Practice Points

Jul – Dec 2019

Volume 6

Quality of Care NL

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

Choosing Wisely NL™

Our partnership with Choosing Wisely Canada builds upon established national guidelines and recommendations that cross all disciplines to support the reduction of low-value health care, particularly where harms outweigh benefits.

Health System Performance in NL

Quality of Care NL

Who We Are

Quality of Care NL is an applied health systems research and evaluation program aimed at improving the quality of care delivered in Newfoundland and Labrador (NL). We work to ensure the right treatment gets to the right patient at the right time.

Our partnership with Choosing Wisely Canada builds upon established national guidelines and recommendations that cross all disciplines to support the reduction of low-value health care, particularly where harms outweigh benefits. This work is carried out by Quality of Care NL on behalf of Choosing Wisely NL.

Our Approach

Our research and evaluation projects are centred on health care system priorities and are directed by many partners within the system. Project ideas are generated by health care providers, managers, policy decision-makers, and patients all with questions on how the system can be improved to deliver better quality care.

Quality of Care NL works with project teams to define methodologies, analyze data, provide clinical interpretation, and engage patients to ensure project outcomes are meaningful. We work with and engage all stakeholders to encourage the implementation of evidence-based research and evaluation outcomes through interventions that make it easier to determine the best course of treatment.

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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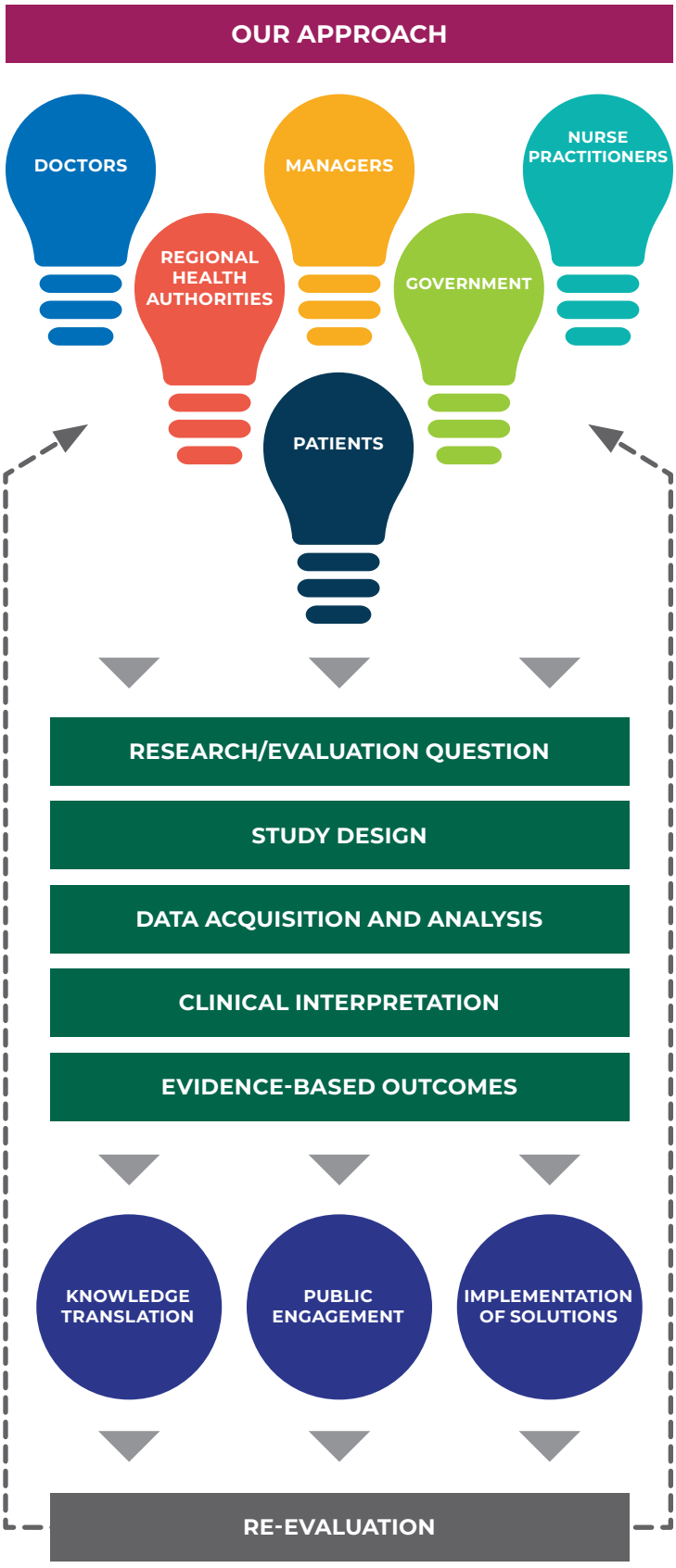

