying pathology (i.e., red flags), or (b) imaging is necessary for the planning and/or execution of a particular evidenced-based therapeutic intervention on a specific spinal condition.

## Practice Points

1. Research from the past two decades indicates that imaging patients with LBP isn't useful for 90–95% of LBP cases (called non-specific or uncomplicated LBP); it is useful only in the small subgroup of patients (5–10%) for whom there is suspicion of red flag conditions (e.g., cancer, infection, inflammatory disease, fracture, and severe neurological deficits).
2. Imaging rates for LBP should therefore be decreasing, but, in fact, imaging has increased over the past 20 years; approximately one third of all images are unnecessary.

## Methods (PI: A. Hall)

1. Evidence from randomized trials shows that imaging does not improve clinical outcomes and observational studies indicate that it may do more harm than good. When serious conditions are not suspected it is likely to prolong recovery in patients with non-specific LBP and increase work absence and unnecessary use of health services.
2. Recent systematic reviews show that physicians over-order to accommodate patient requests, because they believe it will reassure their patients, or because they don't have the time to explain and justify why images are not necessary.
3. Systematic reviews of surveys and interviews suggest that about half of patients expect imaging from their health provider because they believe it can help rule out a sinister cause for the pain. Some patients also mistakenly believe that imaging can better identify the cause of their pain than their physicians' physical exam or that the results of the imaging will inform a tailored treatment plan.



LBP = low back pain, NSAIDs = non-steroidal anti-inflammatory drugs

**Figure 1. Visual Aid For Conducting Diagnostic Triage in Patients With LBP (Originally Reported by Bardin et al. and Traegar et al.)**

Alerting features	Diagnosis and prevalence	Image type	Timing
<ul style="list-style-type: none"> <li>Older age (&gt;65 years for men, &gt;75 years for women)</li> <li>Prolonged corticosteroid use</li> <li>Severe trauma</li> <li>Presence of contusion or abrasion</li> </ul>	Vertebral fracture 0.7% - 4.5%	X ray possible CT scan	<ul style="list-style-type: none"> <li>Major risk: immediate</li> <li>Minor risk: 1 month "watch and wait"</li> </ul>
<ul style="list-style-type: none"> <li>History of malignancy</li> <li>Strong clinical suspicion</li> <li>Unexplained weight loss, &gt;50 years</li> </ul>	Malignancy 0.2%	X ray and MRI	<ul style="list-style-type: none"> <li>Major risk: immediate</li> <li>Minor risk: delay</li> </ul>
<ul style="list-style-type: none"> <li>Fever or chills</li> <li>Immune compromised patient</li> <li>Pain at rest or at night</li> <li>Intravenous drug user</li> <li>Recent injury, dental or spine procedure</li> </ul>	Spinal infection 0.01%	X ray and MRI	Immediate
<ul style="list-style-type: none"> <li>New bowel or bladder dysfunction</li> <li>Perineal numbness or saddle anaesthesia</li> <li>Persistent or progressive lower motor neuron changes</li> </ul>	Cauda equina syndrome 0.04%	MRI	Immediate
<ul style="list-style-type: none"> <li>Progressive lower limb motor weakness</li> <li>Motor deficits at multiple levels</li> </ul>	Severe neurologic deficits	MRI	Immediate
<p>Chronic back pain (&gt;3 months' duration), with back pain onset before 45 years of age and one or more of the following</p> <ul style="list-style-type: none"> <li>Inflammatory back pain with at least 4 of: <ul style="list-style-type: none"> <li>- Age of onset 40 years or younger</li> <li>- Insidious onset</li> <li>- Improvement with exercise</li> <li>- No improvement with rest</li> <li>- Pain at night - with improvement when getting up</li> </ul> </li> <li>Peripheral manifestations (in particular arthritis, enthesitis, or dactylitis)</li> <li>Extra-articular manifestation (psoriasis, inflammatory bowel disease, or uveitis)</li> <li>Positive family history of spondyloarthritis</li> <li>Good response to NSAIDs</li> </ul>	Axial spondyloarthritis 0.1% - 1.4%	Refer to rheumatologist if strong suspicion of axial spondyloarthritis	

Alerting features	Diagnosis and prevalence	Image type	Timing
<ul style="list-style-type: none"> <li>Back pain with leg pain in an L4, L5, or S1 nerve root distribution</li> <li>Positive result on straight leg raise or crossed straight leg raise twist</li> </ul>	Radicular pain or radiculopathy	Consider MRI in patients who are candidates for surgery	Defer work up until a trial of therapy has been completed
<ul style="list-style-type: none"> <li>Bilateral buttock, thigh, or leg pain</li> <li>Older age</li> <li>Pseudoclaudication</li> </ul>	Spinal canal stenosis	Consider MRI in patients who are candidates for surgery	Defer work up until a trial of therapy has been completed

CT = computed tomography, MRI = magnetic resonance imaging, NSAIDs = non-steroidal anti-inflammatory drugs  
 BMJ 2021;372:n291 doi: <https://doi.org/10.1136/bmj.n291> (Published 12 February 2021)

**Figure 2. Supplemental Decision Support Tool to Help Clinicians Identify the Small Group of Patients That Present With Suspected Red Flag Conditions**

## Results/Conclusions

Practice changes in four key areas are required to reduce imaging:

1. Diagnostic triage and management: Conducting a more thorough diagnostic triage will help clinicians better discern which patients fall into the non-specific LBP category.
2. Patient education: Clinicians should reassure patients that imaging is not required and provide self-management advice. Some key points to cover with patients to help with this task:
  - ◇ Most cases of LBP are simple strains and sprains of the back and improve rapidly just like a sprained ankle.
  - ◇ Imaging does not usually help to find the cause of the LBP or guide treatment. The treatment for most cases of LBP is the same with or without imaging.
  - ◇ Unnecessary imaging has risks like delayed recovery, radiation exposure, and unnecessary surgery.
  - ◇ Most imaging “findings” are indications of normal aging like grey hair and wrinkles and occur in patients without back pain so their relevance is unclear.
3. Communication style – four key physician behaviours can help patients feel reassured:
  - ◇ Summarize a patients’ medical history and conduct a thorough assessment to instill confidence that you have a firm grasp on the situation.
  - ◇ Demonstrate empathy and communicate your qualifications and experience to help patients feel that they are seeing the right professional for the job.
  - ◇ Recognize patients’ distress and avoid reductive statements like “nothing to worry about.”
  - ◇ Explain the likely cause(s) of LBP and provide a clear management plan.
4. Monitoring: Regular evaluation of image ordering practices and LBP outcomes relative to peers can provide reassurance to clinicians that any reductions in image-ordering have not resulted in patient harm.

See full published article at: <https://www.bmj.com/content/372/bmj.n291>

# Antimicrobial Stewardship Audits in Central Health: De-Escalation of Meropenem

## Choosing Wisely Canada Recommendation

Don't start or prolong broad-spectrum antibiotic treatment unless clinically indicated.

## Objective

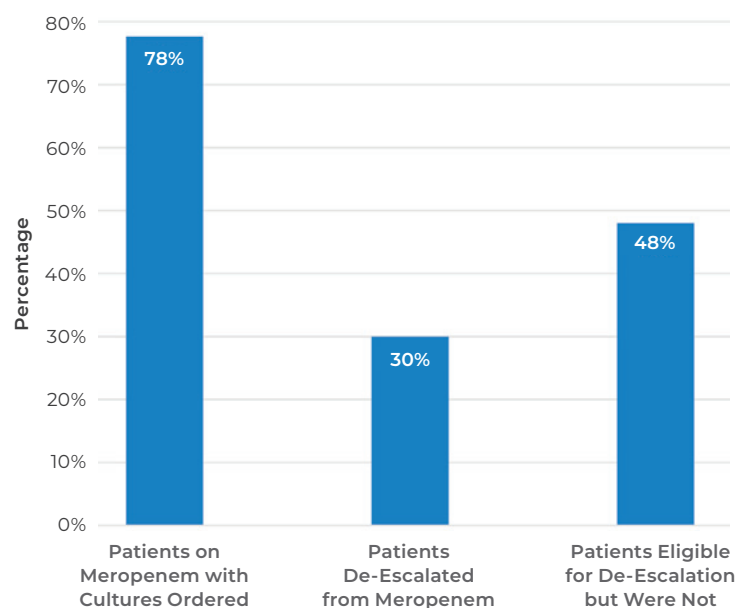
Interventions such as audit and feedback are core elements of hospital antimicrobial stewardship programs. Central Health (CH) performed an audit on antibiotic de-escalation of meropenem.

## Practice Points

1. De-escalation is the process whereby the empiric antibiotic(s) are stopped or narrowed in spectrum of activity based on antimicrobial susceptibility testing reports. This typically occurs on about the third day of antimicrobial therapy. De-escalation aims to reduce selection of antimicrobial resistant bacterial flora by lowering antibiotic pressure, reduce risk of adverse drug effects and decrease costs.
2. Meropenem is an antimicrobial with activity against *P. aeruginosa* and extended spectrum beta-lactamase (ESBL)-producing organisms. It is frequently used for severe bacterial infections such as pneumonia, febrile neutropenia, intra-abdominal infection, urinary tract infection, and polymicrobial skin and soft tissue infections. Since it possesses a broad spectrum of activity, meropenem is used extensively as empirical therapy for life-threatening infections and should be immediately de-escalated if the identified pathogen does not require such treatment or stopped if the illness process is found to be non-infectious in nature.
3. Inappropriate use of broad-spectrum antimicrobials such as meropenem can be reduced without harming patient outcomes.

## Methods (J. Bautista and N. Power)

A one-year audit (Jan 1 – Dec 31, 2020) was conducted on all adult, non-obstetrical inpatients at all Central Health facilities to determine: 1) if bacterial culture and susceptibility (C&S) testing was ordered on those patients prescribed meropenem and 2) if meropenem was de-escalated based on C&S results.



**Figure 1. Meropenem De-Escalation Audit Results 2020 (n=94)**

- A total of 94 patients were ordered meropenem during the audit period. Of these, 73 patients (78%) had bacterial C&S tests ordered. Of the 73, 28 patients (30% total) had meropenem narrowed to more targeted therapy (e.g., ciprofloxacin and metronidazole) or had meropenem discontinued following the reporting of C&S testing results and 45 patients (48%) could have had meropenem de-escalated or discontinued based on C&S testing results.

## Conclusions

1. Patients for whom broad-spectrum antibiotics such as meropenem are being prescribed should have bacterial C&S collected to allow for potential de-escalation to targeted narrower-spectrum antibiotics or discontinuation of antibiotics. This audit revealed broad-spectrum antibiotic use without concomitant culture occurs in more than 20% of cases in the context of meropenem use. This is suboptimal from an antimicrobial stewardship and medical care perspective.
2. The observed rate of infections which exclusively require meropenem in CH is low. This is a useful factor when considering empiric antibiotic therapy.
3. This audit showed that de-escalation following empirical treatment with meropenem represents a significant opportunity for improvement in antibiotic use. Due to specific patient history and clinical presentation, it is acknowledged that meropenem may have been an appropriate agent, despite the C&S results reported. However, identification of reasons that led clinicians to forego de-escalation in context where microbiological C&S results support it was beyond the scope of this audit.
4. Prescribers are encouraged to utilize available local antimicrobial susceptibility patterns to select empiric treatment regimen.
5. Prospective audit and feedback to prescribers is a type of antimicrobial stewardship initiative that could improve antibiotic use in CH.

# Patterns in Pre-Operative Testing for Low-Risk Surgery During a Medical Directive and COVID-19

## Choosing Wisely Canada Recommendation

Don't perform standard baseline laboratory studies, electrocardiogram, or chest x-ray for asymptomatic pre-operative patients undergoing low-risk, non-cardiac surgery.

## Methods

1. In 2016, Choosing Wisely Newfoundland and Labrador (CWNL) identified pre-op testing for low-risk surgeries as an area of low-value care and adopted the “Drop the Pre-op” campaign.
2. In January 2017, a medical directive was rolled out in two Eastern Health (EH) hospitals, St. Clare’s Mercy Hospital (SCMH) and the Health Sciences Centre (HSC).
3. In February/March 2020, COVID-19 forced restrictions on hospitals and clinics throughout the province.
4. In order to examine the effect of pre-operative testing patterns during both the medical directive and COVID-19 restrictions, rates of four pre-operative tests (Creatinine (CR), International Normalized Ratio (INR), Hemoglobin (Hb) and Chest X-Ray) were calculated from Apr 2016 to Feb 2021.

### HSC

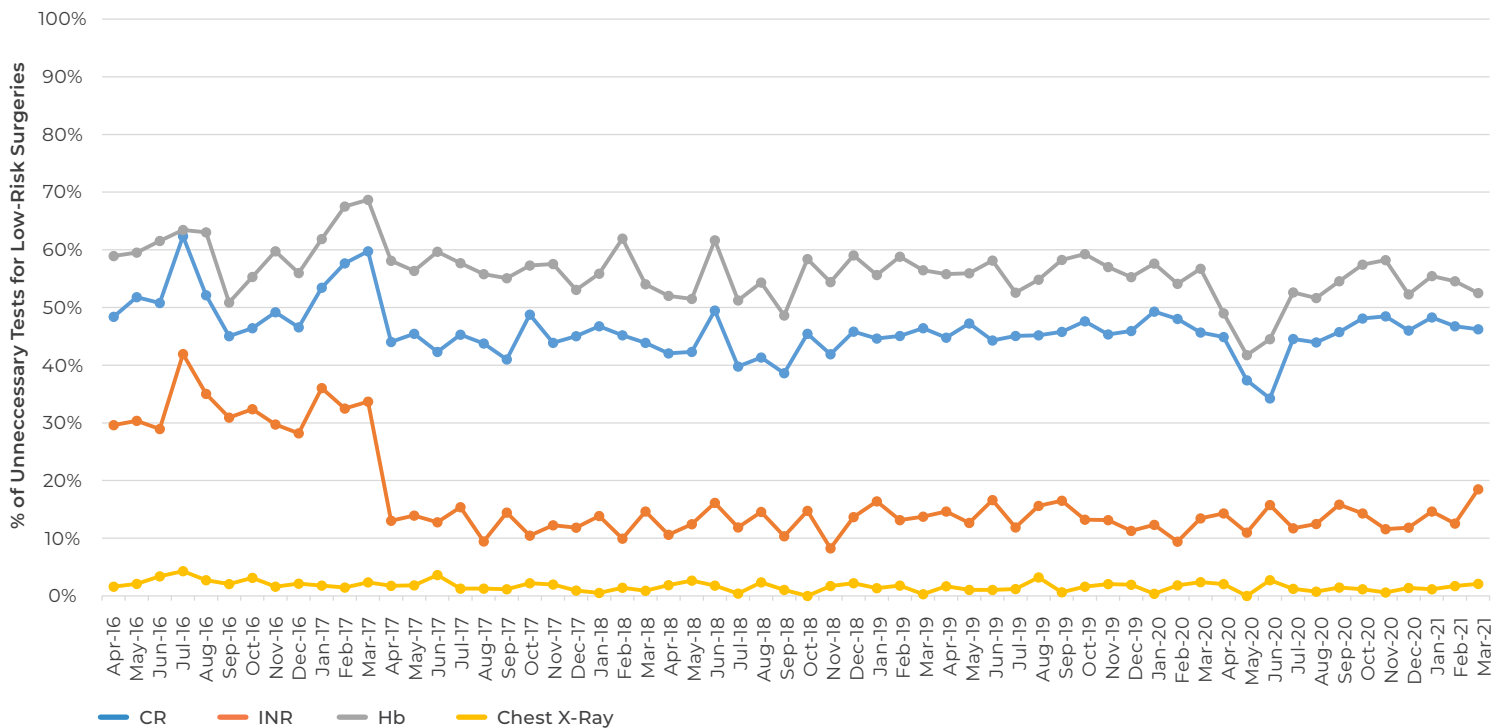


Figure 1. Rates of Pre-operative Tests for Low-Risk Surgeries at the HSC, Apr 2016 – Feb 2021



SCMH

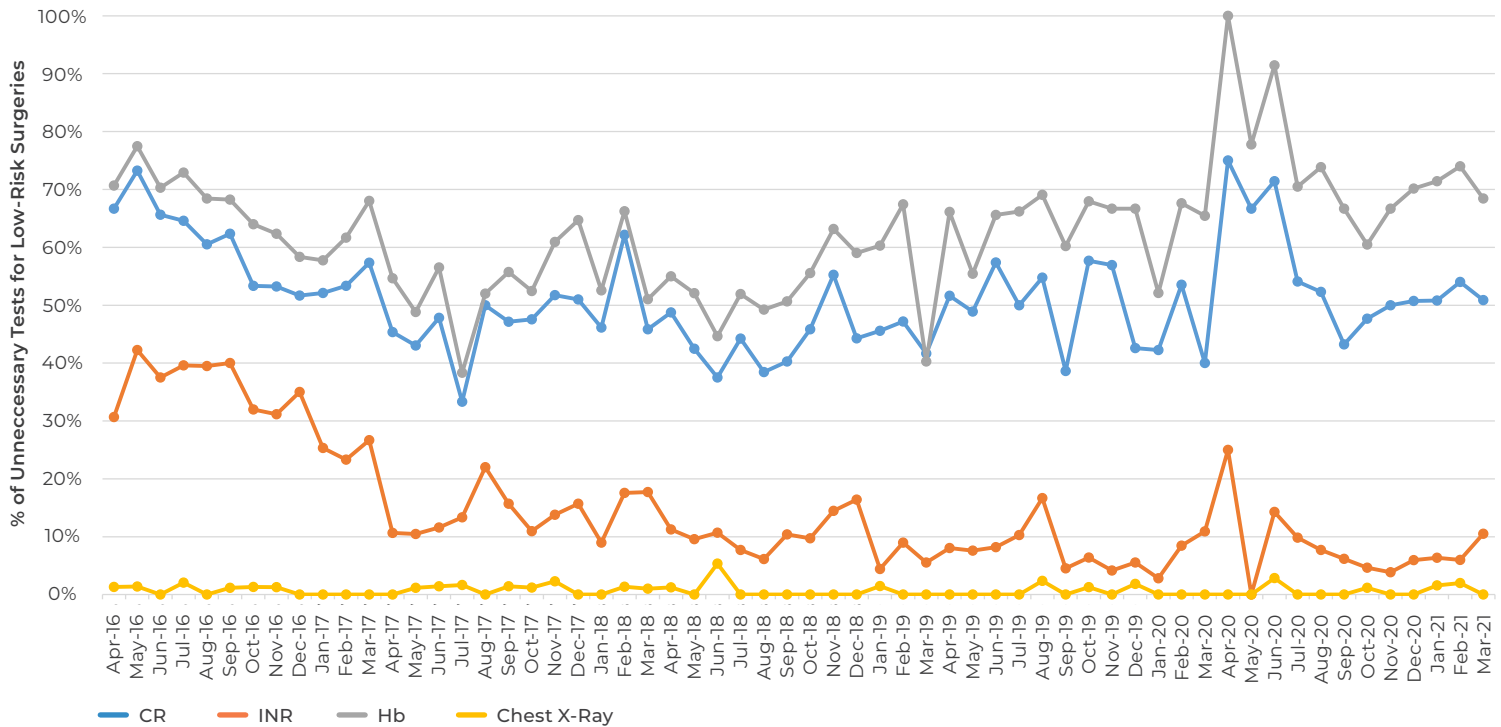


Figure 2. Rates of Pre-operative Tests for Low-Risk Surgeries at SCMH, Apr 2016 – Feb 2021

Results

- Testing patterns differed by hospital during both the medical directive and COVID-19 restrictions.
- At the HSC, there was a significant and sustained decrease in CR (14% absolute reduction), INR (19% absolute reduction) and Hb (12% absolute reduction) testing immediately following the medical directive (first quarter of 2017).
- At SCMH, there was a gradual reduction in CR (19% absolute reduction), INR (12% absolute reduction) and Hb (13% absolute reduction) testing in the months following the medical directive roll out (first two quarters of 2017).
- At the HSC, all tests decreased significantly during COVID-19 restrictions (Mar 2020) and then returned to previous rates by Jul 2020.
- At SCMH, testing decreased during COVID-19 restrictions, followed by an increase in testing rates from April – July 2020.

Conclusions

1. The response to the medical directive to follow Choosing Wisely Canada guidelines regarding pre-operative testing for low-risk surgeries resulted in clinically significant reductions in most tests at both the HSC and SCMH.
2. The patterns of pre-operative testing during COVID-19 restrictions were variable with reductions at HSC and increased rates at SCMH.

# Emergency Surgery by Season in Small Hospitals in Newfoundland and Labrador

## Objective

To identify the volume and type of emergency surgeries provided in small hospitals by season.

## Practice Points

1. Timeliness of emergency surgery can have impacts on patient outcomes, with patients who wait longer than urgency-based defined intervals experiencing worse outcomes.
2. Many factors can contribute to delays in emergency surgery, including travel time to a facility where the surgery can be performed. In Newfoundland and Labrador (NL), travel can be difficult in winter due to weather causing road closures or delays.

## Methods

1. Data on inpatient procedures and emergency department visits for 2019/20 were provided by Newfoundland and Labrador Centre for Health Information (NLCHI) and analyzed by the Harris Centre.
2. Emergency surgery was defined as not-low-risk surgery for which there was an acute admission and the patient had an Emergency Department (ED) visit on the same date as the surgery. Procedures were classified as low-risk using predetermined codes that signify pre-operative testing is unnecessary, with the remaining defined as not-low-risk.