Practice Points

Volume 6: Jul – Dec 2019

Preface

The work published in Practice Points Volume 6 is devoted to components of health system performance and quality of care in acute care hospitals, in long-term care and in primary care. Our objective is to improve the value of health spending, which is the worst in Canada, by improving health system performance and health outcomes commensurate with the money we spend.

The major implications of this work can be summarized in the need for change through:

Acute Hospital Restructuring

Improved Long-term Care for the Frail Elderly, both Institutional and Community

Primary Care Transformation

Enhancement of Electronic Services

Reduction in Low-value Care and Improvement in Quality of Care

Enhanced Social Spending and Spending on Preventative Care to Improve the Non-medical Determinants of Health

At the time of publication, Newfoundland and Labrador was facing a public state of emergency as a result of the COVID-19 pandemic. While none of the work completed in Practice Points Volume 6 was impacted by COVID-19, the pandemic, and the impacts will be acknowledged in future volumes of Practice Points.

Moving forward, Quality of Care NL will compare Canada's health system performance to that of Australia which has been identified as a country with top tier performance. In addition, NL's performance will be compared to that of the Canadian provinces, and to Tasmania, a state with similar characteristics to NL. Results and analysis of this work will be presented as part of Practice Points Vol. 7.

Quality of Care NL

Our Change Strategies and Projects

These change strategies and projects reflect the strategic direction of our partners and the priorities of the people of NL, as set through a patient-oriented priority-setting process.

Report Cards and Academic Detailing

Acute Care Hospitals

Stroke
Colonoscopy
Mammography
Antibiotics
Enhanced Recovery After Surgery (ERAS)
Surgery
Imaging
Drugs

Family Physicians

Drugs
Imaging
Biochemical Tests
Practice Characteristics

Long-Term Care Facilities

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Incidence & Prevalence of Clients

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Stable Angina
Acute Coronary Syndrome

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Medical Education

STARS
Research Apprenticeship Program
Lectures to Medical Students and Trainees

Public Campaigns

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Stroke
Proton Pump Inhibitors
Talk to your Provider

Tools & Resources

qcnl.ca
Practice Points
Scrip Pad
Posters

Events

SHARE Summit
Future Forums

Implementation and eOrdering

eOrdering

Cardiac Cath
Carotid Artery Testing
CT Scans
Biochemical Testing

Implementation of Process Change

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- tPA Usage

ERAS
- Colorectal
- Thoracic
- Head & Neck
- Orthopedic

Mammography
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Randomized Control Trials

How to influence demand for antibiotics
Reduction of imaging for low back pain
Reduction of Pre-op testing in low risk surgeries
How to inform doctors on imaging use

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NL Acute Care Hospital Expenditures are the Highest in Canada

Objective

To assess costs and use of NL hospitals.

Practice Points

1. In 2019, the NL budget was $8.7 billion. The deficit was $1.2 billion and the debt was $15.4 billion. $1.4 billion was spent on debt repayment.

2. Health spending was $3 billion of which 40% was for acute care hospitals.

Data Source

1. CIHI National Health Expenditures Database, 2019 forecast. NL data was compared to Canada and to Nova Scotia.

Results

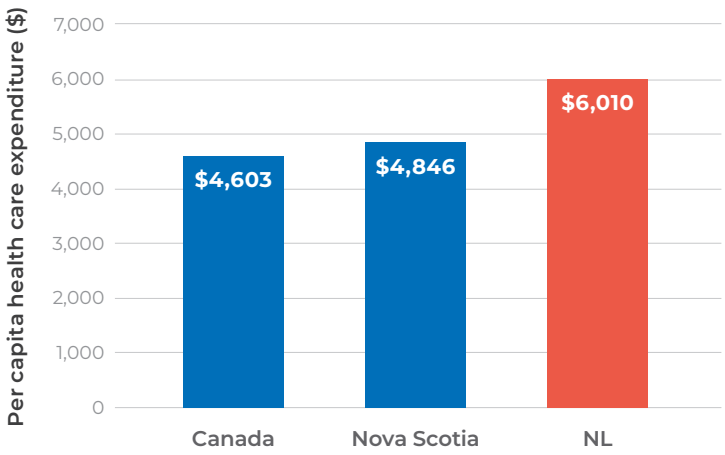


Fig. 1. Per Capita Health Spending in NL Compared to Canada and Nova Scotia

- Health care spending per capita in NL is the highest in Canada, and is 24% higher than in Nova Scotia.

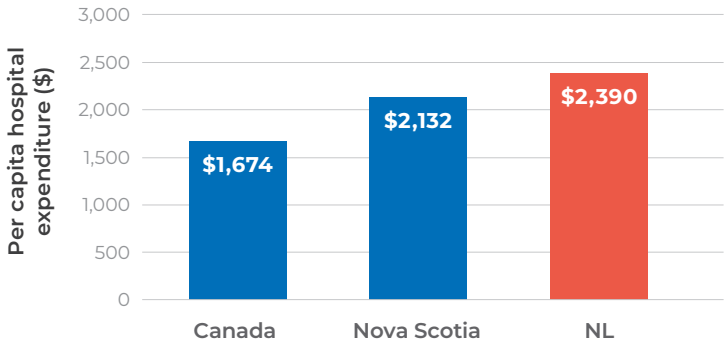


Fig. 2. Per Capita Hospital Expenditures in NL Compared to Canada and Nova Scotia

- Hospital spending per capita in NL is the highest in Canada, and is 12% higher than in NS.

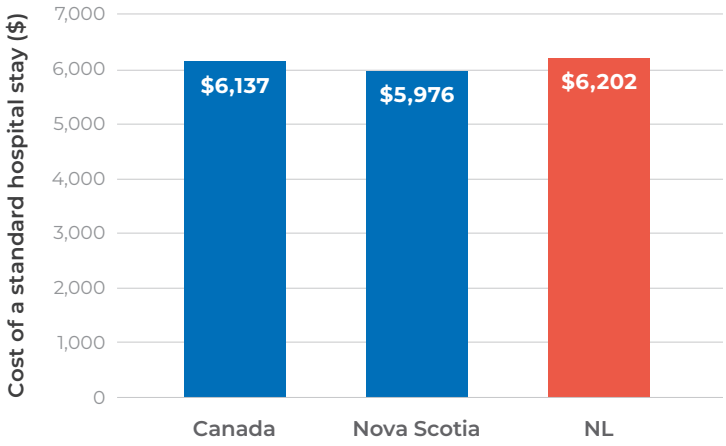


Fig. 3. Cost of a Standard Hospital Stay in NL Compared to Canada and Nova Scotia

- Cost of a hospital stay in NL is similar to Canada and 4% higher than in NS.

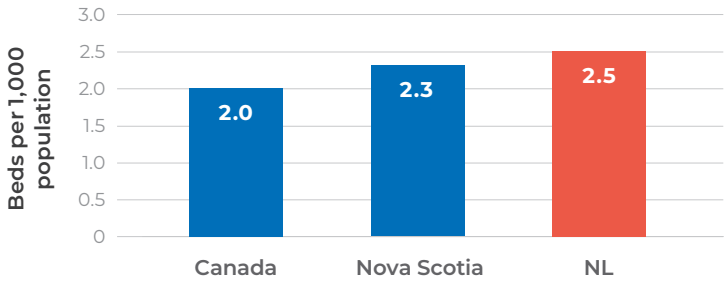


Fig. 4. Acute Hospital Beds/1,000 Population in NL Compared to Canada and Nova Scotia

- Beds per 1,000 population in NL are 25% higher than in Canada and 9% higher than in NS.