## Results

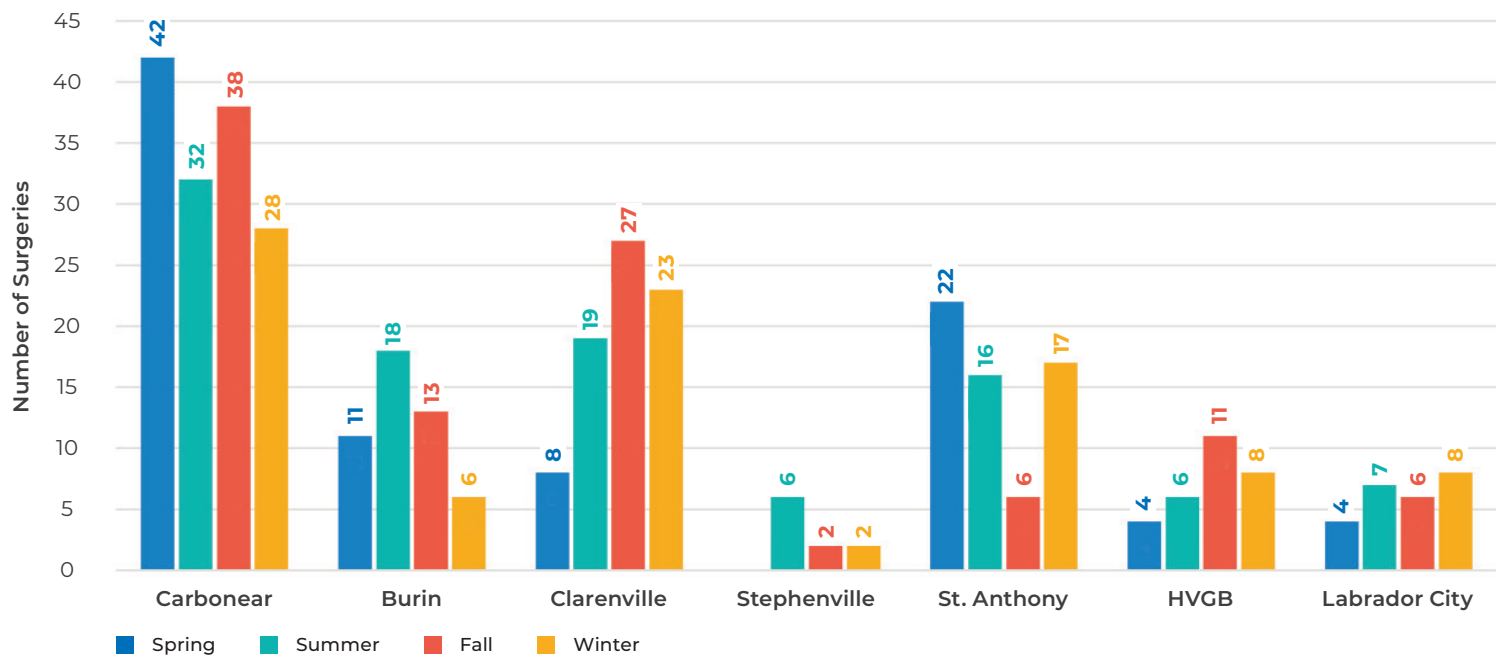
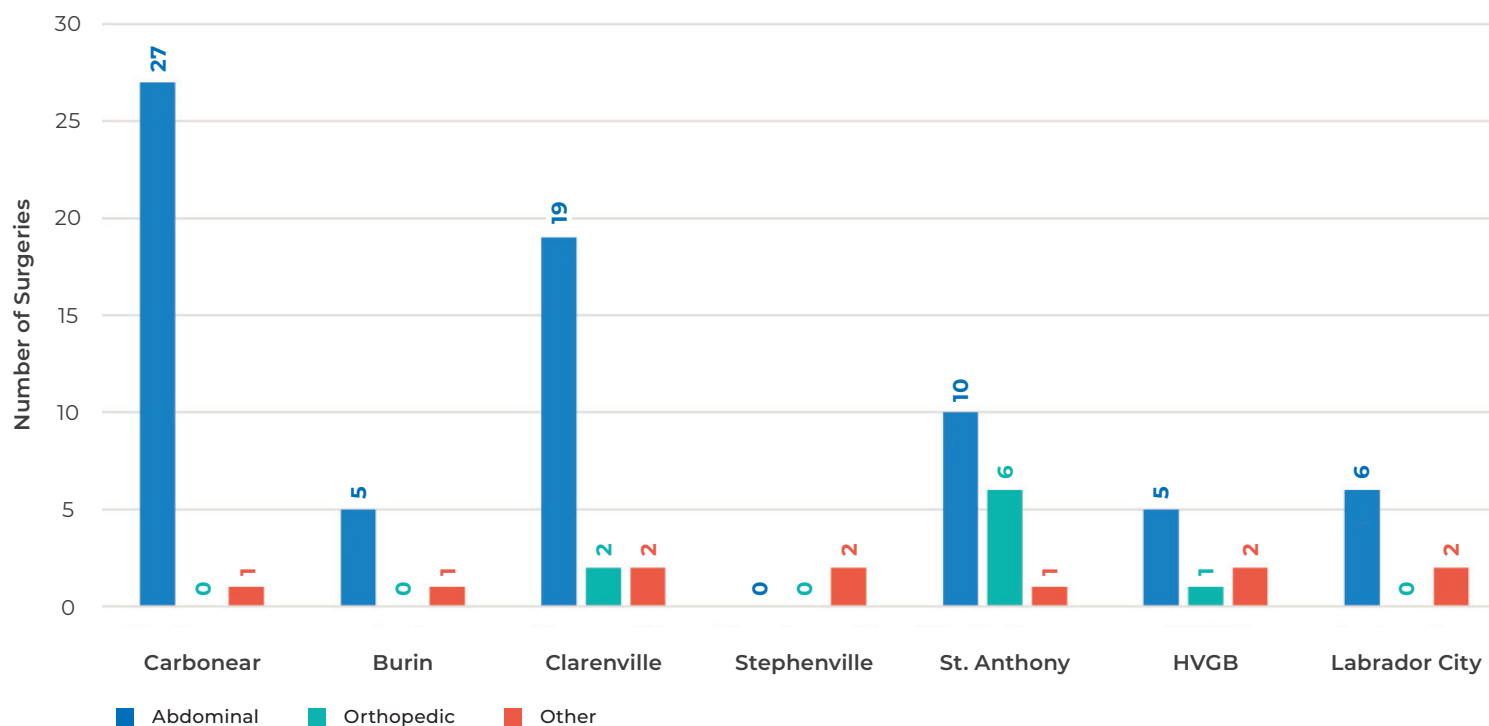


Figure 1. Number of Emergency Surgeries Performed in Small Hospitals During Each Season

- Over 4,000 emergency surgeries were performed in NL in 2019/20, with less than 10% in small hospitals.
- The number of emergency surgeries performed in small hospitals in the winter is low, with no increase compared to other seasons, even though transportation to another facility in winter may be more challenging.



**Figure 2. Number of Emergency Surgeries by Type Performed in Winter in Small Hospitals**

- The majority of all emergency surgeries performed in small hospitals in winter are abdominal surgeries, which are generally less time-critical than other types of surgery that are performed on an emergency basis

## Conclusions

1. Very few emergency surgeries are performed in small hospitals, and those that are, are primarily abdominal surgeries.
2. Patients requiring types of emergency surgery other than abdominal surgery, which can be more time-critical, are already being transported to larger regional or tertiary hospitals for care, as these are not currently being performed in small hospitals.
3. This suggests that transportation challenges, particularly due to winter weather, are not a critical factor for planning future locations of surgical services, as the few emergency surgeries currently conducted in small hospitals are less urgent and can usually be managed with a few hours delay before surgery without significant impact on patient outcomes.

# Improving Access and Efficiency of Ischemic Stroke Treatment Across Four Canadian Provinces Using a Stepped Wedge Trial

## Background

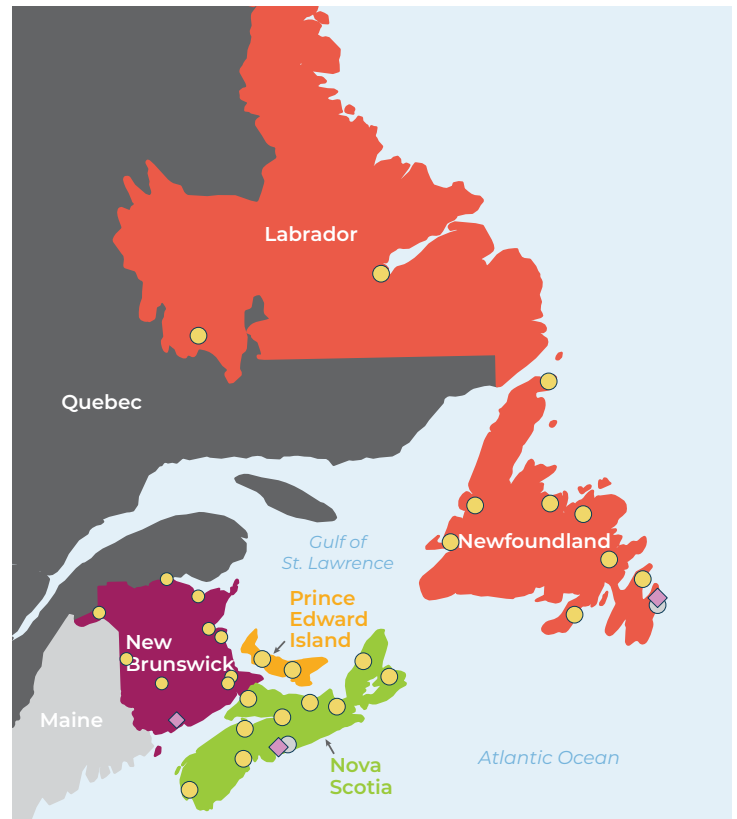
Ischemic stroke is treatable with thrombolysis and/or endovascular treatment (EVT). Both treatments are highly time dependent, as faster treatment results in better outcomes—approximately 1.9 million neurons are lost every minute. Utilization of both of these treatments is less than optimal, and treatment times continue to exceed the recommended benchmarks.

An improvement intervention was launched across Atlantic Canada, which has four provinces: Nova Scotia (NS), New Brunswick (NB), Prince Edward Island (PE), and Newfoundland and Labrador (NL). The intervention was conducted through the Atlantic Canada Together Enhancing Acute Stroke Treatment (ACTEAST) Project, which aimed to improve access and efficiency of treatment for acute ischemic stroke patients.

**Table 1. Population and Geographic Size of Each of the Canadian Atlantic Provinces**

	NS	NB	PE	NL
<b>Population (2022 Estimate)</b>	1,002,586	797,102	166,331	522,453
<b>Size (km<sup>2</sup>)</b>	55,284	72,907	5,660	405,720
<b>Number of Primary Stroke Centres</b>	9	9	2	10
<b>Number of Comprehensive Stroke Centres</b>	1	1	0	1*
<b>Number of Alteplase Capable Centres (Bypass)</b>	1	0	0	1

\* The Comprehensive Stroke Centre (CSC) in NL began performing EVT treatment on June 20, 2022



- ◆ Comprehensive Stroke Centre
- Primary Stroke Centre
- Alteplase Capable Centre (Bypass)

**Figure 1. Location of all Primary Stroke Centres and Comprehensive Stroke Centres in Atlantic Canada**

## Improvement Collaborative Intervention

The Improvement Collaborative for the ACTEAST project was modified from the IHI Breakthrough Series Collaborative model. The entire process was six months in length. There were two Learning Session/Action Periods. Each Learning Session was 1-day long. Additionally, all Learning Sessions and site visits were conducted virtually due to COVID-19 restrictions with the exception of one Learning Session for one cluster that used a hybrid delivery, which will be elaborated on in the next section.

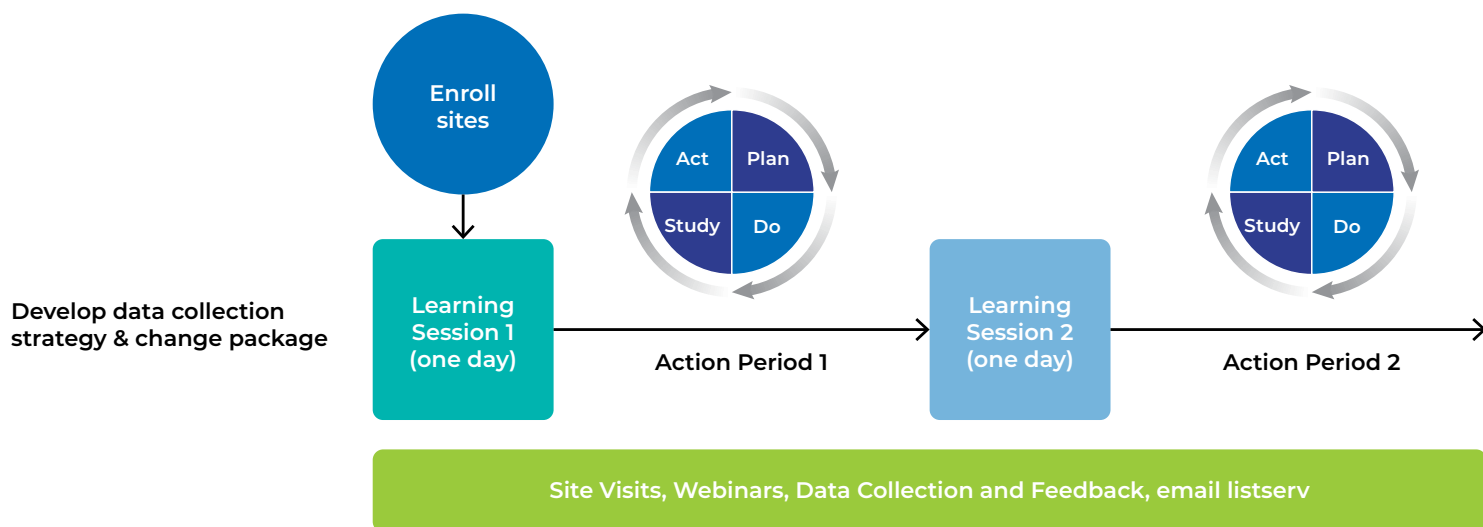


Figure 2. Improvement Collaborative Intervention for ACTEAST project

## Objectives

The primary objective for the ACTEAST project is to **increase the proportion of ischemic stroke patients that receive either thrombolysis or EVT by 5%.**

The secondary objectives are as follows:

1. To reduce the median door-to-needle time (DNT) of all patients treated with alteplase or Tenecteplase.
2. To increase the proportion of all ischemic stroke patients that are discharged home from acute care.
3. To increase the proportion of all treated ischemic stroke patients that are discharged home from acute care.
4. To reduce the hospital length of stay for all ischemic stroke patients.
5. To reduce the hospital length of stay for all treated ischemic stroke patients.
6. To reduce the door-in-door-out times for all patients transferred for EVT.
7. To reduce the door-to-groin-puncture times for all EVT treated patients.
8. To reduce the time to treatment from first medical contact (911 call).

## Stepped Wedge Trial

The evaluation of this Improvement Collaborative intervention will be conducted through a stepped wedge trial. In this trial, all sites will be assigned to a group or cluster. Each cluster will go through the intervention at different times. Prior to going through the intervention, all clusters are in the control phase, while after the intervention, all clusters will have the intervention fully implemented. The intervention is 6 months in length, and it is the Improvement Collaborative described generally above. In Table 2, the orange areas show the “control” periods where the intervention has not yet started, and the green areas show the periods after intervention has been completed. The data collected in the orange and the green phases will be analyzed, and data during the implementation phase will be excluded.

There are three clusters in this stepped wedge trial, and the 6-month Improvement Collaborative intervention will be delivered in phases from Nov 2020 to Apr 2022. The first cluster will include all participating sites in the province of NS. Once this cluster ends, the second cluster will immediately begin, and it includes all participating sites in the provinces of NB and PE. The final cluster includes all participating sites in NL.

**Table 2. Stepped Wedge Trial for ACTEAST Project**

Sites	Cluster 1 (NS)	Cluster 2 (NB, PEI)	Cluster 3 (NL)
Lead in Phase (May/20 – Oct/20)	Retrospective Data Collection	Retrospective Data Collection	Retrospective Data Collection
Phase 1 (Nov/20 – Apr/21)	Intervention	No	No
Phase 2 (May/21 – Oct/21)	Yes	Intervention	No
Phase 3 (Nov/21 – Apr/22)	Yes	Yes	Intervention
Phase 4 (May/22 – Oct/22)	Yes	Yes	Yes

- The orange periods show the time periods prior to the intervention. The green periods show the time periods after the intervention. The yellow shows the 6-month period for the Improvement Collaborative intervention.

## Engagement Results (PI: Dr. N. Kamal, Dalhousie University)

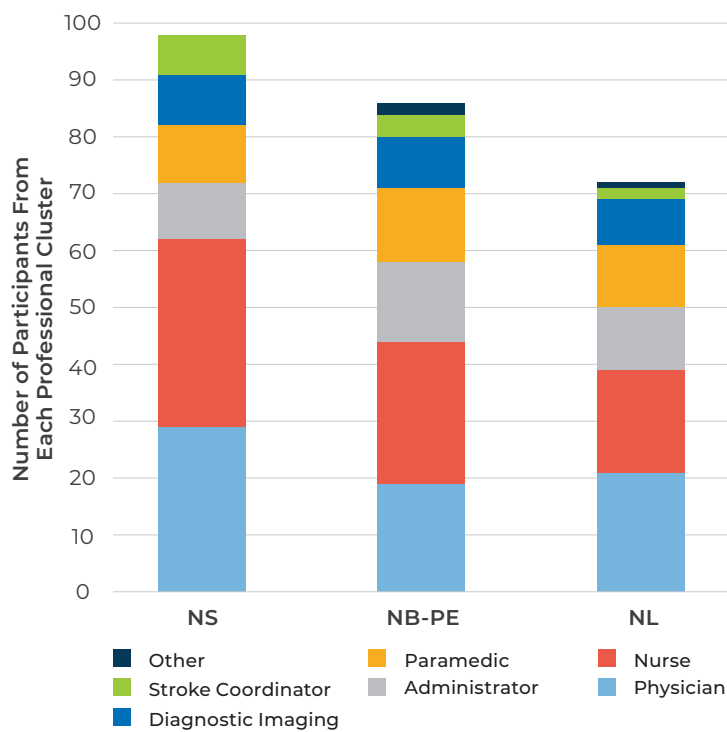
There was a high level of engagement across all three clusters with a high level of physician engagement.

**Table 3. Summary of Engagement Across All Three Clusters for Each Component of the Improvement Collaborative**

Component	NS	NB-PE	NL
Percent of Stroke Centres Participating*	91%	100%	100%**
Total number of participants	98	86	72
Total number of teams	11	12	9
Mean number of participants per team (SD)	8.6 (3.17)	7.7 (3.00)	7.9 (2.85)
Attendance at Learning Session 1	81	73	46
Attendance at Learning Session 2	60	43	50
Number of Webinars	6	5	5
Mean attendance at webinars (SD)	29.0 (6.8)	26.0 (6.3)	19.0 (8.5)
Mean attendance at site visits (SD)	8.8 (4.5)	7.0 (2.8)	8.3 (5.7)

\*including tPA capable bypass centres

\*\*one team withdrew halfway through the Improvement Collaborative



**Figure 3. Number of Participants From Each Professional Group for Each Cluster in NS, NB, PE, and NL**

## Anticipated Results and Benefit

The health impacts of ACTEAST includes both health status (less disability) and determinants of health (efficiency, effectiveness, and appropriateness). The estimated benefit is an additional 7–15% of ischemic stroke patients will gain functional independence. This increase translates to 260 to 550 more patients every year will be able to return home after their stroke in Atlantic Canada. These benefits will be especially apparent in rural and remote communities, which are presently underserved. Additionally, stroke is a very expensive disease, as patients often require lengthy stays in hospital for rehabilitation, which will be reduced through the objectives of the ACTEAST project. If more patients can access efficient treatment, there will be significant cost avoidance to the health system across Atlantic Canada. Based on studies estimating the cost of treatment by stroke outcomes, approximately \$7.8 million per year in health care costs will be avoided across Atlantic Canada, based on an additional 260 patients being able to return home with no disability. This significant potential rate of return on a relatively small investment in a short time frame is unsurpassed by any treatment that is currently available to patients.

# The Use of Urinary Catheters in Eastern Health

## Choosing Wisely Canada Recommendation

Do not insert an indwelling urinary catheter or leave it in place without daily assessment.

## Practice Points

1. Indwelling urinary catheters among hospital patients lead to preventable harms such as urinary tract infection, sepsis, and delirium.
2. Indications for catheter include acute urinary obstruction, critical illness, and end-of-life care.
3. Guidelines regarding inappropriate urinary catheter use have reduced health care-associated urinary tract infections in other jurisdictions.

## Data

Daily urinary catheter use and number of beds occupied was obtained from NL Centre for Health Information for the hospitals in Eastern Health (EH) for 2018 and 2019 by ward.

## Results

### Legend for Figures 1-2

NMED = Medicine	SCU = Special Care Unit	N = North
NS = Neuro Surgery	VICU = Cardiovascular Intensive Care Unit	S = South
U = Urology	SSCU = Surgical Special Care Unit	E = East
ORT = Orthopaedic Surgery	VSCU = Vascular Special Care Unit	W = West

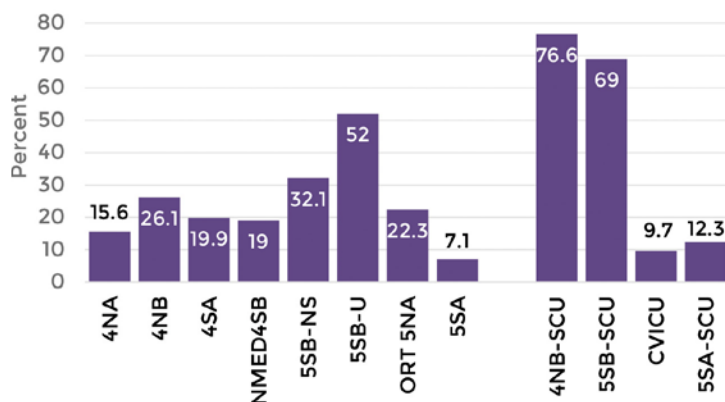
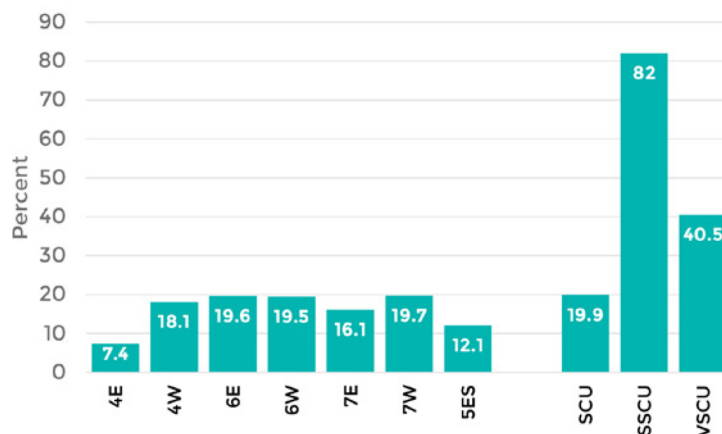


Figure 1. Urinary Catheter Use as Percent of Beds Occupied in Health Sciences Centre (HSC) by Ward and Special Care Unit



\* As anticipated the highest rates were in Surgery and SV Special care units.

Figure 2. Urinary Catheter Use as Percent of Beds Occupied in St Clare's Hospital by Ward and Special Care Unit

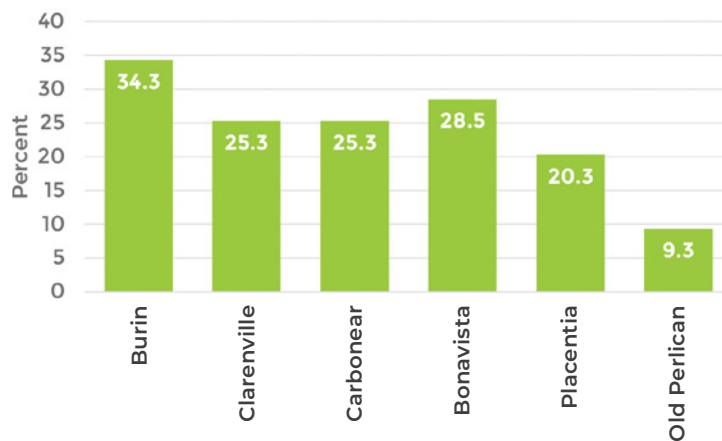


Figure 3. Urinary Catheter Use as Percent of Beds Occupied in the Medical/Surgical Beds of the Peninsular Hospitals and Health Centres of EH

## Conclusion

Given the high rate of catheter use, an intervention such as guidelines to reduce inappropriate urinary catheter use should be introduced in all hospitals.

# Development of a Comprehensive Seniors Care Program for Newfoundland and Labrador

## Objectives

To demonstrate how implementation of a comprehensive seniors care program for Newfoundland and Labrador (NL) can occur.

## Practice Points

1. The number of persons >65 years of age in NL has more than doubled over the past 30 years and will continue to increase over the next 20 years.
2. Twenty-three percent of the NL population is >65 years of age (over 120,000 people).
3. Over 1/4 of the population in NL aged >65 years is considered frail.
4. Prevalence of frailty in acute care in this province is higher than the national average, with 80% of individuals >65 years who are admitted to hospitals being vulnerable or frail.
5. Frail elderly are the highest users of acute care.
6. Patients who do not require the level of intensity of services provided in an acute care hospital occupy 20% of all acute care beds (300 acute care beds per day).

## Data

Health Accord NL provided a blueprint for implementation of a seniors care program focused on frailty. The committee for the aging population wrote this blueprint. The health transformation team in government has communicated with stakeholders to determine alignment of proposals.

## Results

- There are several key components required for the creation of a comprehensive seniors care program.

### Planning and Quality

A senior's secretariat to support a ministerial committee for seniors, a component of which will include the provincial seniors care program;

A strategic framework for the provincial seniors care program (frail elderly focus) with input from geriatricians and clinical leaders;

Seniors care program in the strategic directions of government (health and community services) for the 2023–2026 strategic planning cycle;

Administrative structure and strategy necessary (e.g., program director, administration, resources, and connections to all clinical areas); and

Clear public outcome/performance reporting on quality of care (using a seniors' lens).

### Community Teams

Community-based regional frailty referral networks as community teams are established and practitioners are trained;

Clinical and social navigators;

A person-centered model of care instead of an institutional-based model;

Process for the identification of elderly living with or at risk of frailty;

Resident Assessment Instrument-Home Care (RAI-HC) and other complementary assessments (e.g., the Comprehensive Geriatric Assessment (CGA) utilization);

Standardized care pathways based on comprehensive assessments;

Community level rapid response teams to address early symptoms of frailty; and

Provincial focus to addressing polypharmacy for seniors.



## Hospitals

A senior-friendly care framework for all hospitals and centres of excellence on aging that encompass the continuum of care in Western Health (WH), Central Health (CH) and Eastern Health (EH) regions and a program for Labrador Grenfell-Health (LGH).

Provincial tertiary care team and seniors care (frail elderly) unit in St. John's to care for complex frailty cases referred by the regional networks. Seniors care units (frail elderly) in CH and WH, and a similar approach for LGH, with a focus on assessment, rehabilitation, respite care, and restoration inclusive of:

- repurposing beds currently being used by those receiving alternate level of care (ALC);
- rehabilitation and restorative beds for the three regional centres (30 rehabilitation and 35 restorative beds in total), and the additional staffing required to provide appropriate care; and
- restorative care unit at the Miller Centre for patients on a pathway to return to the community.

Certification of all emergency departments as senior-friendly across the province, beginning with the renovation at the Health Sciences Centre.

## Dementia Care

Innovative options to support individuals with dementia in other areas of the continuum, as part of broader dementia care action plans and at the provincial and federal level;

Transitioning and broadening of the existing Home Dementia Program;

Specialized dementia care spaces in personal care homes or protective community residences.

## Long-Term Care

Comprehensive person-centered, equitable care focused on maximizing function and independence in long-term care (LTC);

A community team model in LTC;

Connections for LTC facilities across the integrated continuum of care;

A well-prepared, empowered, and appropriately compensated work force; and,

LTC facilities that are engaged in the Learning Health and Social System.

## Training and Education

Recruitment of 10–12 geriatricians located across the province:

- 1–2 in LGH, WH, and CH; 6–8 in EH over the next 10 years;
- Establishment of a temporary return of service agreement with another university for the education of geriatricians; and,
- Establishment of geriatrician training program at Memorial University with faculty appointments for geriatricians actively involved in clinical training.

Education of 30 Family Physicians (FPs) in Care of the Elderly (CoE) and 60 geriatric-educating Nurse Practitioners (NPs):

- Increased training posts in Memorial University's FP CoE program;
- Utilization of education programs in other jurisdictions (e.g., Nurses Improving Care for Health System Elders program in Nova Scotia)
- Provide Continuing Education.

Senior/geriatric care in the physician, NP, other health professional curriculum.

CoE educated allied health professionals inclusive of social and clinical navigators on community teams or are available regionally.

Sustainable workforce of adequately educated/compensated home support workers.

## Conclusions

1. Planning for the seniors care program has started which will require recruitment of geriatricians over time as they are trained.
2. All community teams should include FPs and NPs with enhanced skills in the care of older persons and other trained providers.
3. A tertiary seniors care team and unit should be provided in St. John's.
4. Location of centres of excellence on aging with development of interdisciplinary teams for geriatrics, stroke care, rehabilitation, and restorative care should evolve over the next five years in Central and Western NL.
5. An appropriate model of care for frail elderly persons in the Labrador-Grenfell region should be developed.
6. An appropriately implemented model will result in:
  - ◇ Prevention of frailty and better management of frail elderly persons in their communities;
  - ◇ Prevention of hospitalization and emergency room use;
  - ◇ A geriatrics informed approach to care in the community with reduced unnecessary use of health interventions;
  - ◇ A geriatrics-informed approach to frail elderly patients in hospitals, particularly in prevention of deterioration, decreases length of stay, ALC, and transfers to LTC; and,
  - ◇ Strengthened health outcomes and improved health equity for older persons.

# Age-Friendly Communities in Newfoundland and Labrador: Clarenville

## Objective

To demonstrate the need for age-friendly communities in Newfoundland and Labrador (NL) and highlight the age-friendly community of Clarenville, NL.

## Practice Points

1. According to the World Health Organization, an age-friendly community is a community where policies, services, and structures related to the physical and social environment are designed to support and enable people of all ages to live in a secure environment, enjoy good health, and continue to participate fully in society.
2. The Age-Friendly NL communities program was launched in 2009, and supports communities in NL with planning, policies, and undertaking projects in order to become age-friendly [Age-Friendly NL Communities – Children, Seniors and Social Development ([gov.nl.ca](http://gov.nl.ca))].
3. Clarenville was one of 10 communities across eight provinces to pilot the age-friendly communities program when it came to Canada in 2007. The pilot resulted in the development of the Age-Friendly Rural and Remote Communities: A Guide ([https://www.phac-aspc.gc.ca/seniors-aines/alt-formats/pdf/publications/public/healthy-sante/age\\_friendly\\_rural/AFRRC\\_en.pdf](https://www.phac-aspc.gc.ca/seniors-aines/alt-formats/pdf/publications/public/healthy-sante/age_friendly_rural/AFRRC_en.pdf)).

## Background

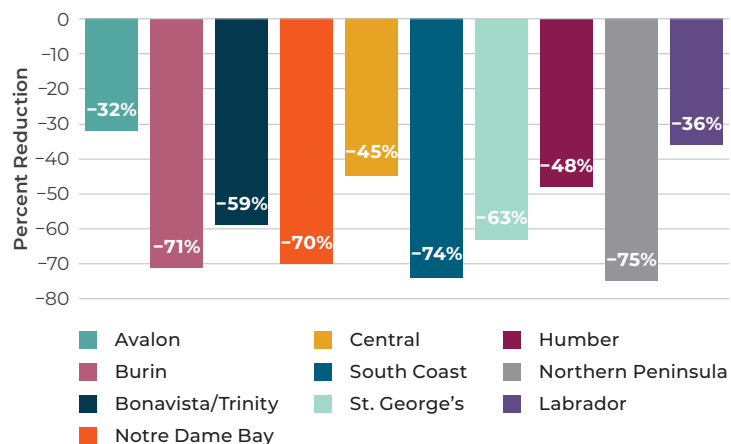


Figure 1. Percent Reduction in Children <15 Years of Age by Region in NL, 1990–2020

- There were large reductions in the number of children across all regions of the province.

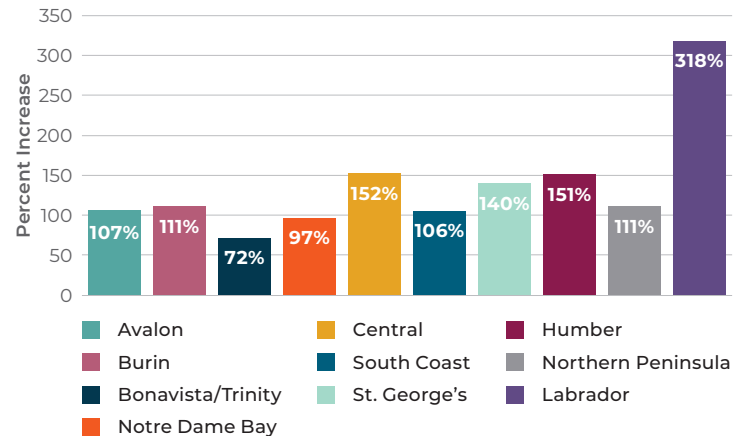


Figure 2. Percent Increase in the Number of Seniors by Region in NL, 1990–2020

- There were large increases in the number of people >65, particularly in Labrador which saw an increase of 318% in the last 20 years.
- By 2040, seniors are projected to represent 31% of the total population of NL.



Figure 3. The Eight Domains of Age-Friendly Communities (Adapted from the World Health Organization)

- The eight domains of an age-friendly community provide a framework for communities that are planning to become age-friendly.

## Results (PIs: H. Kielley, J. Collins, L. Bonnell)

### Transportation

Clareville Region Extended Seniors Transportation (CREST) started in 2013 and has provided transportation to ~16,163 riders >60 and those >25 who use a wheelchair. It has been running for eight years with 90 volunteers that have provided ~80,000 volunteer hours.

### Outdoor Spaces and Buildings

A number of businesses in the Clareville area have been designated age-friendly based on criteria such as accessibility, comfort, visibility/sound, and customer service. Currently there are 10 local businesses piloting the age-friendly model.

In 2014, the town of Clareville opened an age-friendly park which is strategically placed in the community. It is wheelchair accessible, contains walking trails, park benches, green spaces, a gazebo, tobogganing hill, horseshoe pad, fire pit, and a flourishing 33-bed community garden.

### Housing

Currently there are two senior housing projects underway. They consist of 100 units with plans to expand to ~300. King's Haven Adult Living Community provides affordable living for seniors with senior-friendly services built in to its fee.

### Social Participation

Generating Awareness Through Healthy Eating and Recreation (GATHER) is a volunteer-based program that provides activities such exercise routines, gardening, and age-related education sessions.

The Clareville and area age-friendly 50+ club is another means for social participation. Formed in 2021, the number of members has grown to 75. Social events include card playing and arts and crafts.

The Bill Davis Chalet is a community centre that allows seniors to hold events free of charge. It is available free of charge to senior clubs. Strategically located, there is an outdoor park with a splash pad to allow for intergenerational connections.

### Respect and Social Inclusion

Silver Surfers provides intergenerational activities between high school students and staff and students from the College of North Atlantic to help seniors with computer technology.

### Civic Participation and Employment

Clareville's Aliant Pioneers is a volunteer-based group that provides a wide variety of community service in the Clareville area.

### Communication and Information, Community Support and Health Services

Clareville's annual Seniors' Information Fair is devoted to seniors and seniors' services. It provides information on home services, therapy services, health services, finances and much more.

## Conclusions

1. Since the inauguration in 2007 of the Age-Friendly Seniors Program in Clareville, the town and surrounding area have transformed to adapt to the changing needs of the residents. The success is highlighted in the population change and the migration of older residents. In 2016, there was a total of 6,291 people in the town of Clareville, 1,100 of which were >65 (175/1,000). In 2021, the total population grew to 6,704 (6.6% increase) with 1,505 residents >65 (225/1,000).
2. Age-friendly is a process, not a product. Communities must commit to ongoing assessment and improvement. The program is about community capacity building – helping communities have conversations about what aging in place means individually and collectively.
3. Some communities struggle with the capacity to maintain the program. Having a member of council designated as the age-friendly contact is very helpful. It is crucial that the age-friendly committee be representative of all sectors of the community and be made up of passionate individuals with a common purpose.

# Evaluating the Provincial Home Dementia Care Program in the Eastern Health Region

## Objective

The objective of the pilot evaluation was to evaluate the impact of participation in the Provincial Home Dementia Care Program (PHDCP) in the Eastern Health Region on client's acute health care utilization, long-term care (LTC) admission, and caregiver self-efficacy.

## Practice Points

1. Frailty identification and comprehensive geriatric assessment by an interdisciplinary team (provided by the PHDCP) can successfully support frail older adults living with dementia in the community.
2. Optimized care for frail older adults living with dementia provided by the PHDCP has a potential to impact acute health care utilization and rates of long-term care admission. In this study a significant reduction in ER visits was seen.
3. Optimized care for frail older adults living with dementia provided by the PHDCP can impact caregiver self-efficacy. Specifically, knowledge about dementia and confidence and comfort managing the symptoms of dementia improved for caregivers with family members enrolled in the program.

## Methods (PIs: Dr. R. Butler, E. Wallack)

1. Pilot project took place between May of 2019 and October of 2021. Referrals to the program were made by primary care or specialist physicians for individuals with a confirmed or provisional diagnosis of some form of dementia, living in the Eastern Health region.
2. Clients were screened for Frailty using the Rockwood Clinical Frailty Scale, and a Comprehensive Geriatric Assessment to develop care plan. Case management was provided by geriatric nurse practitioners.
3. An informal caregiver survey was conducted with program clients (N=86) from November 2020 – January 2021 to evaluate self-efficacy (confidence) based on the Caregiver Confidence in Sign/Symptom Management (CCSM) scale.

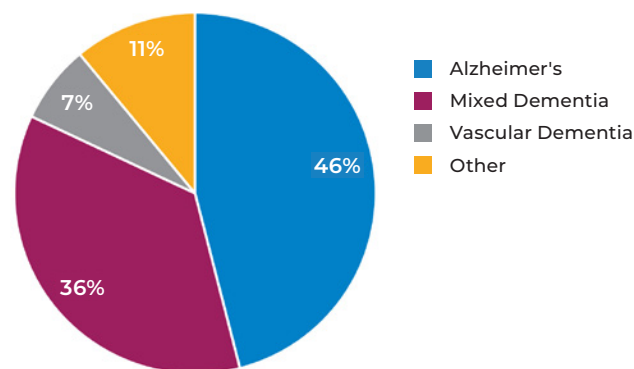
4. Baseline data was collected retrospectively and included patient demographics collected from the provincial electronic medical record (EMR). The primary outcome was admission to long term care. Secondary outcomes included emergency room presentations over a 6-month period; acute care admissions over a 1-year period; acute care admissions resulting from falls over a 1-year period; rate of clients able to die at home; and caregiver self-efficacy.
5. A total 279 clients were accepted into the program during the pilot program and were screened for frailty. Of these clients, 263 received comprehensive geriatric assessment and individualized care plans. Outcome data provided through NLCHI was available for 170 clients. Data in this report is based on this sample.

## Results

**Table 1. Demographic Characteristics of Clients Enrolled in the Provincial Home Dementia Program**

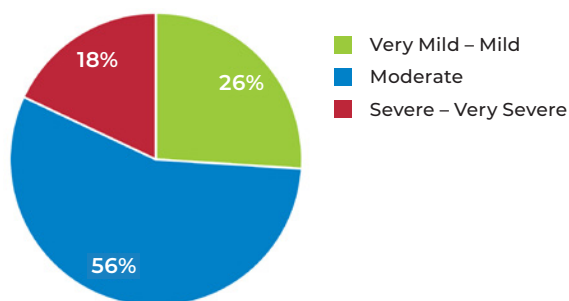
Clients Enrolled N = 170	Age	Sex (%)	Location (%)
	81 (51–101)	Male (49) Female (51)	Urban (85) Rural (15)

- Average age of clients was 81 years however, there was a noticeable gap in the range (51–101). There was no notable difference in the sex of clients, however the majority resided in an urban location (85%).



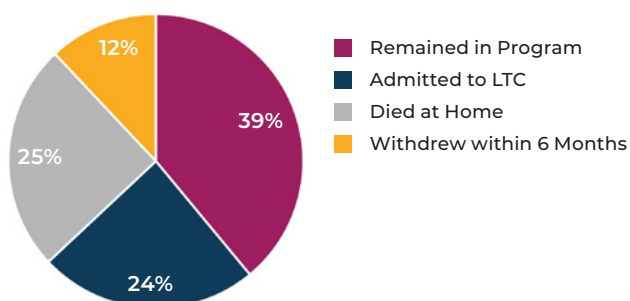
**Figure 1. Clients Enrolled in the Program by Diagnosis of Dementia**

- Most clients were diagnosed with Alzheimer's type dementia (46%), followed by mixed dementia (36%).



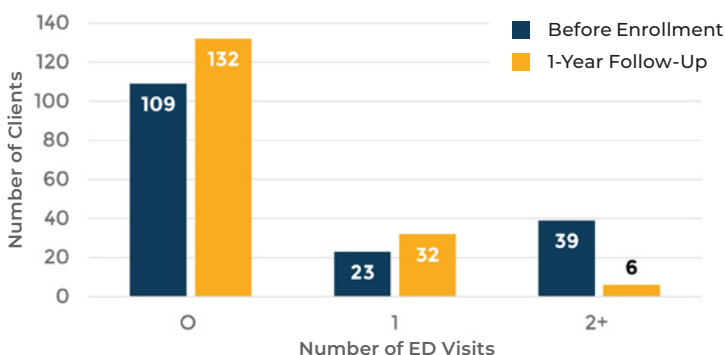
**Figure 2. Clients Enrolled in the Program by Frailty Score**

- The majority of clients were living with moderate frailty (56%) while 18% were living with severe to very severe.



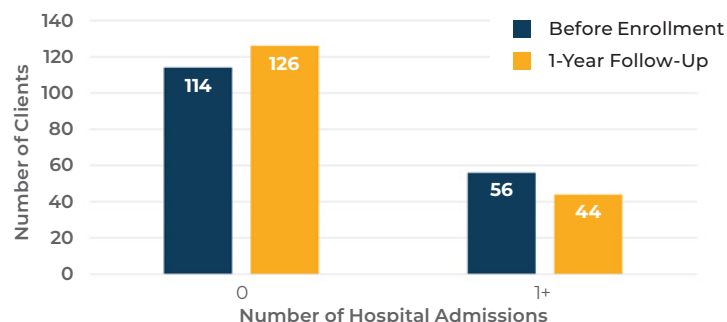
**Figure 3. Clients Disposition at 1-Year Follow-Up**

- After 1-year follow-up, the majority of clients were able to remain at home (39% still in the program, 25% died at home). 12% of clients withdrew from the program within 6 months.
- The rate of LTC admission among PHDCP clients was found to be 28% lower than the provincial CIHI average in people aged ≥ 65 years and 40% lower than all clients in the high to very high needs categories assessed by RAI-HC in NL.



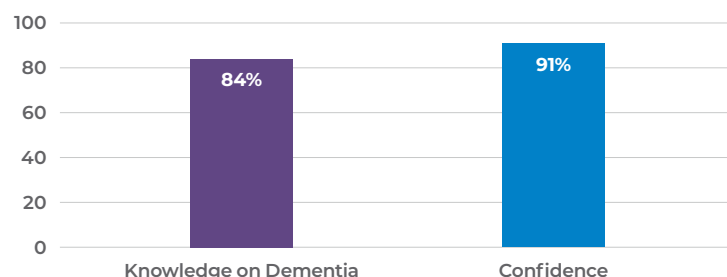
**Figure 4. Number of Emergency Department Visits of Clients before Enrollment and at 1-year Follow-Up**

- There was a statistically significant reduction in Emergency Department (ED) visits ( $p=0.027$ ). Before enrollment, 62 clients (36%) had experienced 1 or more ED visit within the past 6 months. At follow-up, 38 clients (22%) had experienced 1 or more ED visit within the past 6 months.



**Figure 5. Number of Hospital Admissions of Clients Before Enrollment and at 1-Year Follow-Up**

- Before enrollment, 56 (33%) clients had experienced 1 or more hospital admissions within the last year. At follow up, 44 (26%) clients had experienced 1 or more hospital admission within the last year.



**Figure 6. Impact of the Program on Caregiver Self-Efficacy**

- 84% indicated that the PHDCP has increased their knowledge about dementia. 91% reported increased confidence and comfort managing the medical symptoms of dementia.

## Conclusions

- The PHDCP was successful in reducing the use of ED visits and hospital admission among clients enrolled in the program.
- Caregiver self-efficacy improved for those whose family members were involved.
- Integrating this program in the proposed Comprehensive Provincial Frail Elderly Program proposed by the Health Accord should be considered.

# Undertriage of Older Adults with a Low-Acuity Triage Score in the Emergency Department

## Objective

To identify and describe characteristics and outcomes of older adults ( $\geq 65$  years) who present to the emergency department (ED) with a low-acuity triage score.

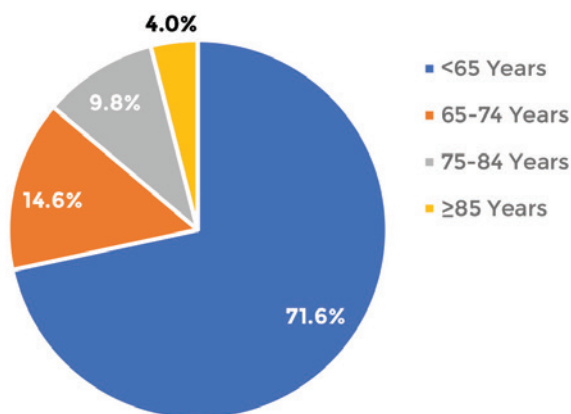
## Practice Points

1. Newfoundland and Labrador (NL) has the highest proportion of older adults ( $\geq 65$  years) in Canada (CA). By 2036, 31% of Newfoundlanders and Labradorians will be older adults compared to 23.7% across CA.
2. Older adults likely experience undertriage (i.e., misclassified into a lower triage category even though criteria are met for urgency and additional resources) in the ED compared to younger adults, especially those  $\geq 85$  years.
3. There is a need to update current triage tools in the ED to include age, frailty, multimorbidity, polypharmacy, and daily function.
4. Collaboration with social work and other services (i.e. internal medicine, geriatric medicine, etc.) should be encouraged and with resources allocated to create more comprehensive care in the ED for this complex population.

## Methods (PIs: Drs. K. Furlong, S. Mercer, M. Parsons)

1. A retrospective cohort study was performed on ED visits of patients assigned a Canadian Triage and Acuity Score (CTAS) of 4 or 5, considered 'low acuity', between 1 Jul – 30 Sep, 2019 at the Health Sciences Centre (HSC) and at St. Clare's Mercy Hospital in St. John's, NL.
2. All patients aged  $\geq 65$  years were selected for this study, and were then divided into age subgroups of 65 to 74 years, 75 to 84 years, and  $\geq 85$  years. Patients aged 40 to 55 years were selected as controls.
3. The primary outcome was admission to the hospital at initial ED visit.

## Results



**Figure 1. Percent of ED Visits at HSC and St. Clare's Mercy Hospital, Jul – Sep 2019**

- Older adults accounted for 28.4% of ED visits from 1 Jul – 30 Sep 2019.