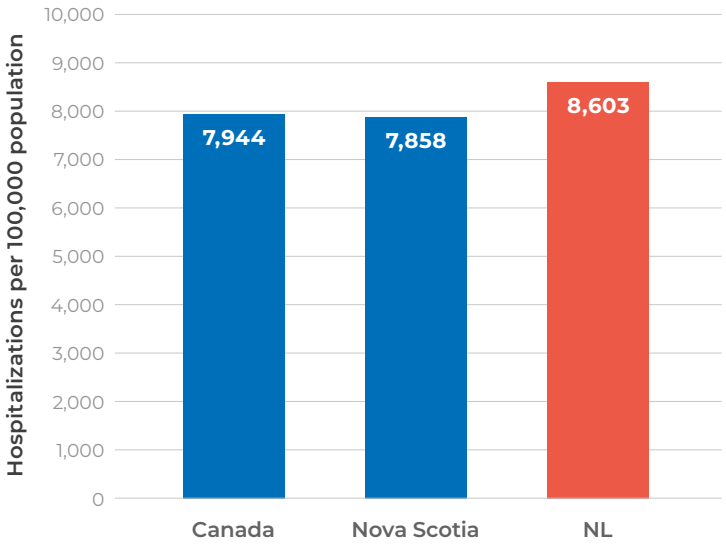


Fig. 5. Age-Sex Standardized Hospitalization Rate/100,000 Population in NL Compared to Canada and Nova Scotia

- Hospitalization rate per 100,000 population in NL is 8% higher than in Canada and 9% higher than in NS.

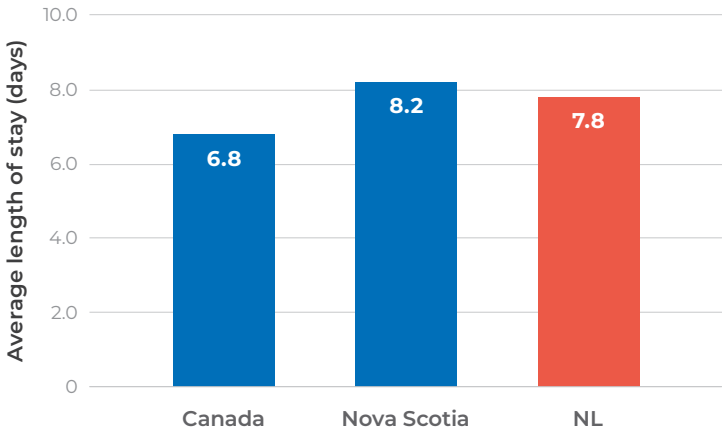


Fig. 6. Age Standardized Average Length of Hospital Stay in NL Compared to Canada and Nova Scotia

- Length of stay in NL is 15% higher than in Canada and 5% lower than in NS.
- Limitation: This data includes ALC.

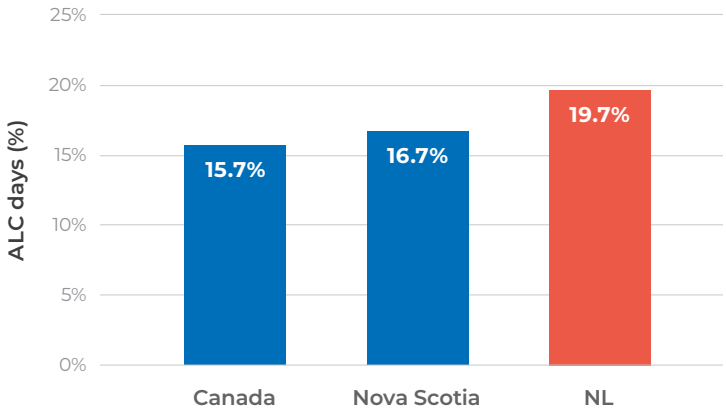


Fig. 7. Percentage Alternate Level of Care in NL Acute Care Hospitals Compared to Canada and Nova Scotia

- Percentage alternate level of care in NL is 25% higher than in Canada.

Conclusions

1. In NL, hospital spending per capita is 43% higher than for Canada, as a result of a 25% higher number of beds per 1,000 population, 8% higher age and sex standardized hospitalization rates, 15% higher length of stay, and 25% higher alternate level of care.

2. Reduction in the number of hospital beds, hospitalization rates, and length of stay will require accompanying improvement in primary care and long-term care, as there are already signs of capacity pressure in some hospitals.

3. Age standardized per capita spending would be a valuable comparison as it would adjust for the older age of the NL population compared to other provinces.

Signs of Capacity Pressure in Acute Care Hospitals in NL

Objective

To assess whether acute care hospitals in NL exhibit signs of capacity pressure revealed by high occupancy rates, and the role of high alternate level of care (ALC) use in causing capacity pressure.

Practice Points

1. Severe hospital capacity pressures, revealed by high occupancy rates, lead to an increase in emergency room wait times and high numbers of patients waiting for a hospital bed.

2. The lack of alternatives to hospital care for patients ready for discharge but who cannot go home has been labeled the alternate level of care (ALC) issue.

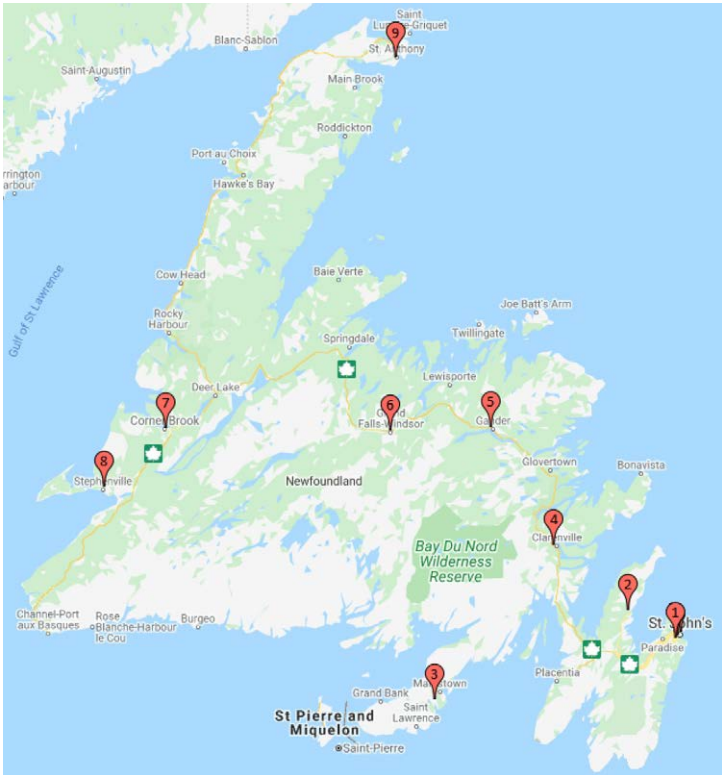
3. ALC is an inefficient use of hospitals but it occurs because of deficits in access to long-term care, personal care, home care, rehabilitation, or tertiary care.

Methods

1. Data for 2018/19 occupancy rates were obtained from the Department of Health and Community Services. ALC data for 2018/19 were obtained from the NL Centre for Health Information.

2. The Waterford and Janeway Hospitals were excluded from the analysis.

Results



Newfoundland Hospitals

1. **St. John's (Health Sciences Centre)**
   Occupancy: 92%; ALC: 7%
   St. John's (St. Clare's)
   Occupancy: 83%; ALC: 17%
2. **Carbonear**
   Occupancy: 77%; ALC: 12%
3. **Burin**
   Occupancy: 55%; ALC: 13%
4. **Clarenville**
   Occupancy: 82%; ALC: 18%
5. **Gander**
   Occupancy: 97%; ALC: 19%
6. **Grand Falls-Windsor**
   Occupancy: 98%; ALC: 33%
7. **Corner Brook**
   Occupancy: 91%; ALC: 35%
8. **Stephenville**
   Occupancy: 95%; ALC: 29%
9. **St. Anthony**
   Occupancy: 84%; ALC: 29%

Labrador Hospitals

Happy Valley-Goose Bay
Occupancy: 96%; ALC: 11%
Labrador City
Occupancy: 86%; ALC: 4%

Health Centres

Occupancy: 76%; ALC: 19%

- The Health Sciences Centre and the hospitals in Gander, Grand Falls-Windsor, Corner Brook, Stephenville, and Happy Valley-Goose Bay have >85% occupancy levels.

- The hospitals in Central Health and Western Health have high ALC rates.