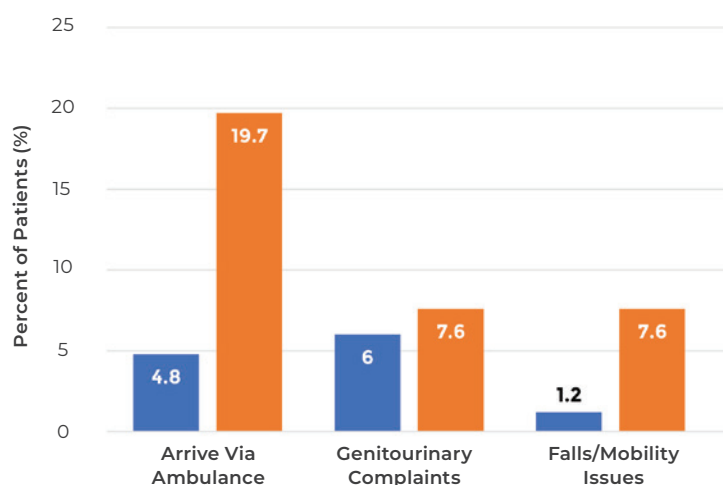
**Table 1. Patient Characteristics of Older and Younger Adults, Jul – Sep 2019**

	Younger Adults (n=84)	Older Adults (n=462)
Age (Years) [Mean $\pm$ SD]	46.8 $\pm$ [4.4]	78.5 $\pm$ [8.5]
Range (Years)	40 – 55	65 – 102
Sex – Female (%)	48 (57.1)	285 (61.7)
<b>Location</b>		
Urban (%)	74 (88.1)	387 (83.8)
Rural (%)	10 (11.9)	75 (16.2)
<b>CTAS on Presentation</b>		
CTAS 4	78 (92.9)	445 (96.3)
CTAS 5	6 (7.1)	17 (3.7)
<b>Triage Location</b>		
Ambulatory Care	52 (61.9)	296 (64.1)
Bedded Unit	10 (11.9)	86 (18.6)

$p > 0.05$  for all

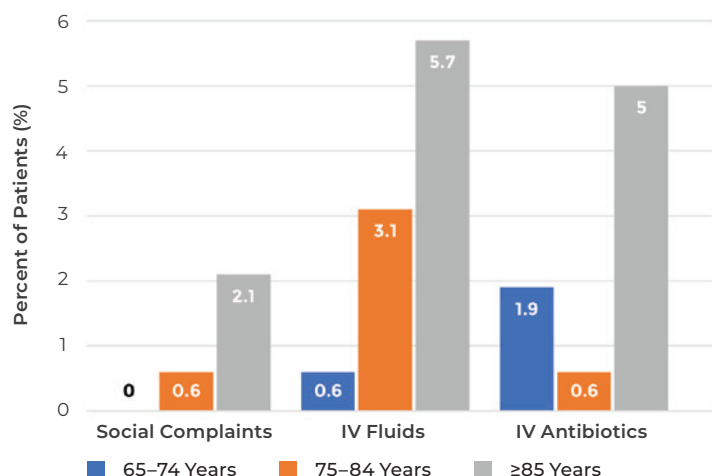
- Patient characteristics did not differ between older adults and younger adults.
- Older adults had more frequent ED visits and hospital admissions in the previous six months ( $p < 0.05$ ).

- Rate of admission was not higher in low-acuity older adults (1.1%) compared to their younger counterparts (0%,  $p > 0.05$ ).
- Older adults were more likely to arrive via ambulance, and present with genitourinary complaints and falls/mobility issues compared to younger counterparts ( $p < 0.05$  for all).



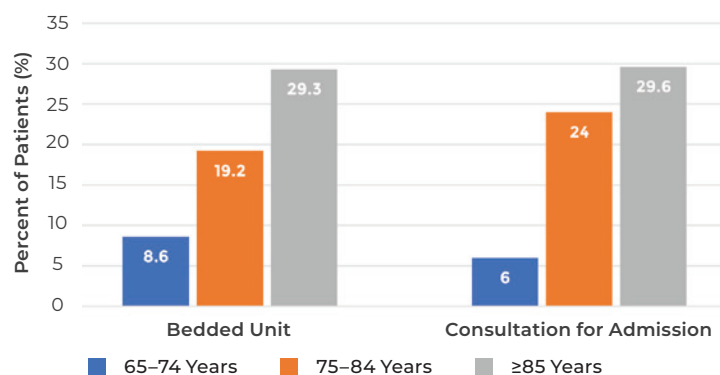
**Figure 2. Percent of Patients by Age Group, Jul – Sep 2019**

- Older adults also received a social work consultation more frequently than younger adults (4.9% vs 0%  $p < 0.05$ ).
- Older adults  $\geq 85$  years were more likely to present with social complaints, require IV fluids, and IV antibiotics ( $p < 0.05$  for all).



**Figure 3. Percent of Patient by Age Subgroup for Social Complaints, IV Fluids, and IV Antibiotics, Jul – Sep 2019**

- Older adults  $\geq 85$  years were more likely to be triaged in a bedded unit and receive consultation for admission ( $p < 0.05$  for both).



**Figure 4. Percent of Patient by Age Subgroup for Bedded Unit and Admission, Jul – Sep 2019**

## Conclusions

1. Older adults account for nearly one-third of patients who visit the EDs in St. John's, NL
2. Older adults have more frequent ED visits and hospital admissions in the six months prior to an ED visit compared to younger adults.
3. Despite a similar low-acuity triage score, compared to younger adults, older adults are more likely to arrive by ambulance, present with falls or mobility issues, and require a social work consultation. This may represent the undertriage of older adults in the ED by current triage tools.
4. Those  $\geq 85$  years are more likely to present with social complaints, require IV fluids, IV antibiotics, require a bed in the ED, and be consulted for hospital admission than adults 65 to 84 years. This may represent undertriage in the 'oldest' old compared to those  $< 85$  years.



# Clinical Characteristics and Quality of Care in the Long-Term Care Facilities of Newfoundland and Labrador

## Objective

To describe the clinical characteristics and measures of care quality of residents in Long-Term Care Facilities (LTCFs).

## Practice Points

1. Admission to LTCFs is usually for people with extensive impairment of the activities of daily living and/or severe cognitive impairment. As a consequence, survival in a LTCF is around 22 months.
2. Classification systems exist concerning the primary reason for admission linked to the number of hours of care provided (Resource Utilization Groups: RUGs, of which there are 7), and the degree of health instability (CHESS scores: Changes in Health, End-stage disease, and Signs and Symptoms).
3. Clinical practice guidelines exist and recommendations have come from Choosing Wisely Canada to restrict the chronic use of antipsychotics and of benzodiazepines. However, psychotropic drugs are widely used in LTCFs. Use of trunk and limb restraints may occur in clients to control behaviour, but are not advised.

## Data

Data was obtained from the Resident Assessment Instrument (RAI) completed every quarter in LTCFs. The last one available for a resident in the year 2020/21 was evaluated. The number of clients is greater than the number of beds, because clients who died during the year were included.

In this summary, for each facility we present data on demography (sex, age  $\geq 85$  years), clinical characteristics (percent resident for  $>5$  years, percent with extensive impairment of activities of daily living or severe cognitive impairment, percent in a high (1: Special Rehabilitation, 2: Extensive Services, 3: Special Care, 4: Clinically Complex) RUGs group, percent with at least moderate CHESS score, and use of psychotropic drugs, or restraints.

## CHESS Score – Changes in Health, End Stage Disease, Signs and Symptoms Scale

This scale detects frailty and health instability and was designed to identify residents at risk of serious decline. Higher scores indicate higher levels of medical complexity and are associated with adverse outcomes, such as mortality, hospitalization, pain, caregiver stress, and poor self-rated health. The scale ranges from 0 (no health instability) to 5 (very high health instability).

## RUG Hierarchy Category

There are seven RUG categories, based on clinical complexity and resource utilization. Each category is associated with a specific set of RUG-III groups. All RUG-III categories are ordered in a clinical hierarchy, from the most resource intensive (Special Rehabilitation category) to the least resource intensive (Reduced Physical Functions category).

**Table 1. Clinical Characteristics and Utilization of Psychotropic Drugs, Diuretics, and Restraints in Residents of LTCFs by Facility**

Facility Name	Residents in FY 2020/21	% Female	% Age ≥85	% RUGs 1-4	% Moderate to very high CHES score	% Used Antidepressant	% Used Antipsychotic	% Used Antianxiety	% Used Hypnotic	% Used Restraint
Baie Verte	25	56	40	48	4	72	40	12	28	0
Botwood	101	65	44	27	3	68	43	19	9	2
Buchans	22	64	64	27	5	45	36	32	27	0
Fogo	13	85	46	15	8	77	15	23	38	0
Gander	133	72	53	27	13	63	25	41	20	0
Grand Falls-Windsor	77	69	43	30	10	53	9	19	17	1
Harbour Breton	20	70	55	5	0	60	20	25	25	0
Lewisporte	60	82	47	23	15	73	45	25	42	2
New-Wes-Valley	49	80	53	18	2	51	18	18	22	2
Springdale	89	64	47	19	6	60	17	8	11	0
Twillingate	45	73	51	27	4	56	38	29	13	0
Agnes Pratt	148	82	36	36	9	56	39	21	11	0
Bonavista	70	73	57	54	9	49	23	36	23	0
Bonavista Protective	10	60	50	20	20	40	40	60	30	0
Carbonear	255	59	43	38	8	52	23	29	22	0
Clareville	52	75	48	33	4	58	17	27	42	0
Clareville Protective	11	73	55	0	9	73	27	27	18	0
Glenbrook Lodge	106	71	48	38	10	50	31	20	14	0
GrandBank	70	76	47	56	33	47	29	54	39	0
Miller Centre	51	29	53	27	8	57	31	18	24	0
Placentia	75	71	44	53	12	60	33	25	28	0
Pleasant View Towers	492	56	32	28	10	54	35	17	9	0
St. Lawrence	48	52	40	58	19	48	48	44	40	0
St. Luke's	121	76	44	36	6	68	34	20	7	0
St. Patrick's	239	71	51	22	7	51	23	22	9	0
Happy-Valley Goose Bay	77	62	38	23	5	42	36	9	22	0
Labrador South	15	60	60	13	7	47	67	20	27	0
Labrador West	14	50	14	36	0	14	21	14	21	0
St. Anthony	58	66	26	33	9	71	41	33	24	0

Table 1 continued

Facility Name	Residents in FY 2020/21	% Female	% Age ≥85	% RUGs 1-4	% Moderate to very high CHES score	% Used Antidepressant	% Used Antipsychotic	% Used Antianxiety	% Used Hypnotic	% Used Restraint
Bay St. George	132	55	39	41	8	57	33	30	34	0
Burgeo	20	70	65	10	5	55	30	25	45	0
Corner Brook	360	63	49	48	14	52	36	32	37	0
Norris Point	17	71	59	24	6	47	41	41	29	12
Port Saunders	28	68	36	32	25	64	18	43	39	7
Port aux Basques	36	56	58	19	3	47	19	25	42	0

- The majority of residents were female.
- In 13 of 35 (37%) LTCFs, the majority of residents were ≥85 years.
- 22% of LTCFs had 10% of residents with moderate to high CHES scores, but 2 of these were health centres and 1 was a protective community residence.
- Five LTCFs reported that >50% of residents were in the high RUGs group.
- Use of psychotropic drugs was very high: ≥50% of residents were taking anti-depressants in 25 (71%) of LTCFs. This was a significant increase compared to 2019/20 where the majority of residents taking anti-depressants was only in 54% of LTCFs.
- Wide variability in the use of antipsychotics, anti-anxiety, and hypnotics was observed.
- The use of restraints was very unusual.

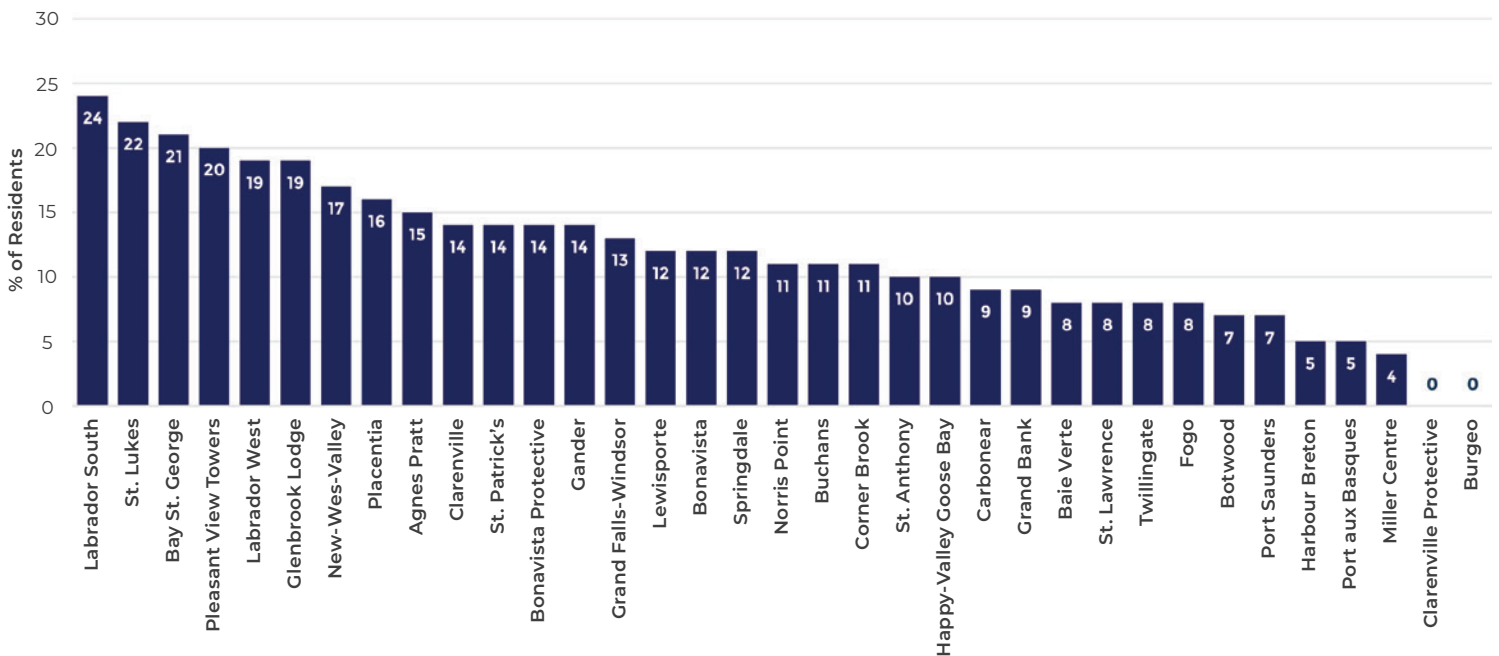


Figure 1. Percent of Residents with Stay >5 years

- The percent of residents whose stay was >5 years varied from 0–24%.
- In 15 (43%) LTCFs, more than 1 in 8 residents had been there for >5 years, a slight increase from 31% in 2019/20.

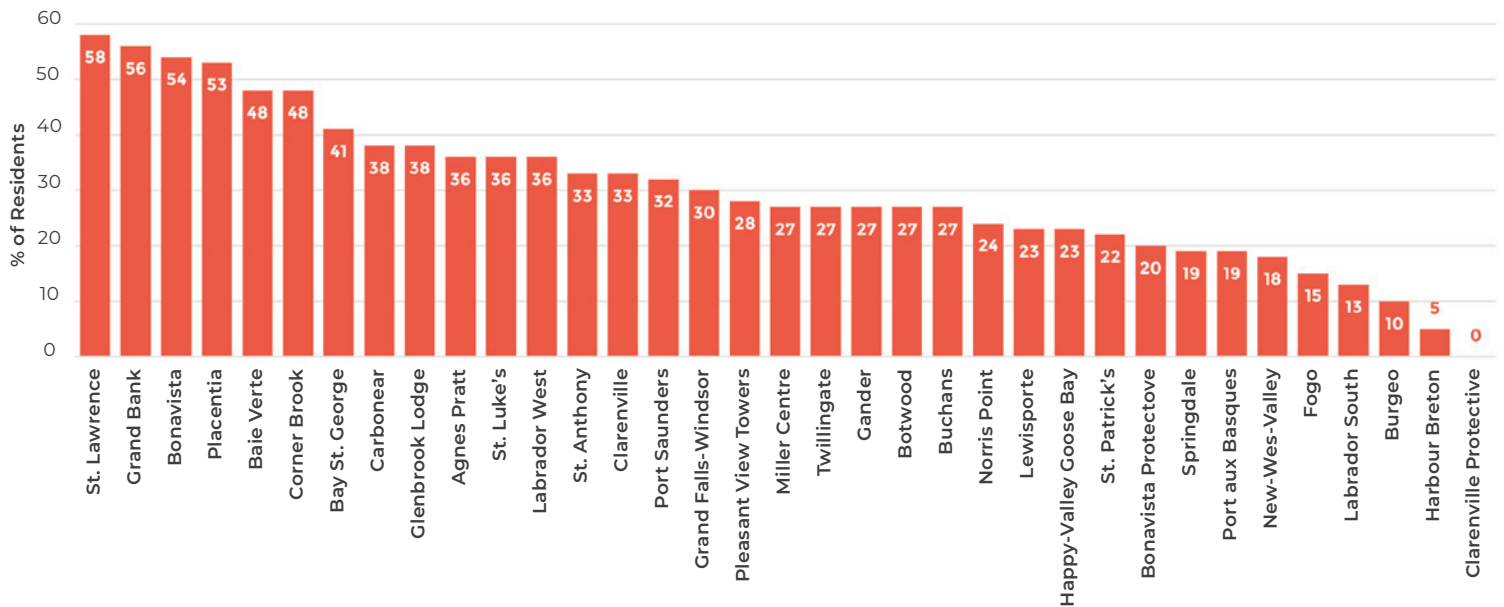


Figure 2. Percent of Residents in One of the Four Highest Resource Use Groups Analyzed by LTCF

- The percentage of residents in a RUGs 1–4 group varied from 58% St. Lawrence to 0% in Clarenville protective.
- Four LTCFs reported the majority of their residents were in one of the four highest RUGs groups: St. Lawrence, Grand Bank, Bonavista, and Placentia.

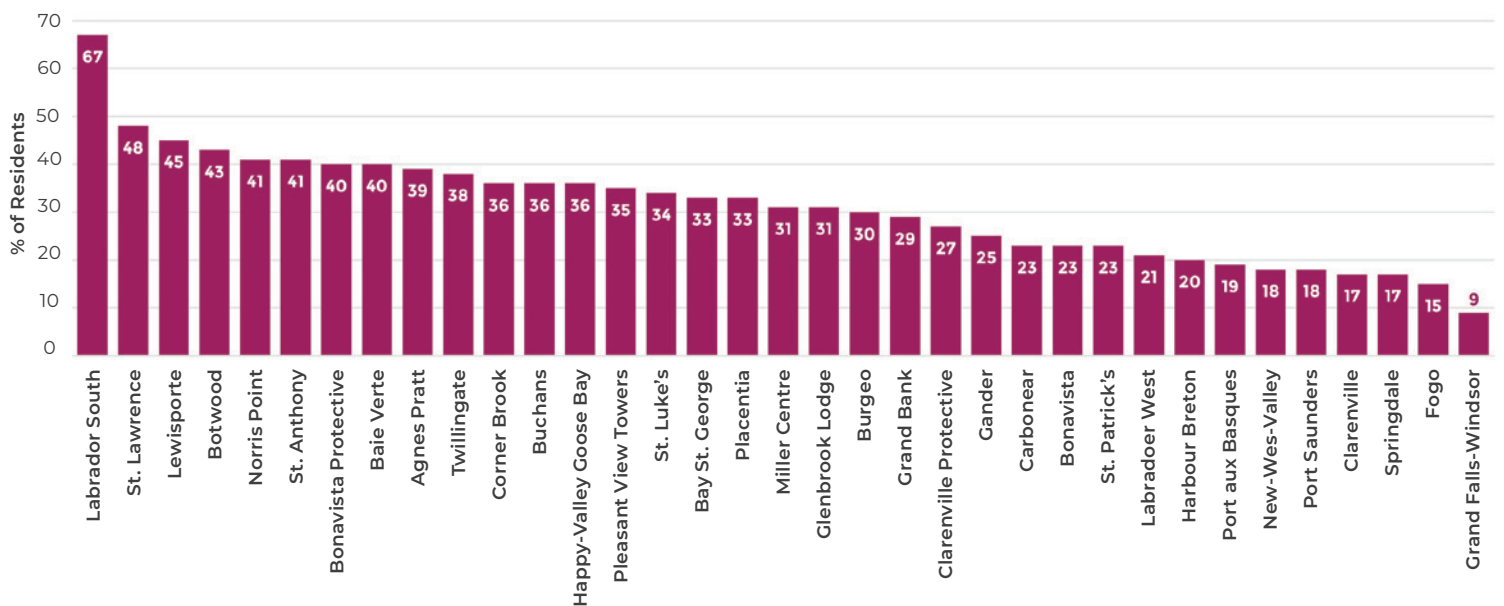


Figure 3. Percent of Residents Taking Antipsychotics by LTCF

- In 8 (23%) LTCFs, the rate of antipsychotic use was  $\leq 20\%$ , whereas in 20 (57%) LTCFs, it was  $\geq 30\%$ .
- In 2019/20, 43% of LTCFs rate of antipsychotic use was  $< 20\%$  while 49% of facilities the rate was  $\geq 30\%$ .

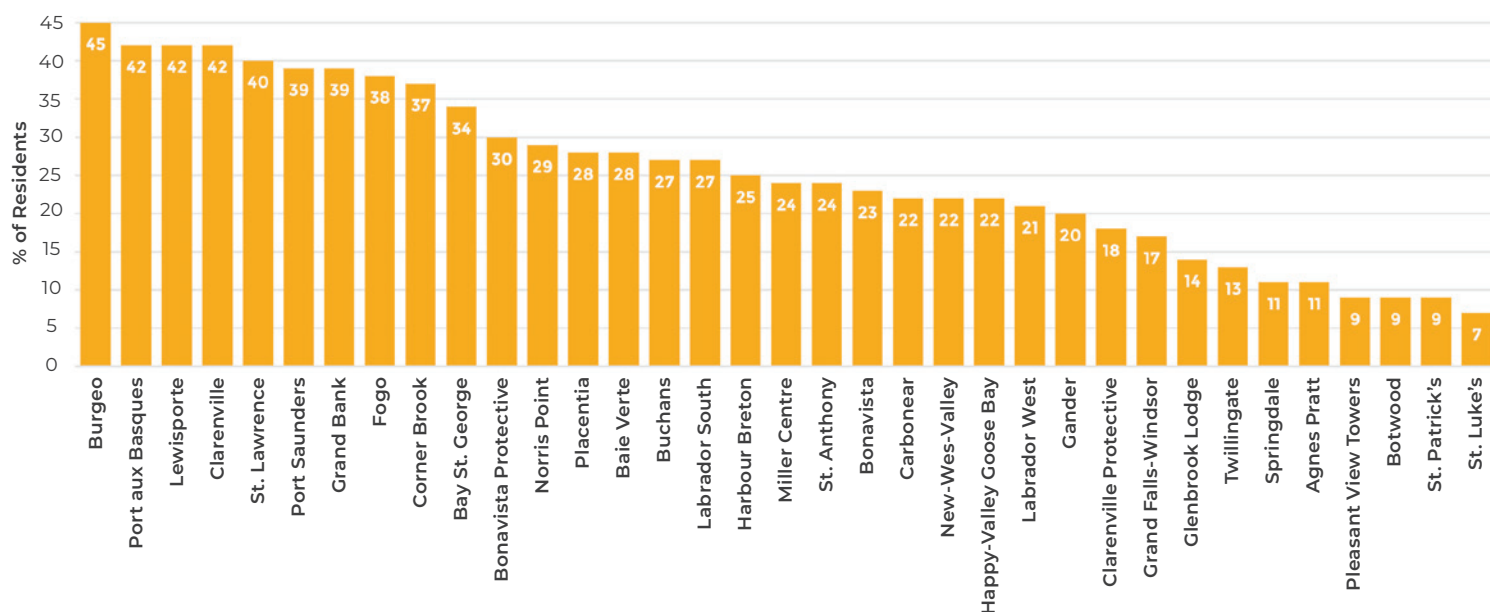


Figure 4. Percent of Residents Taking Hypnotics by LTCF

- The percentage of residents taking hypnotics ranged from 45% in Burgeo to 7% in St. Luke's.
- This wide variability in the use of hypnotics was reflected in the observation that 11 (31%) LTCFs had a rate  $\leq 20\%$  (14% of LTCFs in 2019/20), and 11 (31%) LTCFs had a rate  $\geq 30\%$  (43% of LTCFs in 2019/20).

## Conclusions

1. In 37% of LTCFs, the majority of residents are  $\geq 85$  years compared to 31% in 2019/20
2. Variability in the rates of residents staying for  $>5$  years was observed like previously in 2019/20. This could be related to admitting younger people with severe disability or admitting older people without severe disability.
3. Variability by LTCFs in the percent with high RUGs groups was again observed like the previous year, which could be a marker for a wide variability of health care professionals across facilities.
4. Quality of life and safety may be adversely affected by use of psychotropic drugs. These are prescribed frequently in some LTCFs. Efforts by the RHA to reduce use of these drugs, particularly antipsychotics and benzodiazepines, are required.
5. Use of restraints was rare.

# Antibiotic Usage in Long-Term Care Facilities

## Choosing Wisely Canada Recommendation

Multiple recommendations exist for not using antibiotics for upper respiratory infections, sore throat, and otitis media that are most likely viral in origin or for asymptomatic bacteriuria in non-pregnant women.

<https://choosingwiselycanada.org/pamphlet/antibiotics-urinary-tract-infections/>  
<https://choosingwiselycanada.org/long-term-care/antibiotics/>  
<https://choosingwiselycanada.org/toolkit/choosing-wisely-ltc/>

## Practice Points

1. NL has the highest use of antibiotics per capita in Canada.
2. Urinary tract infections are the most common indicators for prescribing antibiotics for residents in long-term care facilities (LTCFs).
3. Up to 50% of long-term care (LTC) residents who have bacteria in their urine do not have a urinary tract infection. Treating asymptomatic bacteriuria with antibiotics is unnecessary, potentially harmful, and contributes to antimicrobial resistance.

## Methods

1. Prescriptions provided were recorded by the Newfoundland and Labrador (NL) Pharmacy Network and these data from the community were obtained from the NL Centre for Health Information from 1 Jul 2019 – 31 Jul 2021. Residents of LTCFs were identified through the MediTech-LTC database.
2. The COVID-19 pandemic started in the province on 16 Mar 2020 and continued beyond Jul 2021.

## Results

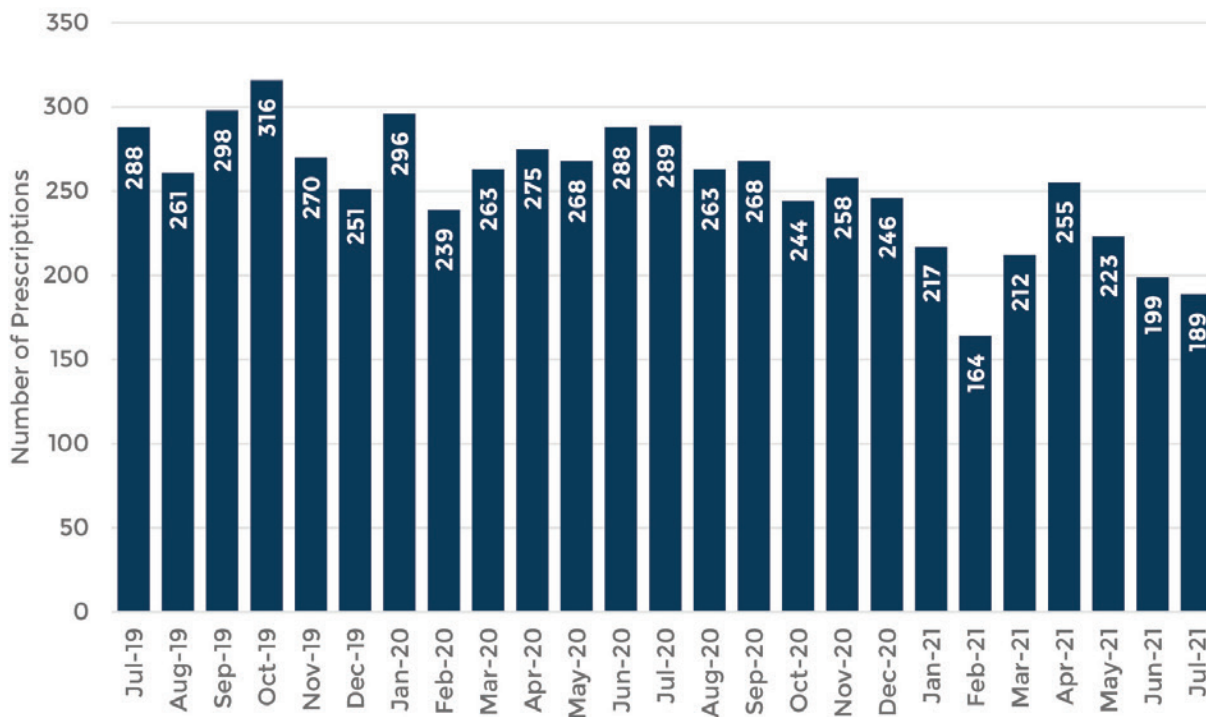
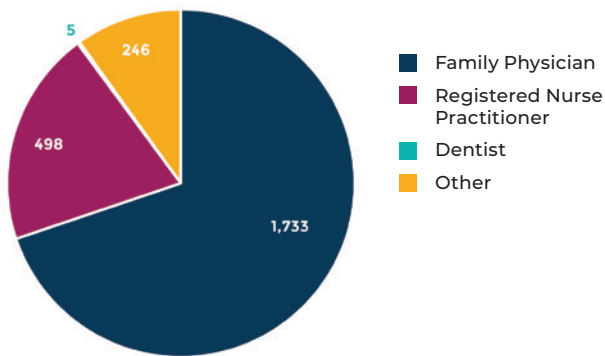
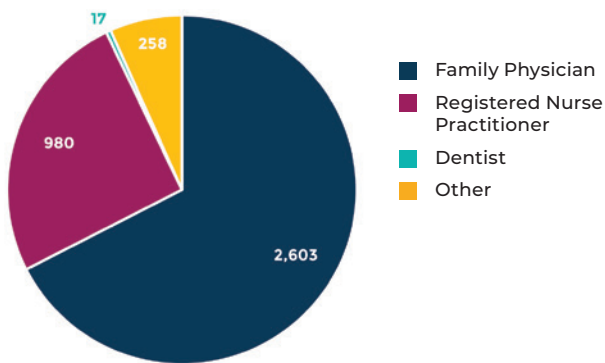


Figure 1. Total Number of Prescriptions/Month for Oral Antibiotics, Jul 2019 – Jul 2021

- As of June 2020 there were approximately 1,900 residents in LTC.
- From 1 Jul 2019 – 31 Mar 2020 a total of 2,482 prescriptions were given to 1,963 residents. This gave an average of 276 prescriptions/month and 1.3 prescriptions/resident who received an antibiotic pre-COVID-19.
- During COVID-19 from 1 Apr 2020 – 31 Jul 2021 a total of 3,858 prescriptions were given to 2,966 residents. This gave an average of 242 prescriptions/month and 1.3 prescriptions/resident who received an antibiotic.

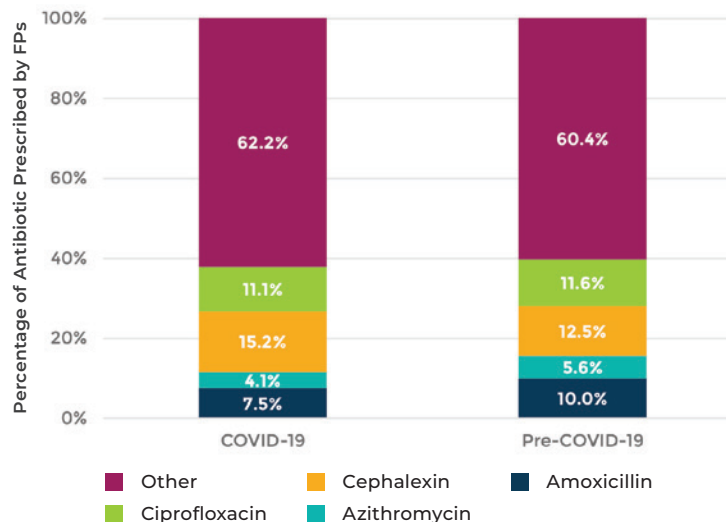


**Figure 2A. Prescription by Health Provider Jul 2019 – Mar 2020**



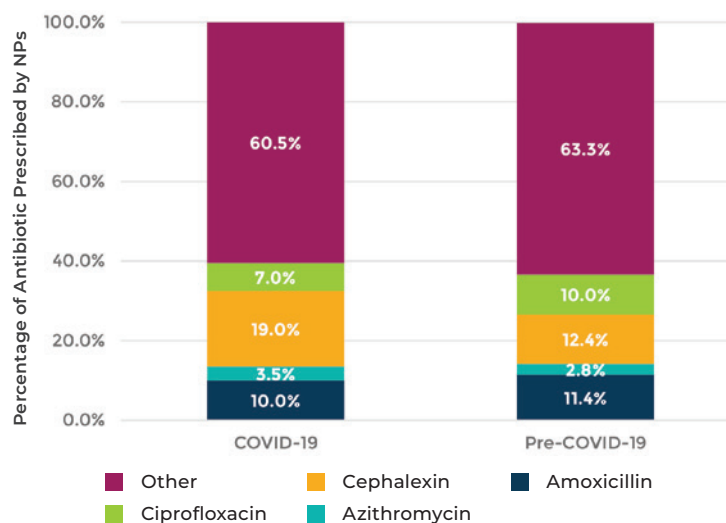
**Figure 2B. Prescription by Health Provider Apr 2020 – July 2021**

- Pre-COVID-19, 70% of oral antibiotics were prescribed by Family Physicians (FPs) and 20% by Nurse Practitioners (NPs).
- During COVID-19, 67% were prescribed by FPs and 25% by NPs.
- Notably, FPs comprise the majority of providers in the province.



**Figure 3A. Type of Antibiotic Prescribed by FPs Before and During COVID-19**

- There was no change in the distribution of antibiotic types prescribed by FPs before and during COVID-19.
- Despite the need to limit use of ciprofloxacin because of E. coli resistance, it continued to be prescribed.



**Figure 3B. Type of Antibiotic Prescribed by NPs Before and During COVID-19**

- There was a decrease in the proportion of Cephalexin prescribed by NPs during COVID-19.

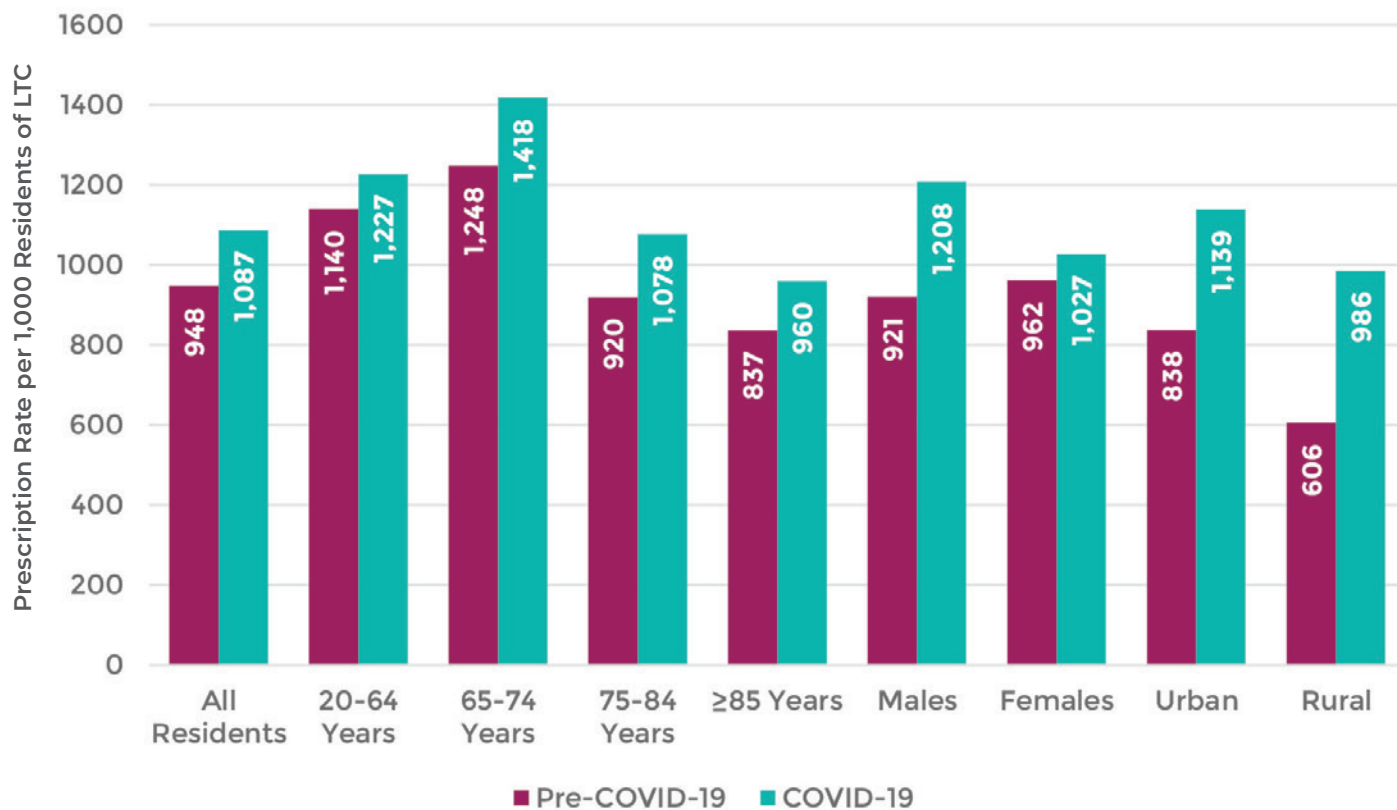


Figure 4. The Rate of Antibiotic Prescriptions Increased Across All Demographic Categories

- The rate of antibiotic prescriptions increased across all demographic categories.

## Conclusions

1. Despite the onset of COVID-19 being associated with a large reduction in antibiotic prescriptions in the community, there was only a slight decrease (12%) in average monthly prescriptions in LTC.
2. Despite a slight decrease in the volume of antibiotics in LTC during COVID, the rate of prescriptions increased due to a lower number of residents in the facilities during the pandemic.



# Inappropriate Antibiotic Use for Urinary Tract Infections in Western Health Long-Term Care Facilities

## Choosing Wisely Canada Recommendation

Don't use antimicrobials to treat bacteriuria in older adults unless specific urinary tract symptoms are present.

## Practice Points

1. Antimicrobial treatment of asymptomatic bacteriuria has no demonstrated benefits in older adults.
2. Upwards of 50% of Canadian long-term care (LTC) residents will test positive for bacteriuria without symptoms of a urinary tract infection (UTI).
3. Clinical pharmacists on site should be consulted for treatment choice and recommendations for residents with potential UTI's.

## Data (PIs: R. Staples, N. Day, K. Taylor, A. Rumbolt, J. Leamon)

Data was obtained from Western Health's Infection Prevention and Control Program. Not meeting criteria (NMC) rate was calculated as the number of antibiotics prescribed for residents with UTI or Catheter-associated UTI (CAUTI) who did not meet the Canadian LTC definition for infection per 10,000 resident days.

Western LTC opened in Jun 2020 and is therefore not included in the 2019/20 data. Western Memorial Regional Hospital (WMRH) began collecting antibiotic usage data in 2020. Therefore, WMRH is not included in 2019/20 data.

## Results

Table 1. Number of UTIs, CAUTIs, and NMCs in Western Health LTC Sites

LTC Site		2019	2020
Bonne Bay Health Center (BBHC)	# of UTI	1	2
	# of CAUTI	0	0
	# of NMC	3	5
Bay St. George LTC (BSGLTC)	# of UTI	12	12
	# of CAUTI	11	6
	# of NMC	16	17

Table 1 continued

Calder Health Center LTC (CHCC LTC)	# of UTI	0	2
	# of CAUTI	0	0
	# of NMC	1	3
Dr. Charles L. Legrow Health Center LTC (DCLHC LTC)	# of UTI	3	8
	# of CAUTI	4	1
	# of NMC	12	2
Corner Brook LTC (CB LTC)	# of UTI	43	40
	# of CAUTI	8	7
	# of NMC	67	85
Rufus Guinchard Health Center (RHCC LTC)	# of UTI	2	3
	# of CAUTI	0	0
	# of NMC	5	4
Western LTC (WLTC)	# of UTI	-	15
	# of CAUTI	-	4
	# of NMC	-	13
Western Memorial Regional Hospital	# of UTI	-	21
	# of CAUTI	-	7
	# of NMC	-	6

- The number of NMC's increased in all facilities except Dr. Charles L. Legrow. Particularly in CB LTC, which saw an increase of 27% from 2019 to 2020.

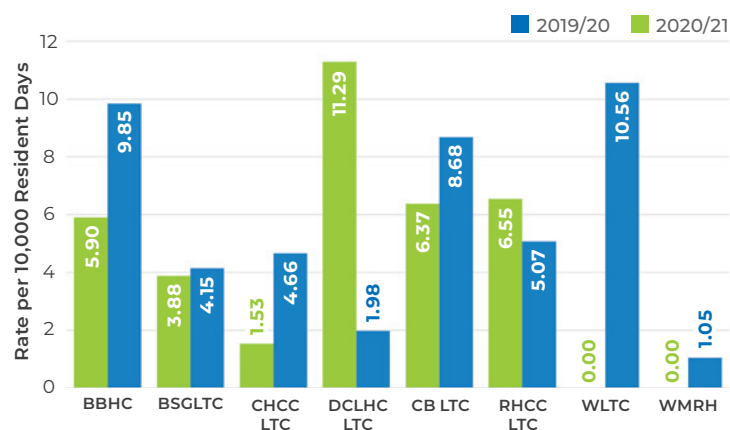


Figure 1. Rate of NMC for Antibiotic Use for UTIs and CAUTIs by LTC Facility

## Conclusions

1. From 2019–2020, the rate of antibiotic use for UTIs/CAUTIs that did not meet the diagnostic criteria of UTI/CAUTI increased for the BBHC, BSGLTC, CHCC LTC, and the CB LTC. The NMC rate decreased in this time period for the DCLHC LTC, and the RHCC LTC.

# Predicting Future Use of Psychotropic Drugs in Long-Term Care Residents

## Objective

To predict future use of psychotropic drugs in long-term care (LTC) residents by using machine learning (Random Forest).

## Practice Points

1. Psychotropic drugs can alter the mind, emotions, or behaviours and are widely used in LTC Facilities.
2. The quality of life and safety of a resident may be affected by the use of these drugs. Efforts to reduce the use of these drugs, particularly antipsychotics and benzodiazepines, must be made.
3. Machine learning is a branch of artificial intelligence and computer science which uses data to help identify patterns and make decisions with minimal human intervention. It is a method that has been applied and can be utilized in various clinical areas such as disease detection and predictions.

## Data (PIs: V. Abodunrin, L. Pena-Castillo)

Assessments provided were recorded by the RAI-MDS and these data from 36 LTC Facilities in Newfoundland and Labrador (NL) were obtained from the NL Centre for Health Information from 1 Apr 2016 – 9 Sep 2021. The COVID-19 pandemic started in the province on Mar 16 2020 and continued beyond Jul 2021.

The data used for analysis comprised of assessments from 5,316 residents in LTC. A total of 71 variables describing demographic and clinical characteristics were assessed to predict future use of psychotropic drugs.

## Results

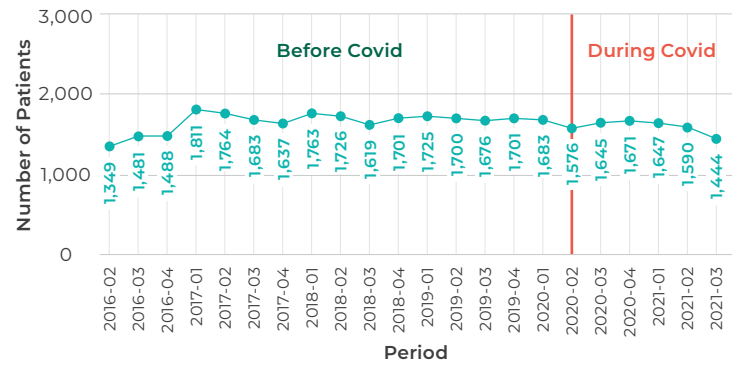


Figure 1. Number of Assessments on Residents by Quarter from 2016–2021

- The average number of assessments on residents in LTC Facilities was 1,657 before COVID-19 and 1,600 during the first 5 quarters of COVID-19.

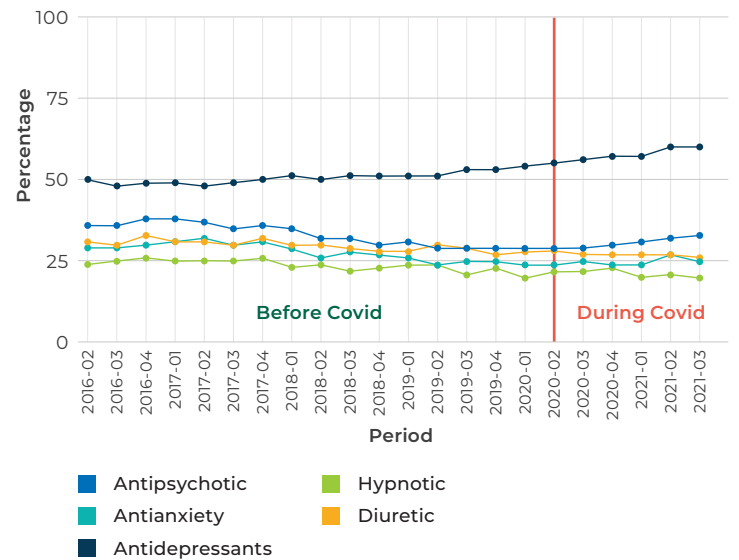


Figure 2. Percentage of Residents Using Psychotropic Drugs in Each Quarter from 2016–2021

- The percentage of LTC residents using psychotropic drugs remained constant from 2016–2021. However, there was a slight increase of 10%, most noticeably after the onset of COVID-19 in the percentage of residents using antidepressants.

**Table 1. Average Precision and Accuracy of the Random Forest (RF) Model to Predict Future Use of Antipsychotics and Benzodiazepines in LTC Residents**

Drug	Precision (PPV)	Accuracy
Antipsychotics	0.70	0.77
Benzodiazepines	0.61	0.73

- The precision (positive predictive value (PPV)) gives the indication of how effectively a test is able to repeat the same result. It ranged from 70% in antipsychotics to 61% in benzodiazepines.
- The accuracy gives the percentage of correct predictions the model made. It ranged from 77% accuracy in antipsychotics to 73% accuracy in benzodiazepines.

**Table 2. Top 5 Variables Based on Mean Accuracy Decrease for Antipsychotics**

Variable	Mean Accuracy Decrease
Age	0.0098
Number of Medications (Last 7 days)	0.0081
Delusions	0.0065
Cognitive Performance Scale	0.0055
Over 85 years of Age	0.0039

**Table 3. Top 5 Variables Based on Mean Accuracy Decrease for Benzodiazepines**

Variable	Mean Accuracy Decrease
Number of Medications	0.0123
Depression	0.0081
Use of Antidepressants	0.0068
Cognitive Performance	0.0042
Age	0.0033

- The mean accuracy decrease coefficient shows how the variables exclusion would impact the accuracy of the overall RF model. The more the accuracy declines, the more important the variable.

- Age, number of medications and cognitive performance were common variables that were important in predicting antipsychotic and benzodiazepine usage.

## Conclusions

1. The machine learning model was more effective in predicting usage of anti-psychotics in LTC residents with a precision of 70% and accuracy of 77%.
2. The impact of the COVID-19 pandemic on the usage of psychotropic drugs only noticeably impacted antidepressants.
3. Machine Learning could be a tool to assist clinicians and health care providers to identify situations in which alternatives to antipsychotic medications should be considered for residents of LTC.

# Impact of the COVID-19 Pandemic on Social Determinants of Health

## Objective

To describe the self-reported impact of the COVID-19 pandemic on economic and psychological social determinants of health (SDH) in Canada (CA) and Newfoundland and Labrador (NL).

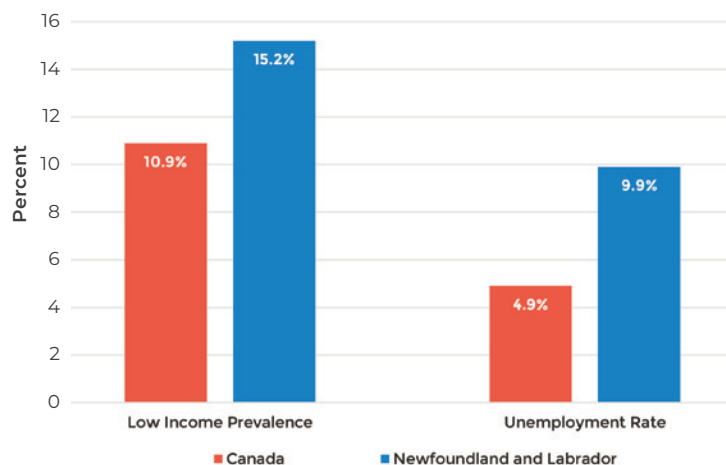
## Practice Points

- SDH are specific social and economic factors that impact individuals' health. They include factors such as income and employment, as well as social supports and coping skills, among others.
- The COVID-19 pandemic, and the public health measures implemented in response, affected SDH, as lockdowns and restrictions on gatherings impacted opportunities for employment or social support.

## Data

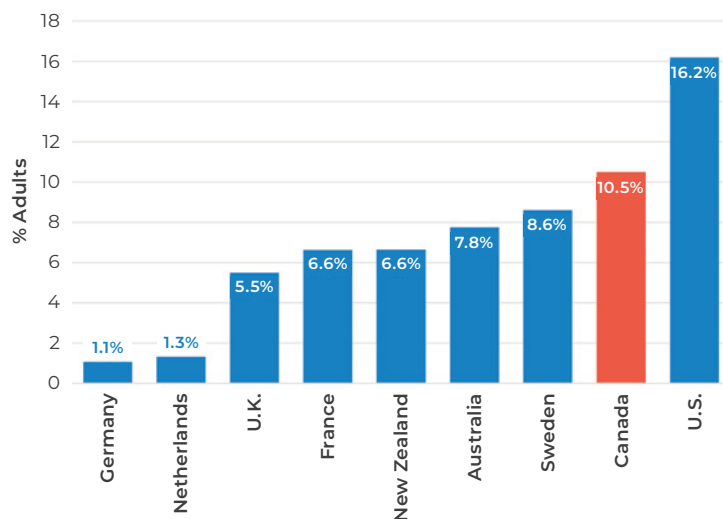
Provincial and Canadian data for economic metrics and stress were obtained from Statistics Canada. Self-reported data on the impact of the COVID-19 pandemic were obtained from the Canadian Institute for Health Information (CIHI) from the Commonwealth Fund survey of adults, 2020 and the Commonwealth Fund survey of older adults, 2021.

## Results



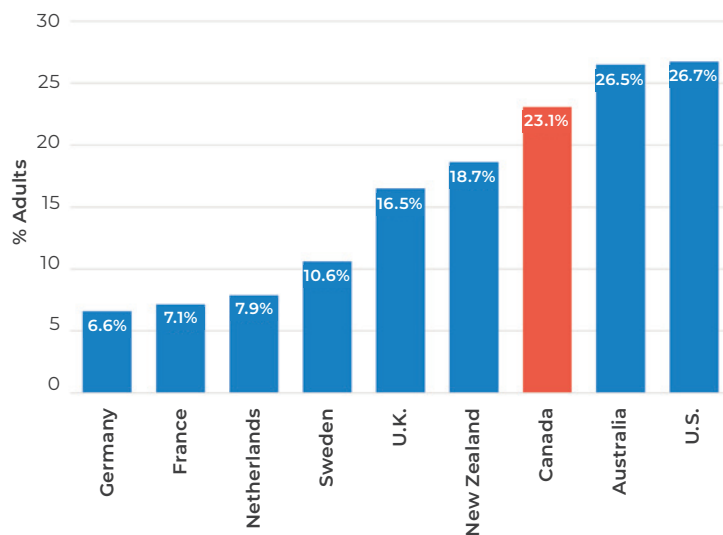
**Figure 1. Prevalence of Low Income (After Tax) Status Among Adults Aged 18+ Years and Unemployment Rate for Individuals Aged 15+ Years in CA and NL, 2021**

- The low income prevalence in NL is almost 50% higher than the Canadian average and the unemployment rate in NL is double the Canadian average.



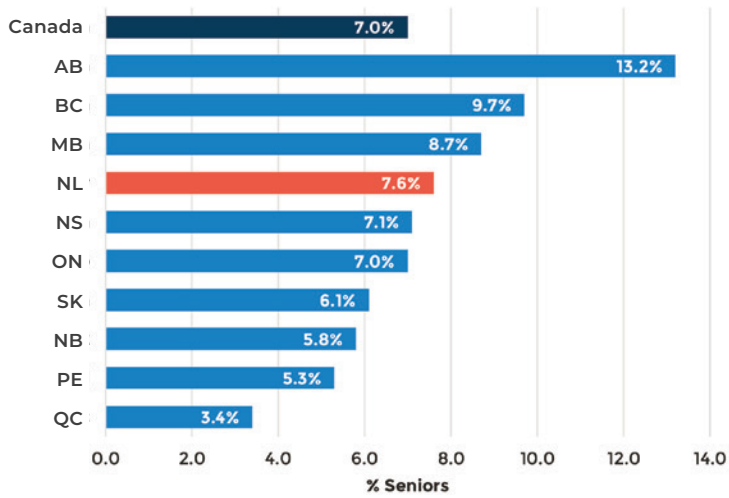
**Figure 2. Percent of Adults Unable to Pay For Basic Necessities Like Food, Heat, or Rent Because of the COVID-19 Pandemic**

- Compared to peer countries, Canadians reported the second worst impact of the pandemic on their ability to pay for basic necessities.



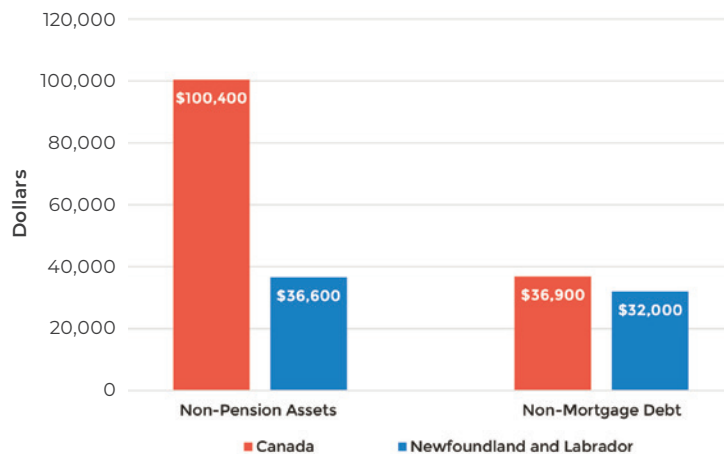
**Figure 3. Percent of Adults Who Lost A Job or Source of Income Because of the COVID-19 Pandemic**

- Compared to peer countries, Canadians reported the third worst impact of the pandemic on their income and employment.



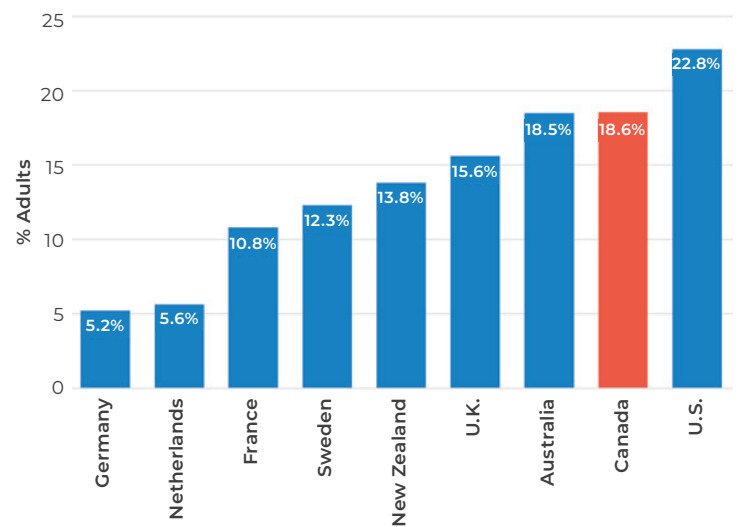
**Figure 4. Percent of Seniors Who Lost a Job or Source of Income (Including a Reduction in Retirement or Pension Payment) Because of the COVID-19 Pandemic**

- Compared to the Canadian average, slightly more seniors in NL reported a loss of a job or income due to the pandemic.



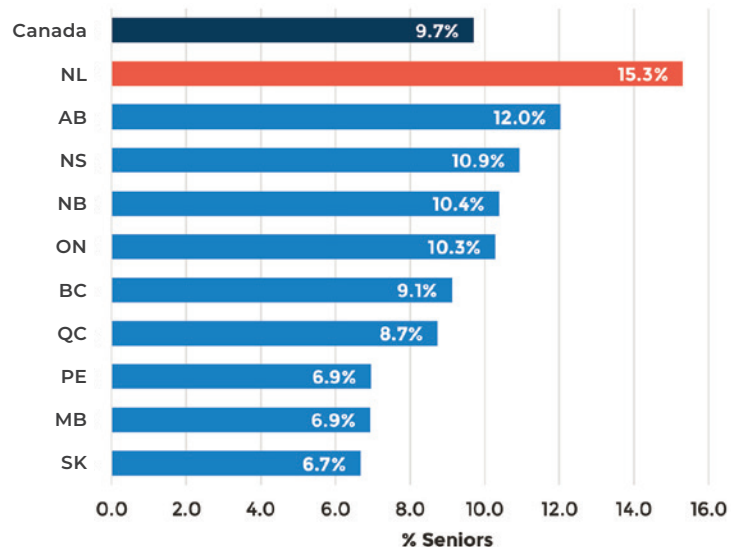
**Figure 5. Average Individual Non-Pension Financial Assets and Average Individual Non-Mortgage Debt In CA and NL**

- Individuals in NL report more limited savings than the rest of CA with average financial assets in NL being just over a third of the Canadian average. Individual debt in NL is slightly lower than the Canadian average.



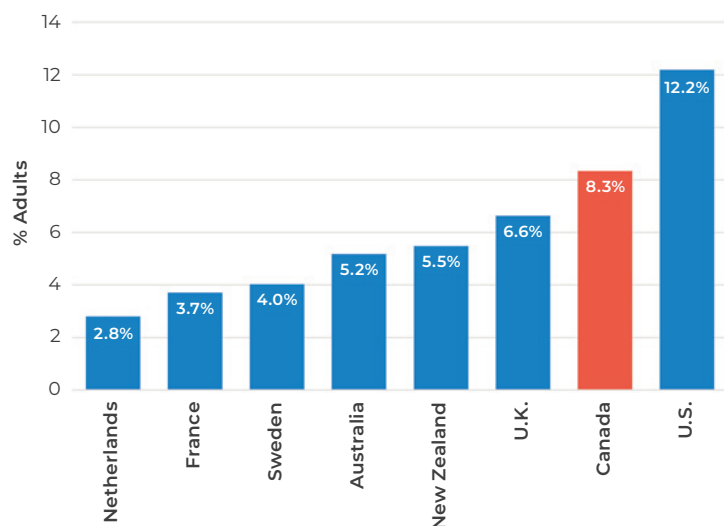
**Figure 6. Percent of Adults Who Used Up All or Most of Their Savings Because of the COVID-19 Pandemic**

- More Canadians reported using up their savings because of the COVID-19 pandemic than in any other peer country except the US.



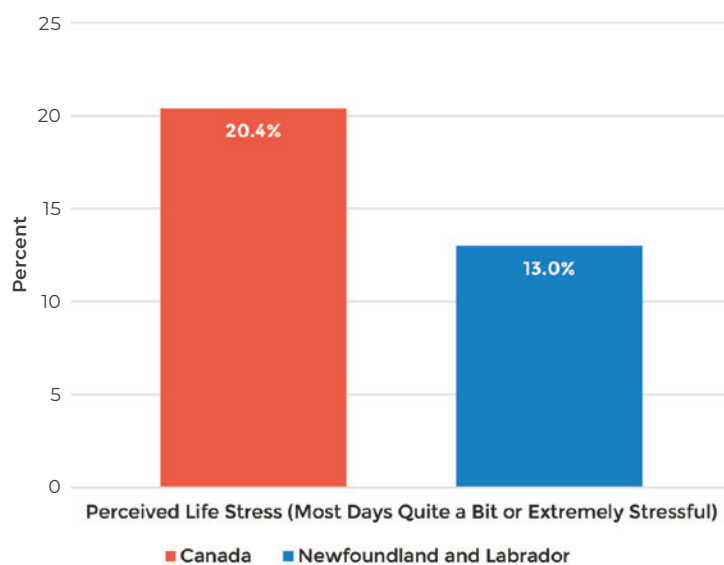
**Figure 7. Percent of Seniors Who Used Up All or Most of Their Savings Because of the COVID-19 Pandemic**

- Seniors in NL reported the worst financial impact of the pandemic in CA, with 58% more seniors in NL reporting using up their savings than the Canadian average.



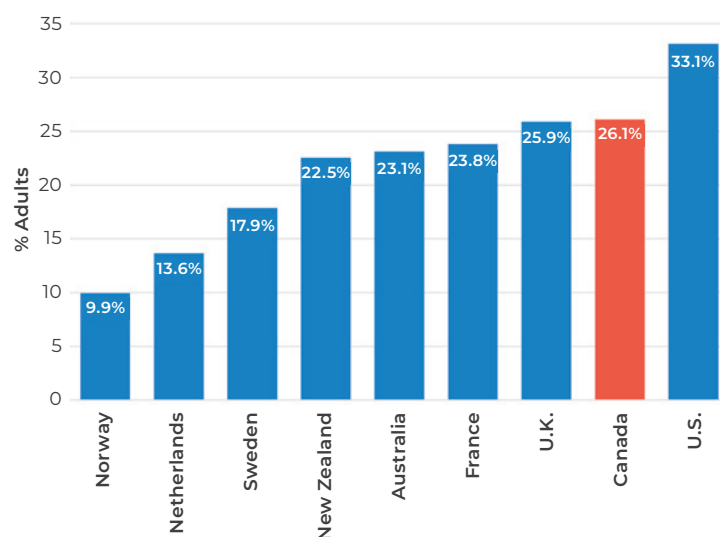
**Figure 8. Percent of Adults Who Borrowed Money or Took Out a Loan Because of the COVID-19 Pandemic**

- More Canadians reported needing to borrow money because of the COVID-19 pandemic than in any other peer country except the US.



**Figure 9. Percent of Individuals 12+ Years in Canada and NL Reporting They Perceive Most Days To Be Quite a Bit or Extremely Stressful, 2020**

- Individuals in NL report lower levels of stress than the Canadian average.



**Figure 10. Percent of Adults Who Experienced Stress, Anxiety, or Great Sadness They Found Difficult to Cope With by Themselves, Since the COVID-19 Outbreak Started**

- More Canadians reported difficulty coping with stress, anxiety, or sadness since the COVID-19 pandemic than in any other country except the US.

## Conclusions

1. Individuals in NL experience worse outcomes on most economic measures than the Canadian average.
2. Individuals in NL experience better outcomes related to some aspects of psychological well-being than the Canadian average, including experiencing less stress.
3. CA performed poorly in terms of negative impacts of the COVID-19 pandemic on adults' economic and psychological well-being, with only the US faring worse overall among peer countries surveyed. If national trends in economic and psychological well-being observed in response to the COVID-19 pandemic are mirrored in NL, then these SDH will have deteriorated for adults in this province as well, although they may not have changed relative to the Canadian average.
4. Seniors in NL report a greater economic impact of the COVID-19 pandemic than seniors in CA overall, with a greater proportion of seniors in NL using up their savings than any other province in the country and a greater proportion of seniors in NL losing a job or source of income than the Canadian average.

# Understanding the Influences on Older Adult Nutrition in Western NL and Promoting Positive Nutritional Change

## Objectives

1. To understand the factors, both individual and environmental, that influence the nutrition of older adults living at home in the community in western NL.
2. To explore the beliefs and perceptions of older adults and key informants about the role of community organizations and nursing practice in relation to older adult nutrition.
3. To identify the types of community-based programs and resources that could support positive nutritional change among community-dwelling older adults.

## Practice Points

1. The nutrition of older adults is individually impacted by their own personal access to healthy food, the affordability of good food, the personality characteristics of the older adult, and the time and planning requirements of eating well.
2. The environmental factors that influence the nutrition of groups of older adults living at home in western NL are the local food distribution systems, the economics of food, the NL climate, traditional practices related to food in NL, and social groups.
3. Older adults in western NL want local, community-based programming that makes eating healthy food easier, cheaper, and fits with their lifestyle.
4. Community-based nutrition programming needs to be advertised to older adults through communication strategies they engage with and should be consistently available, not one-time offerings of programs.
5. Community change agents, who are brokers between groups, champions of programming, and educators of health and services, should be employed. These community leaders would act as the medium between area residents and community organizations, health care, and academia, and would be a source of knowledge, inspiration, and a proponent of positive change.

## Methods (PI: Dr. D. Pittman)

1. Focus groups with older adults.
2. Individual interviews with key informants (community leaders, farmers, nurses, health administrators).

## Results

**Table 1. Overview of Individual and Environmental Determinants of Older Adult Nutrition in Western NL**

Community-Dwelling Older Adult Nutrition in Western NL	
Individual Determinants of Good Nutrition	Environmental Determinants of Good Nutrition
1. Personal Access	1. Food Distribution Systems
2. Affordability	2. Food Economics
3. Personality Characteristics Influencing Food Choices	3. NL Climate
4. Time and Planning Requirements of Eating Well	4. Traditional Practices in NL
	5. Social Groups
	6. Food-related Government Policies and Programs

Older Adult Individual Determinants of Good Nutrition
<b>1. Personal Access</b>
The ability of the older adult to access healthy food, both locally at smaller convenience stores and further away at larger grocery stores is influenced by their own physical abilities, living location, transportation options, and local weather.
<b>2. Affordability</b>
Healthy food costs more than poorer quality food. Individual older adults have varied amounts of income depending on age, work status, pension, and savings, with many being on a fixed income. The amount they can afford to spend on food determines what they buy and this may require them to shop the sales and budget for food.
<b>3. Personal Characteristics Influencing Food Choices</b>
The individualized knowledge of each older adult about the benefits of healthy eating, their cooking abilities, their past exposure to healthy foods, and their personal levels of interest and motivation to eat healthy or to prepare food.
<b>4. Time and Planning Requirements of Eating Well</b>
Cooking healthy food requires time and planning for the necessary ingredients, which is dependent on the availability of food in stores and the freshness of the food. Some older adults, especially those who continue to work, find that they do not have time to cook or are not prepared to if they haven't planned in advance, such as by taking meat out of the freezer.

Table 1 continued

Older Adult Environmental Determinants of Good Nutrition
<b>1. Food Distribution Systems</b>
How food is imported, where it is sorted, and how it is distributed back to communities for sale influences the quality, freshness, and availability of food. As there is no distribution centre in western NL, much of the food that is imported in Port aux Basques is sent to St. John's for sorting and storing and is then distributed back to western NL for re-sale. Once the food is at the stores, public accessibility remains a problem in western NL, with almost no public transportation systems connecting communities.
<b>2. Food Economics</b>
The high cost of nutritious food, the gas needed for vehicles, the price of electricity required for cooking and storage of food, and other costs associated with goods and services. Local convenience stores sell food for a higher price than larger grocery stores, disadvantaging those who must purchase locally. The further away a community is from a large grocery store, the higher the cost of gas to travel there.
<b>3. NL Climate</b>
The growing season in NL is short, with only 3–4 months in the summer. The climate influences what can be grown outside at home or in communities.
<b>4. Traditional Practices in NL</b>
Residents of NL have traditionally relied on salt as a means of preserving meat. The traditional NL diet has also included a lot of breads and sweets, with limited use of spices, and a reduced exposure to some types of fruits and vegetables, such as varieties of green, leafy vegetables and tropical fruit. Past reliance on hunting and gathering as means of securing food becomes more difficult for older adults.
<b>5. Social Groups</b>
Social groups can provide support and incentive for older adults to model healthy eating behaviours, such as sharing recipes and increasing awareness through shared discussions about food and health.
<b>6. Food-related Government Policies and Programs</b>
Social support programs need to target improved access to healthy, nutritious foods. Municipal planning regulations should limit unhealthy food options, such as fast food restaurants. Media and advertising campaigns should limit the promotion of bad food choices and should advertise local programming.

Table 2. Areas for Positive Nutrition Change and the Role of Community Organizations and Nursing Practice

Areas to Target for Positive Nutritional Change
<ul style="list-style-type: none"> <li>• Improve Food Availability (increase access, reduce cost, &amp; minimize effort)</li> <li>• Promote Education</li> <li>• Support Home Gardening</li> <li>• Decrease Food Waste</li> <li>• Develop Support Groups</li> <li>• Make Media and Communications Stronger</li> <li>• Supportive Policies and Programs</li> </ul>

Table 2 continued

Improving Older Adult Nutrition	
Role of Community Organizations	Role of Nursing Practice
<ul style="list-style-type: none"> <li>• Community Gardens, Garden Clubs</li> <li>• Cooking Demonstrations and Classes</li> <li>• Farmer's Markets</li> <li>• Meals-on-Wheels, Food Kits</li> <li>• Supper Clubs, Family Food Events</li> <li>• Food Banks</li> </ul>	<ul style="list-style-type: none"> <li>• Navigator</li> <li>• Educator</li> <li>• Advocate</li> <li>• Promoter of Health</li> <li>• Team Member</li> <li>• Leader</li> </ul>
Linking it All Together:	
Community Change Agents: Brokers, Champions, and Health Educators	

## Conclusions

- The nutrition of older adults can be improved with:
  - ◊ **Increase Access** that supports the production, distribution, and storage of food in NL.
  - ◊ **Reduce Cost** so good food is available at a fair price. Older adults should not pay higher costs for food based on personal circumstance or where they live.
  - ◊ **Minimize Effort** for community programming and the requirements to make or purchase nutritious food.
- Support community resiliency by utilizing local resources and promoting community-based programming that is responsive to local needs, multi-functional, and consistently available.
- Establish open, clear communication mechanisms with area residents, and between organizations locally, regionally, and provincially. The utilization of community change agents and the establishment of formal collectives can assist with this.



# Non-Medical Determinants of Health and Health Outcomes in Newfoundland and Labrador Compared to Canada

## Objective

To compare non-medical determinants of health, chronic disease, and mortality rates in Newfoundland and Labrador (NL) to those in the rest of Canada (CA).

## Practice Points

Prevalence of chronic disease, incidence of cancer, and life expectancy and mortality in NL are the worst in CA, and are strongly influenced by non-medical and social determinants of health (SDH), which are poor in NL.

## Methods

1. Data on non-medical determinants of health, prevalence of chronic disease, and mortality were obtained from Statistics Canada and the Canadian Institute for Health Information (CIHI). Data on cancer-specific incidence, survival and mortality were obtained from the Canadian Cancer Statistics 2021 report from the Canadian Cancer Society, which uses data provided by provincial cancer registries.
2. For each metric, NL was ranked in comparison to the other provinces with 1 as the best performance/outcome and 10 as the worst. In the tables, rank 1–3 is coloured green, rank 4–7 is yellow, and 8–10 is red, except where otherwise indicated due to missing data for some provinces. For measures with data missing for one province, yellow is rank 4–6 and red is 7–9. For the measure with data missing for two provinces, yellow is rank 4–5 and red is 6–8.

## Results

### Legend For Tables 1–5

NL Rank	1–3	4–7	8–10
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Table 1. Non-Medical and SDH, 2020

	CA (%)	NL (%)	NL Rank
<b>Healthy Eating</b>			
Fruit or vegetable consumption 5+ times per day	25.4	17.5	10
<b>Physical Activity</b>			
Adults (age 18+): 150 minutes per week	53.8	50.4	7
Youth (age 12–17): 60 minutes per week	42.9	46.9	4
<b>Alcohol Use</b>			
Heavy drinker	16.6	21.0	10
<b>Current Smoker</b>			
Daily or occasional	12.9	19.0	10
Daily	9.1	13.1	10
<b>Breastfeeding*</b>			
Initiation	91.9	64.3	10
Exclusive, at least 6 months	36.8	15.4	9**
<b>Employment</b>			
Unemployment rate <sup>#</sup>	7.5	12.9	10
<b>Income</b>			
Living on low income	6.4	7.0	6
<b>Education<sup>#</sup></b>			
Tertiary education	62	54	9
Bachelor's level or above	35	21	10
<b>Child Development<sup>##</sup></b>			
Children Vulnerable in Areas of Early Development	27.6	21.2	1
<b>Stress</b>			
Most days quite a bit or extremely stressful	20.4	13.0	1
<b>Belonging</b>			
Somewhat or very strong sense of belonging to local community	70.2	80.0	1
<b>Life Satisfaction</b>			
Satisfied or very satisfied	93.2	94.4	4

\* 2018 data

<sup>#</sup> 2021 data

\*\* Excludes PEI (9 = worst province)

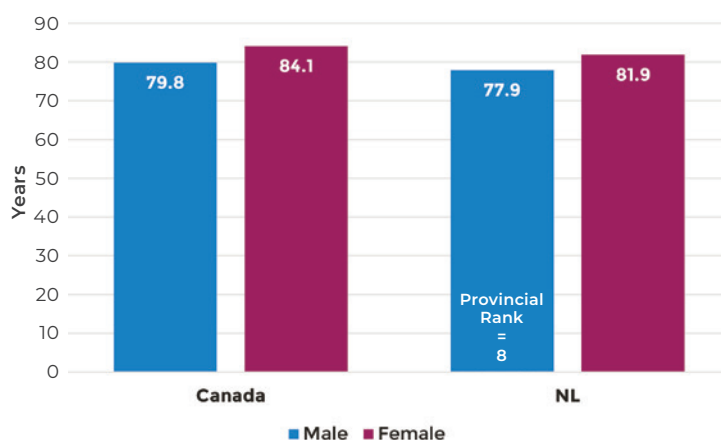
<sup>##</sup> NL data 2018–19 (school year); Canada based on the most recent available data from each province

**Table 2. Chronic Disease in CA and NL, 2020**

		CA	NL	NL Rank
<b>Arthritis</b>				
Prevalence (age 15+)		19.1%	27.7%	10
<b>Chronic lower respiratory diseases</b>				
Age standardized mortality rate per 100,000		25.8	35.3	9
<b>Asthma</b>	Prevalence (age 12+)	8.7%	9.1%	8
	Age standardized mortality rate per 100,000	0.7	0.8	3
<b>COPD</b>	Prevalence (age 35+)	3.9%	5.5%	7
<b>Diabetes</b>				
Prevalence (age 12+)		7.1%	11.4%	10
Age standardized mortality rate per 100,000		17.1	42.3	10
<b>End-stage kidney disease</b>				
Incidence per 100,000		20.8	17.8	4*
Prevalence per 100,000		141.6	166.4	7*
Age standardized mortality rate per 100,000		8.6	18.1	10
Hemodialysis rate per 100,000		49.5	108.7	8*
<b>Chronic liver disease and cirrhosis (excluding alcoholic liver disease)</b>				
Age standardized mortality rate per 100,000		4.4	9.1	10
Age standardized mortality rate per 100,000		191.3	225.4	10
<b>Major cardiovascular disease</b>				
<b>High blood pressure</b>	Prevalence (age 12+)	17.0%	23.9%	10
	Age standardized mortality rate per 100,000	4.2	11.3	10
<b>Heart failure</b>	Age standardized mortality rate per 100,000	12.6	14.6	6
<b>Heart attack</b>	Age standardized mortality rate per 100,000	27.4	27.3	6
	Hospitalizations per 100,000	219	289	9
<b>Stroke</b>	Hospitalizations per 100,000	136	163	9
<b>Cerebrovascular diseases</b>	Age standardized mortality rate per 100,000	30.2	42.7	10
<b>Obesity</b>				
Adult (18+), self-reported obese		28.2%	41.9%	10
Youth (12–17), self-reported overweight or obese		23.2%	26.3%	6

\* Excludes Quebec (9 = worst province)

- The prevalence and severity of chronic disease in NL generally ranks the worst in CA.



**Figure 1. Life Expectancy at Birth for Males and Females in CA and NL, 2018–2020**

**Table 3. Life Expectancy (in Years), Mortality (Rates per 100,000 Population), and Infant Mortality (Rate per 1,000 Live Births) in CA and NL, and Provincial Rank of NL**

		CA	NL	NL Rank
<b>Life expectancy (2018–2020)</b>	At birth (years)	81.2	79.9	9
	At age 65 (years)	20.9	19.16	10
<b>All causes mortality (2020)</b>	Crude rate	808.5	1,043.0	10
	Age-standardized rate	690.4	834.2	10
<b>Avoidable deaths (2016–2018)</b>	Overall	190	230	9
	From preventable causes	125	143	7
	From treatable causes	65	87	10
<b>Infant mortality</b>	Per 1,000 live births	4.5	5.0	7

- Life expectancy at age 65, overall mortality, and avoidable deaths from treatable causes in NL are the worst in CA.
- Infant mortality is higher in NL compared to CA. This reflects that the mortality rate specifically for infants aged under 1 day at time of death in NL is the highest among all provinces, while mortality rates for other ages of infants are on par with the rest of CA.

**Table 4. Age-Standardized Mortality Rates per 100,000 Population for CA and NL and Provincial Rank for NL for the Most Common Natural Causes of Death in CA, 2020**

	CA	NL	NL Rank
<b>Malignant neoplasms</b>	182.6	225.1	10
<b>Diseases of the heart</b>	118.3	158.1	10
<b>Dementia</b>	50.0	62.8	9
<b>COVID-19</b>	35.2	0.6	2
<b>Cerebrovascular diseases</b>	30.2	42.7	10
<b>Chronic lower respiratory diseases</b>	25.8	35.3	9
<b>Influenza and pneumonia</b>	12.9	13.3	9
<b>Diabetes mellitus</b>	17.1	42.3	10
<b>Alzheimer's disease</b>	12.3	6.7	4
<b>Nephritis, nephrotic syndrome, and nephrosis</b>	8.9	18.3	10

- Mortality rates in NL are among the highest in the country for the most common causes of death.
- The low mortality rate from COVID-19 reflects the success of public health measures implemented in NL in 2020.

**Table 5. Age Standardized Rates and Survival for the Six Most Common Cancers in CA, 2021**

	CA	NL	NL Rank	
<b>Lung and bronchus</b>				
Incidence rate/100,000*	Male	62.0	77.9	7
	Female	57.9	68.3	7
5-year survival (%)**		22	23	2
Mortality rate/100,000	Male	50.9	65.7	10
	Female	41.4	44.4	6
<b>Colorectal</b>				
Incidence rate/100,000*	Male	64.1	105.0	9
	Female	46.6	80.3	9
5-year survival (%)*		67	68	1
Mortality rate/100,000	Male	25.9	42.8	10
	Female	17.2	27.9	10

**Table 5 continued**

<b>Breast</b>				
Incidence rate/100,000*	Female	126.8	136.6	9
5-year survival (%)*	Female	89	89	2
Mortality rate/100,000	Female	23.1	25.3	9
<b>Prostate</b>				
Incidence rate/100,000*	Male	117.9	105.2	2
5-year survival (%)*	Male	91	91	2
Mortality rate/100,000	Male	22.7	27.8	6
<b>Non-Hodgkin lymphoma</b>				
Incidence rate/100,000*	Male	30.3	31.1	8
	Female	21.8	22.8	8
5-year survival (%)*		69	69	5
Mortality rate/100,000	Male	8.2	8.9	7
	Female	5.0	6.5	10
<b>Bladder</b>				
Incidence rate/100,000*	Male	41.4	39.4	3
	Female	11.3	13.8	9
5-year survival (%)*		77	82	1
Mortality rate/100,000	Male	9.6	10.2	6
	Female	2.8	2.8	8

\* Excludes Quebec (9 = worst province)

\*\* Excludes Quebec and PEI (8 = worst province)

- NL has among the highest age-standardized incidence and mortality rates for common cancers in comparison to other Canadian provinces.
- 5-year survival rates for common cancers in NL are among the best in the country, so the highest overall mortalities are driven by the higher incidence rates.

## Conclusions

1. NL ranks poorly in many non-medical and SDH, including health behaviours and economic conditions. Given the impact of these factors on health and chronic disease, there is potential for greater improvements in health outcomes and life expectancy in NL by addressing social services and health promotion rather than focusing solely on the health care system.
2. The cause of the high mortality rate for infants under 1 day old in NL should be investigated and potential improvements implemented.

# Household Food Insecurity in Newfoundland and Labrador, 2021

## Objective

To determine the extent of food insecurity in Newfoundland and Labrador (NL) compared to other Canadian provinces.

## Practice Points

- Household food insecurity refers to the inadequate or insecure access to food because of financial constraints. It denotes pervasive material deprivation. It is most prevalent in single-parent families, renters and among individuals who identify as Indigenous or black.
- In Ontario, compared with total annual health/drug costs in food-secure households, these adjusted annual costs were 23% higher in households with marginal food insecurity, 49% higher in those with moderate food insecurity, and 121% higher in those with severe food insecurity (Tarasuk et al., CMAJ, 2015). Whether this is cause or effect is uncertain.
- In 2017–18, in Canada (CA), 12.7% of households experienced some level of food insecurity in the previous 12 months.
- In NL, reductions in food insecurity among social assistance recipients from 2007–12 correlate with the increase in social assistance benefits that accompanied the 2006 poverty reduction strategy.
- In 2017/18 the prevalence of food insecurity in NL was second highest among the Canadian provinces.

## Data

Statistics Canada Canadian Community Health Survey conducted in 2017–18 in 103,500 households reported by Tarasuk V. Miller A. <https://proof.utoronto.ca/>

Data Source: Tarasuk V, Li T, Fafard St-Germain AA. (2022) Household food insecurity in Canada, 2021. Toronto: Research to identify policy options to reduce food insecurity (PROOF). Retrieved from <https://proof.utoronto.ca>

## Results

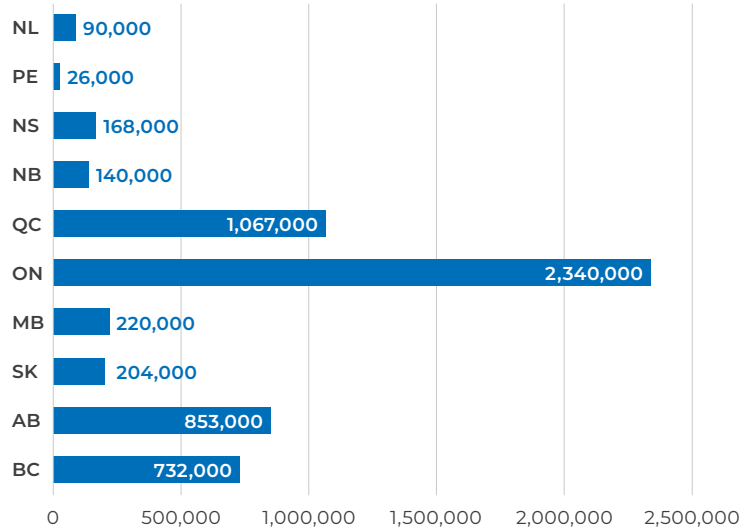
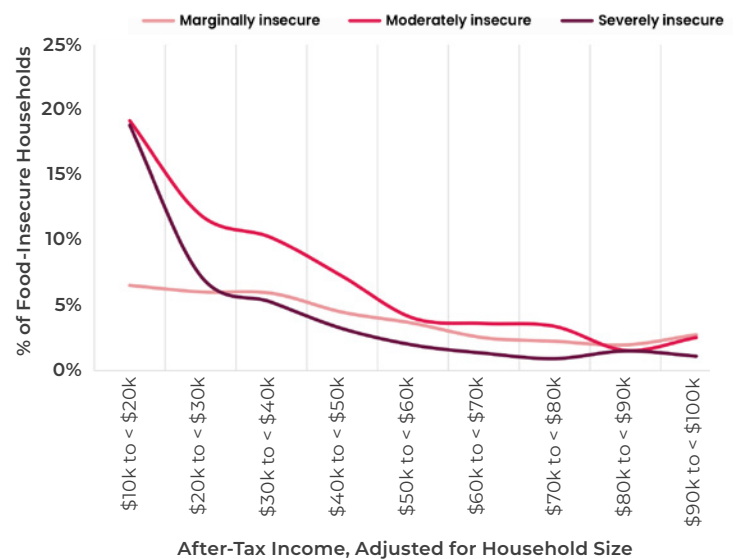


Figure 1. Number of People Living in Food-Insecure Households by Province, 2021

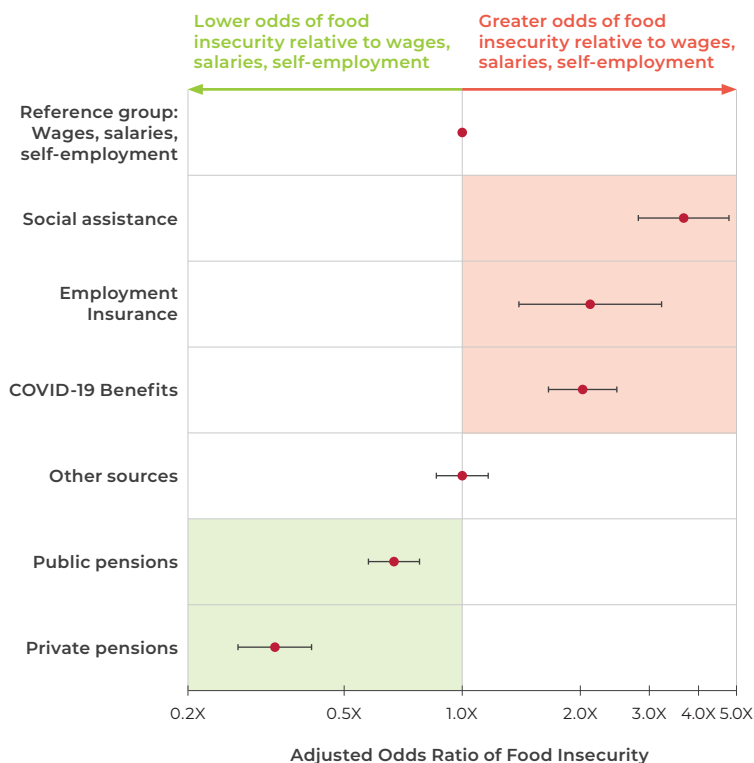
- The prevalence of food insecurity differed markedly by province ranging from 13.1% in Quebec (QC) to 20.3% in Alberta (AB).
- The prevalence of food insecurity in NL was 17.9%, ranking 4th highest of the Canadian provinces and similar to the rates for Manitoba (17.8%) and Nova Scotia (17.7%).



Data Source: Statistics Canada, Canadian Income Survey (CIS) 2020.

Figure 2. Food Insecurity in Canada by Household Income

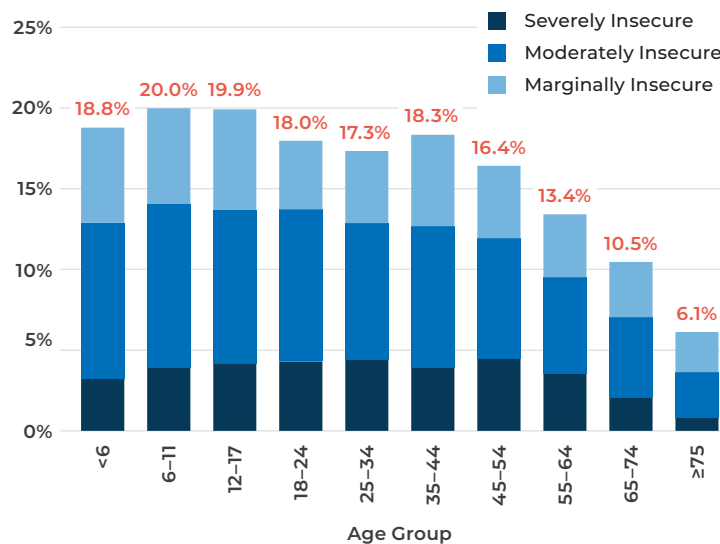
- Household food insecurity is a measure of material deprivation, tightly linked to indicators of social and economic disadvantage.
- Household income is a robust predictor of food insecurity.



Data Source: Statistics Canada, Canadian Income Survey (CIS) 2020.

**Figure 3. Adjusted Odds Ratios of Food Insecurity in Relation to Main Source of Income (Adjusted for Socio-Demographic and Economic Characteristics)**

- Multivariable analysis shows the elevated vulnerability of food insecurity associated with public income support programs, aside from public pensions.
- Being outside the workforce comes with heightened food insecurity only if you are not a senior.
- Female lone parent households had the highest rate of food insecurity at 38.1%, followed by male lone parent households at 20.8%, and unattached individuals living alone at 20.3%.
- When analyzed by racial/cultural identity the highest percent of individuals living in food-insecure households was found in Indigenous Peoples at 30.7%.



Data Source: Statistics Canada, Canadian Income Survey (CIS) 2020.

**Figure 4. Percentage of Individuals Living in Food-Insecure Households in Canada by Age Group, 2021**

- The prevalence of household food insecurity among children and young adults is more than triple the prevalence for adults 75 years and older.
- The proportion of children under 18 who lived in food-insecure households in NL was 26.4%, the highest rate among the 10 provinces.

## Conclusions

1. Tackling the conditions that give rise to food insecurity means reevaluating the income supports and protections that are currently provided to very low income, working-aged Canadians and their families.
2. This means addressing the vulnerability of households reliant on employment incomes but still unable to make ends meet and ensuring that working-aged adults not in the workforce also have sufficient incomes to meet basic needs.

# Food Costs in Newfoundland and Labrador in Comparison to Other Provinces in 2021

## Objective

To use a novel, nationally representative, highly disaggregated food costing measure (digital National Nutritious Food Basket: dNNFB) to compare the cost of food across regions and provinces in 2021.

## Practice Points

1. Food baskets for a reference family of two adults and two children were more expensive in Atlantic Canadian provinces than other provinces/territories sampled.
2. Comparing the dNNFB with national estimates of market basket measure (MBM) food costs suggests we are underestimating the cost of food across the country with standard surveillance statistics.
3. Empirical observations of food prices and their distribution across retailers and regions within Canada (CA) can facilitate conversations between retailers, communities, and policymakers regarding effective policy options to address ongoing affordability issues.

## Data (PIs: N. Taylor, Dr. C. Mah)

Online food price data over 23 Nov and 24 Nov 2021 was collected from 751 stores in 11 retail banners across Canada. 184 discrete products were matched to 61 indicator foods to cost the dNNFB.

<https://www.sciencedirect.com/science/article/pii/S2211335523000530>

## Results

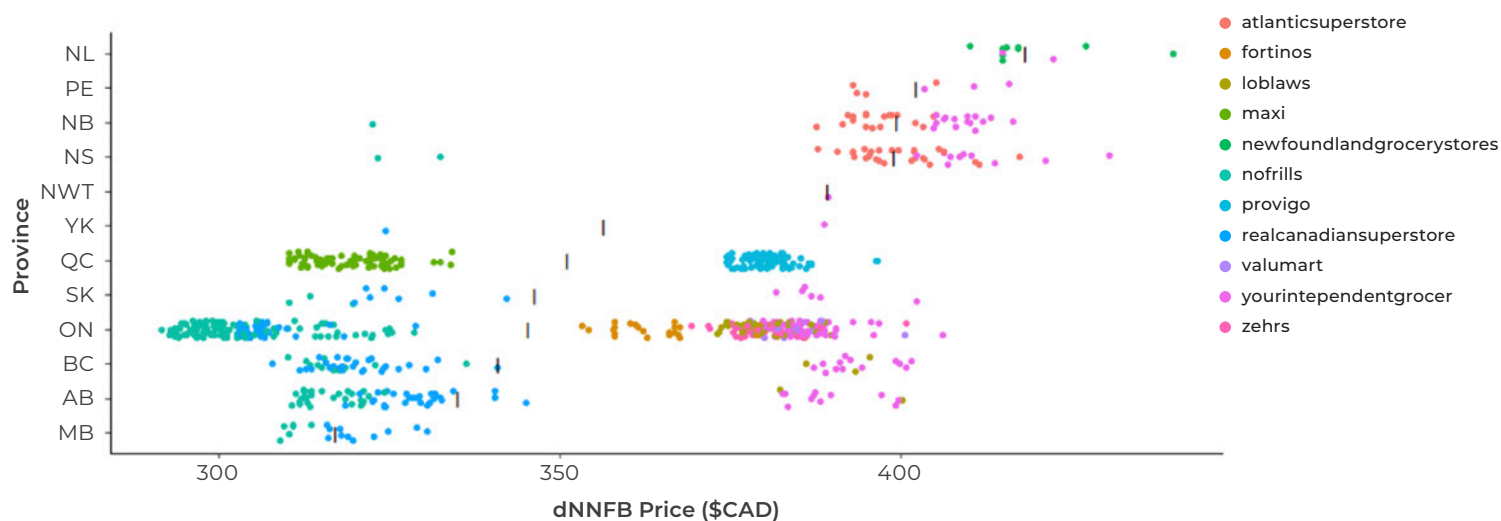
**Table 1. Average Weekly dNNFB Reference Family Costs Stratified by Statistics Canada Region. Percentage Reflects the Increase in Cost Associated with Baskets in Atlantic Canada Relative to Other Regions**

Province	Mean (CI)	Comparative Cost (Manitoba Reference)
<b>Manitoba (MB)**</b>	317.29 (314.17–320.4)	1
<b>Alberta (AB)</b>	335.13 (328.7–341.57)	1.06
<b>British Columbia (BC)</b>	341.12 (332.05–350.19)	1.08
<b>Ontario (ON)</b>	345.46 (341.32–349.59)	1.09
<b>Saskatchewan** (SK)</b>	346.36 (330.69–362.03)	1.09
<b>Quebec (QC)</b>	351.09 (346.1–356.09)	1.11
<b>Yukon* (YK)</b>	356.57 (NA)	1.12
<b>Northwest Territories* (NWT)</b>	389.38 (NA)	1.23
<b>New Brunswick (NB)</b>	399.52 (394.42–404.62)	1.26
<b>Nova Scotia (NS)</b>	399.03 (393.24–404.81)	1.26
<b>Prince Edward Island** (PE)</b>	402.35 (395.7–409.01)	1.27
<b>Newfoundland** (NL)</b>	418.38 (414.2–422.56)	1.32

\* Note only 2 stores were sampled respectively for the YK and NWT. Although the data is included, caution should be taken when comparing these values to the provincially sampled stores.

\*\* NL, PE, MB, and SK had store counts >6 but <30, confidence intervals should be interpreted cautiously.

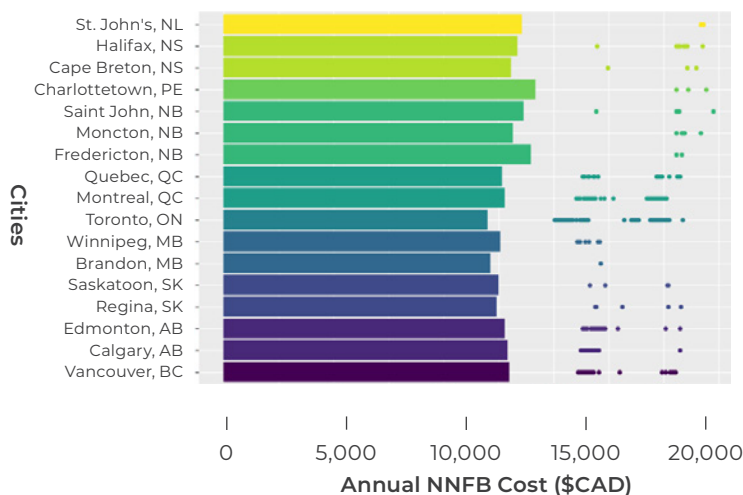
- A reference family in Newfoundland would pay ~32% more than a reference family in MB for a weekly national nutritious food basket



Average basket costs per province are captured by black horizontal lines. Point colors reflect the store banner each basket cost was calculated from.

**Figure 1. Weekly dNNFB Reference Family Costs Stratified by Province and Banner**

- Among the Four Atlantic provinces NL has the greatest average and maximum food costs for a reference family (Two adults, Two children).



Bar graphs indicate MBM estimates from Statistics CA for cities from each province across CA. Points indicate dNNFB costs from stores within the cities listed.

**Figure 2. Comparison of Annual dNNFB Estimates and Statistics CA MBM Estimates Adjusted for Inflation**

- dNNFB annual estimates were greater than Statistics CA MBM estimates after adjusting for inflation in cities across the ten provinces of CA.

## Conclusions

Inequity exists in the cost of food between Atlantic CA, more specifically NL, and the rest of CA. Food affordability is associated with food insecurity, dietary compromise, and adverse health outcomes. Underestimating food costs may lead to inadequate responses to the ongoing cost of living crisis. Web scraped food prices provide accurate, near real-time data to engage with stakeholders in communities across the country to address food affordability.

# A Holistic Approach to the Social Determinants of Health

## Objective

To develop an approach for bringing awareness to the importance of the social determinants of health (SDH) and integrating the SDH into health and social system policy and delivery.

## Practice Points

1. The SDH are responsible for 60% of our health, with the health system comprising only 25% and ones biology and genetics comprising only 15%.
  2. Health spending has seen dramatic increases over the years, while investments in the SDH have been minimal.
  3. Life expectancy in Newfoundland and Labrador (NL) is lower than the Canadian average.
  4. NL is among the most food insecure provinces in Canada, with the children of low income families experiencing the highest rates of food insecurity.
  5. Government of NL has accepted the idea of well-being as central to its goal and has integrated well-being into various initiatives, plans, reviews, and evaluations.
  6. Integrating the SDH into the health and social systems is essential.
- Leveraging the work that has already been completed to develop Canada’s Quality of Life Framework domains and indicators, NL is well-positioned to engage across government and sectors to adapt the framework to develop NL’s first well-being framework.
  - Placing well-being at the center of the framework enables the integration of measures in each of the five domains – society, environment, good governance, prosperity, and health. Each domain plays a role in the well-being of the people of the province. Measuring each will provide insight to Government of NL as to whether or not investments, policies, and actions are improving the well-being of the population.
  - Implementation of a well-being framework for NL has potential to become the measure by which we gauge our health as a province and the potential to position NL as a leader in rebalancing health and well-being.

## Data

Canada’s Quality of Life Framework domains and indicators.

## Results



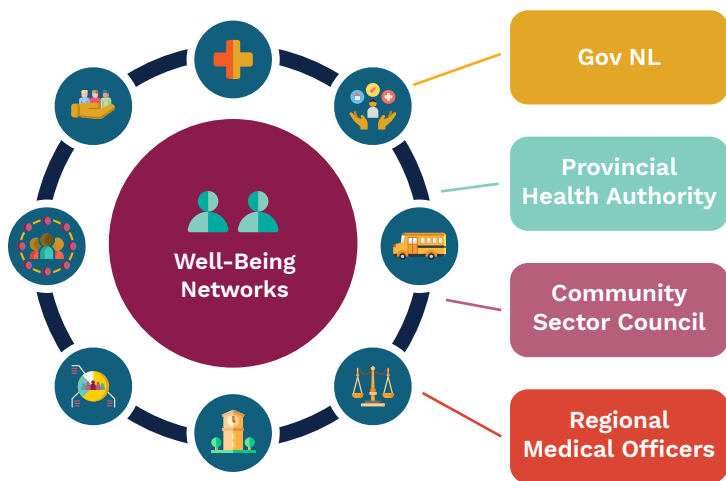
Figure 1. Collating the Evidence – A Well-Being Framework for NL



Figure 2. Engaging the Regions – Regional Well-Being Networks



- It is critical to engage with people, including Indigenous groups, who deliver and receive services such as health, social, education, justice, private sector, community sector, etc.
- Regional needs vary based on geography, demographics, sustainability of services, and much more.
- Well-being networks provide opportunities to focus on region-specific priorities, issues and solutions by facilitating collaboration with stakeholders with a vested interest in the impacts of the SDH.
- Networks are new to Canada providing NL the opportunity to lead an innovative approach to social and health community integration.
- Network members are identified by leadership positions they hold as part of their day jobs.
- Networks are supported by regional data integrating social, economic, and environmental metrics with health system information to help focus discussions.
- Each well-being network is supported by field catalysts, dedicated staff that facilitate effective community integration and discussion and collate solutions for consideration by decision-makers.



**Figure 3. Supporting Decision-Makers – A Proposed Structure to Implement a Well-Being Approach in NL**

- For networks to be most effective, they must be connected to decision-makers that influence policy and delivery – Government of NL, the provincial health authority, the community sector, and regional medical officers
- Structures that enable good two-way communication with the networks should reduce silos and improve integration.

### Government of NL

- Various departments in Government NL have mandates that intersect with the SDH.
- Coordinating and aligning individual efforts into an overarching strategy is required.
- To do this, interdepartmental committees will be established.
- The health transformation team will support the committees to achieve the following objectives:
  1. Increase **awareness** of the importance of social, economic, environmental, and lifestyle factors that determine health in NL.
  2. Create **sustainable and integrated structures** within government and in the regions that implement improvement in the SDH and disease prevention.
  3. Create an **evaluation** well-being framework that facilitates change in an iterative manner.
- To achieve these objectives, the health transformation team will support the committees to lead the development of the well-being framework, and lead the establishment of regional well-being networks.
- Evidence from the well-being framework and discussions from the regional well-being networks will feed into the interdepartmental committees to inform strategy and policy development.

## Provincial Health Authority (PHA)

- The creation of a PHA is well underway.
- The new governance structure for the PHA will assign a vice president of well-being the responsibility of integrating the SDH and community care into health system delivery.
- Evidence from the well-being framework and discussions from the regional well-being networks will link to the vice president of well-being to help inform service delivery in the region.

## The Community Sector

- The community sector plays a critical role in the delivery of programs and services related to the SDH.
- Partnering with the community sector to identify needs within regions will help determine the investments that will have the most impact for those that are most in need.
- The Community Sector Council of NL is well positioned as a partner in coordinating the work of the community sector.
- Evidence from the well-being framework and discussions from the regional well-being networks will link to the Community Sector Council to help inform service delivery in the region.

## Conclusions

1. The regional medical officers of health and public health have a responsibility for population health. Linking the networks of the regional medical officers and through them to the chief medical officer will integrate public health with structures created to improve the SDH and lifestyle factors predisposing to disease.
2. A holistic approach to prioritizing the SDH as a way of improving health outcomes in NL is essential.
3. Changing the culture of all stakeholders – the public, government, the community sector, the private sector – will be required.
4. A cross-departmental, cross-sectoral approach will leverage partnerships to affect real change.
5. Investing in programs and services that target the SDH must be a priority.
6. Using data to inform decision-making for policy, delivery, and investment will ensure those most in need remain in focus.
7. Opportunities for partnership in building support for improving the SDH and lifestyle factors should be evolved over time.

# Social Prescribing – A Potential Way to Achieve Better Health Outcomes in Newfoundland and Labrador

## Objective

To investigate social prescribing and how it could improve physical and mental health outcomes in the people of Newfoundland and Labrador (NL).

## Practice Points

1. Social determinants of health (SDH) is the name given to the conditions in which people are born, live, grow, eat, exercise, learn, work, play and age. These social, economic, and environmental factors have more influence on health (60%) than the health system (25%); or genetic make-up and biology 15%.
2. An estimated 20% of patient visits to family physicians are for social issues that, if left unattended, can develop into medical conditions leading to increased demand on health care systems and inappropriate use of physician time.
3. Social prescribing is a person-centered, community-based approach to health care that empowers individuals to better understand their needs and take action to improve their health and well-being. It can be used by anyone across the lifespan but has been shown to be particularly beneficial for people who are living with complex health and social needs.

## Data (PIs: S. Sajed, J. Gosine)

- Canadian Medical Association, 2017, “Health equity and the social determinants of health,” (Canadian Medical Association Journal, 2017)
- <https://www.allianceon.org/Rx-Community-Social-Prescribing-In-Ontario>
- <https://www.allianceon.org/Social-Prescribing>
- <https://larter.com.au/social-prescribing-highly-practical-way-address-social-determinants-health/>

## Results

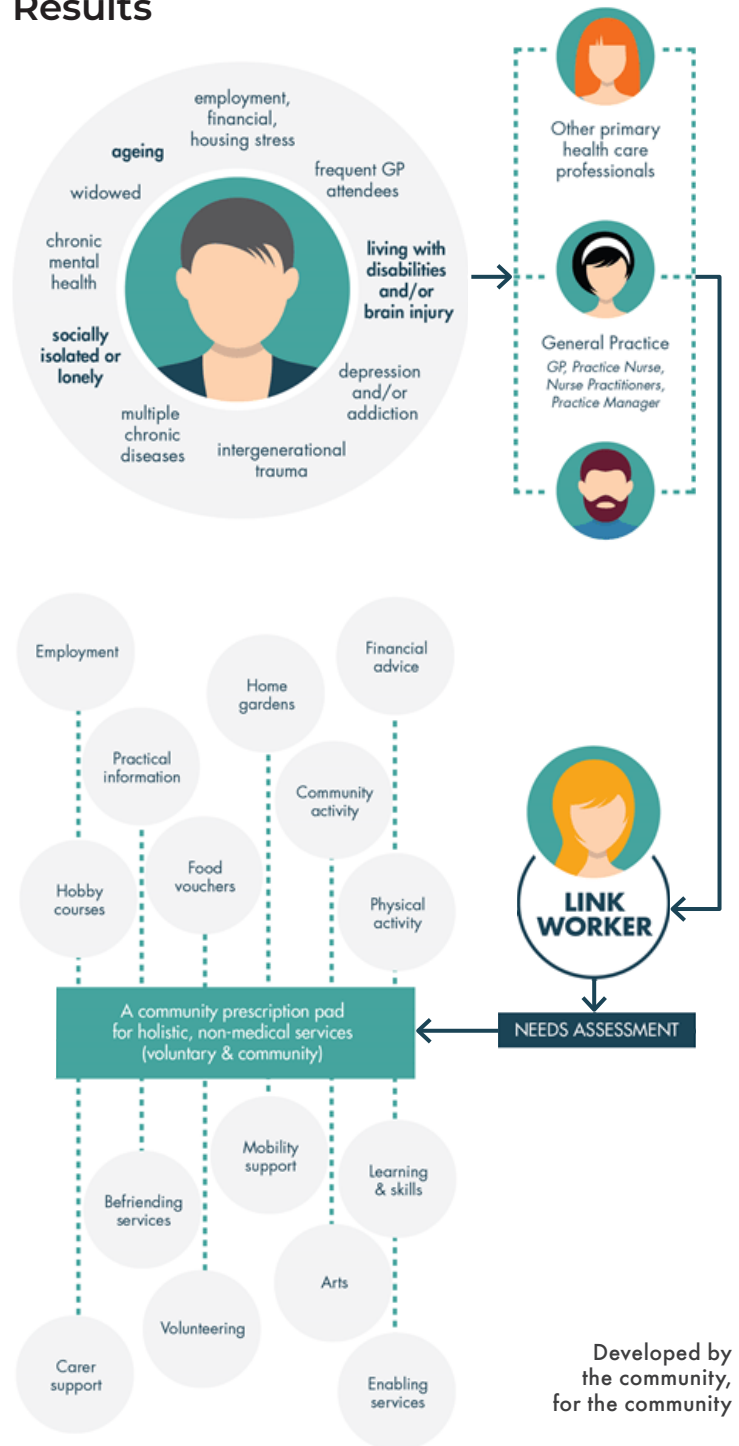
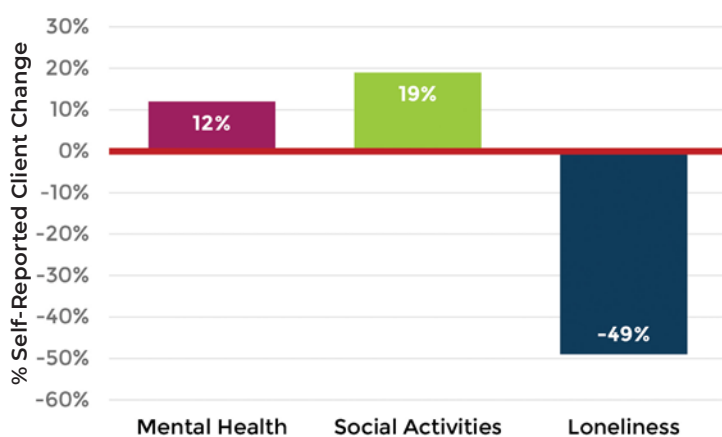


Image accessed from <https://larter.com.au/social-prescribing-highly-practical-way-address-social-determinants-health/>, February 2023

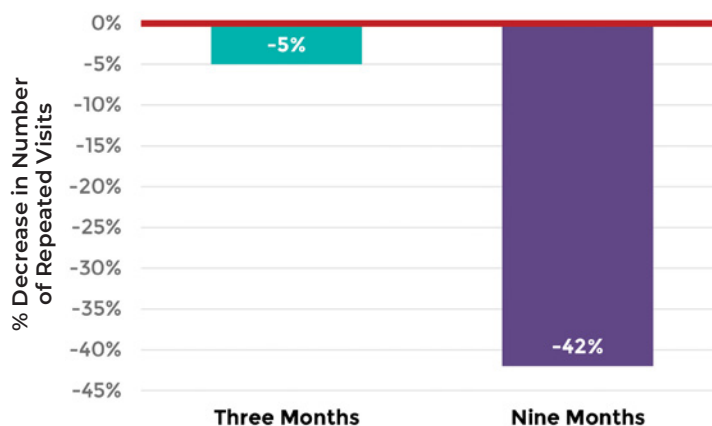
Figure 1. Example of a Concept Diagram For Co-Designing a Local Social Prescribing Model by Larter Consulting

- Social prescribing links people with non-clinical services and assistance that can prevent social issues such as loneliness, homelessness, and improves health.
- Evidence shows that over 90% of those who were seen by a “health connector” or “link worker” as part of a social prescribing scheme self reported feeling “better” and more in control of their health.
- Adopting more community-centered practices can assist in providing more appropriate and effective methods of engaging people and enhancing their health and well-being.



**Figure 2. Self-Reported Change in Loneliness, Mental Health, and Sense of Connectedness and Belonging of Participants in “Rx Community – Social Prescribing” Year-Long Pilot**

- A Social Prescribing Research Pilot in Ontario “Rx Community – Social Prescribing”, run by the Alliance for Healthier Communities found that social prescribing has a substantial impact on health.
- Participants’ experiences of loneliness decreased by 49%, self-reported mental health improved by 12% and their sense of community belonging increased by 19%.



**Figure 3. Health Providers Reported Social Prescribing Decreased Number of Repeat Visits By Clients**

- Medical professionals found social prescribing reduced the number of repeat visits by patients by 5% after three months and by 42% after nine months as shown in figure above.

## Conclusions

1. Social prescribing is currently being used or developed in 17 countries: China, South Korea, Germany, Denmark, Australia, Finland, Sweden, Spain, Singapore, Ireland, the Netherlands, Portugal, Canada, New Zealand, the UK, USA and Japan.
2. A social prescribing approach embedded into primary care could potentially lead to better health outcomes for the people of NL.

## Additional Resources

- [WHO: A Toolkit On How to Implement Social Prescribing](#)
- [Social Prescribing Tool for Health Professionals](#)
- [Global Social Prescribing Alliance](#)
- [Canadian Institute for Social Prescribing](#)

# The Well-Being of Newfoundland and Labrador Prior to Implementation of Health Accord NL

## Objective

To provide an overview of the well-being of communities within Newfoundland and Labrador (NL).

## Practice Points

1. Well-being is the experience of health, happiness and prosperity and is influenced by every aspect of life. Well-being means having what we need to create and maintain the lives we want for ourselves.
2. Measurement of well-being indicators is essential so that we can assess current levels of social and economic well-being, determine which areas of the province are experiencing poor well-being, plan implementation of interventions and monitor the impact of these interventions over time.

## Methods

1. Data on a number of key social and economic indicators was obtained from the Well-Being and Indicators section in Community Accounts (Department of Finance).
2. Data was compiled for a select sample of communities within NL (but is available for 364 communities in total) and also for the Province as a whole.
3. A Composite Well-Being Score was provided for each community based on a community's ranking on 16 well-being indicators that included both objective and subjective measures.

## Results

Table 1. Well-Being Summary Table for Select Communities in NL and for the Province

Indicator	St. John's	Clareville	Gander	Grand Falls-Windsor	Corner Brook	Labrador City	Happy Valley-Goose Bay	Province
Population, 2016	108,860	6290	11,690	14,520	19,805	7,220	8,110	519,716
Population Change, 2011–2016	2.5%	4.2%	5.7%	4.3%	-0.4%	-2.0%	7.4%	1.0%
Migration Rate (5 year basis), 2016	16.6%	20.1%	20.3%	13.8%	12.6%	13.3%	17.6%	
Average Couple Family Income, 2019	\$135,200	\$121,200	\$122,900	\$103,100	\$101,400	\$172,400	\$141,600	\$113,300
Personal Income Per Capita, 2019	\$43,700	\$39,500	\$41,800	\$35,500	\$36,200	\$60,300	\$46,100	\$38,600
Economic Self-Reliance Ratio, 2019	86.3%	83.0%	84.9%	78.1%	78.7%	93.7%	89.0%	80.0%
Employment Rate (age 15 and over), 2016	57.8%	56.2%	56.3%	46.8%	49.0%	65.1%	66.9%	49.5%
Change in Employment, 2014–2019	-2.3%	0.8%	0.8%	-5.4%	-3.1%	-3.6%	-5.1%	-3.8%
High School Diploma or Higher (pop 25 to 64), 2016	91.2%	90.2%	89.4%	86.6%	88.6%	91.9%	87.9%	84.3%
Bachelor's Degree or Higher (pop 25 to 64), 2016	35.6%	20.5%	19.3%	16.5%	20.1%	14.7%	17.2%	18.3%
Employment Insurance Prevalence, 2021	21.4%	38.0%	27.6%	36.0%	31.3%	14.4%	21.9%	38.6%
Income Support Benefits Incidence, 2021	11.4%	8.0%	7.1%	10.7%	8.4%	2.9%	5.3%	7.8%

table continued on page 110

Table 1 continued

Indicator	St. John's	Clareville	Gander	Grand Falls-Windsor	Corner Brook	Labrador City	Happy Valley-Goose Bay	Province
Median Age of Death, 2016–2020	79	82	82	78	81	69	76	78
Low Income Prevalence: All Family Types, 2019	23.7%	14.8%	15.6%	17.5%	18.4%	8.8%	13.0%	16.5%
Self-Assessed Health Status, Excellent and Very Good, Age 12+, 2015–2016	63.5% +/- 4.8%	43.0% +/- 24.3%	60.5% +/- 10.0%	64.6% +/- 7.3%	62.5% +/- 6.7%	73.9% +/- 9.0%	51.9% +/-10.3%	62.0% +/- 1.7%
Sense of Belonging to a Community, Age 12+, 2015–2016	75.5% +/- 4.3%	88.8% +/- 15.9%	79.0% +/- 8.6%	84.3% +/- 5.7%	81.2% +/- 5.5%	84.1% +/- 7.5%	78.4% +/-8.7%	79.6% +/- 1.5%
Satisfaction with Life in General, Very Satisfied or Satisfied, Age 12+, 2015–2016	85.7% +/- 3.5%	97.4% +/- 8.1%	86.8% +/- 7.1%	89.2% +/-4.9%	91.1% +/- 4.0%	88.3% +/- 6.6%	95.0% +/- 4.7%	88.0% +/-1.2%
Composite Well-Being Score	70%	79%	76%	64%	64%	76%	73%	

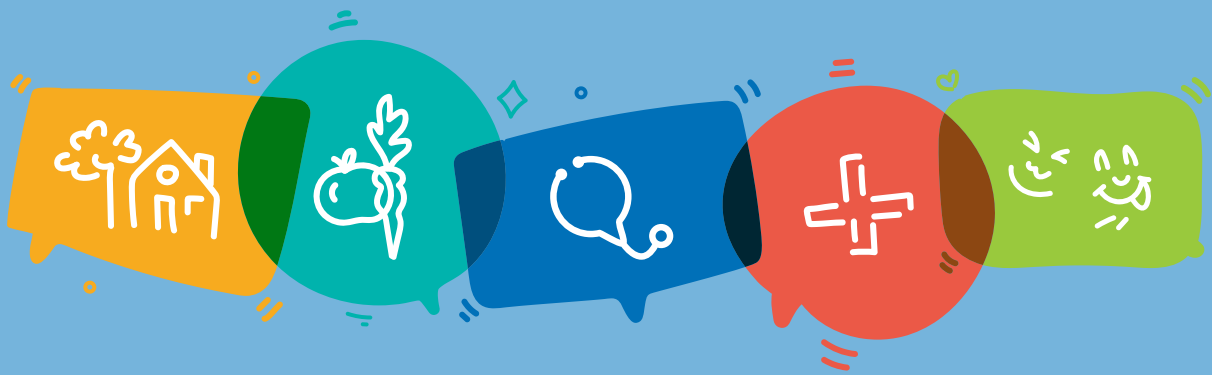
## Conclusions

1. Communities across NL experience vastly different rates of population change, income, employment, education, income support benefits and more.
2. Monitoring a population's well-being helps to determine areas of need and guides decision-makers in determining policies and interventions.

## Our Partners

Our innovative approach enables us to work closely with all our partners, including:





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