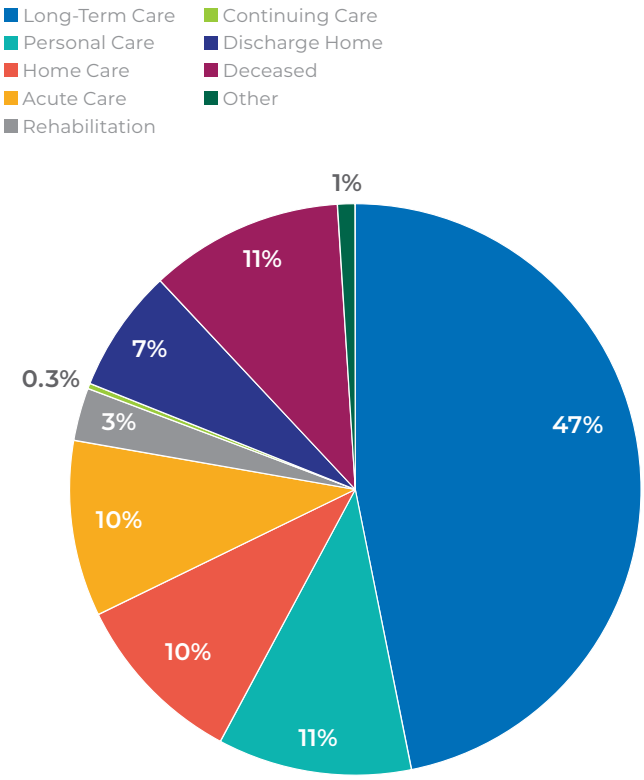


Fig. 1. Proportion of Total ALC Length of Stay Due to Wait For Type of Other Care

- Majority of ALC Length of Stay is caused by a wait for long-term care.

Conclusions

1. Capacity stress exists in six hospitals which have high occupancy rates and in four hospitals it is associated with high ALC rates (Gander, Grand Falls-Windsor, Corner Brook and Stephenville).

2. Low occupancy and high ALC occur in three rural Eastern Health hospitals (Carbonear, Burin, Clarenville) and in St. Anthony.

3. The majority of ALC days are for patients awaiting a long-term care bed.

4. Reduction in the number of acute care beds in NL will require accompanying improvement in the long-term care sector.

Prolonged Length of Stay in NL Hospitals is the Result of Prolonged Stay in Medicine Beds

Objective

To determine the reasons why length of stay in NL acute care hospitals is prolonged.

Practice Points

1. In NL hospitals, average length of stay (LOS) for any type of acute care case is 6.9 days, whereas in Canada it is 5.7 days. For typical cases only, the average lengths of stay are 5.1 and 4.4 days, respectively.

Methods

1. Acute LOS for each hospital and health centre in the province by acute care type for 2018/19 was obtained from the NL Centre for Health Information and compared to the corresponding Canadian average for 2018/19 by acute care type and hospital size (defined by CIHI: teaching/large/medium/small) obtained from CIHI. This data excludes ALC. The bars in the figures are LOS in NL hospitals and the line parallel to the x-axis is the comparable LOS in Canadian hospitals.

Results

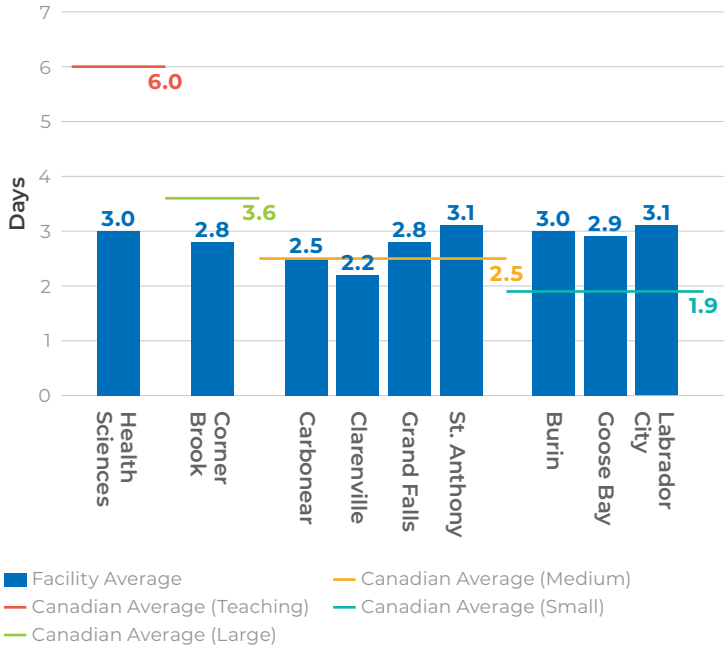


Fig. 1. Obstetrics Acute Length of Stay

- Obstetrics LOS was lower than Canada, except for St. Anthony, Burin, Goose Bay and Labrador City.

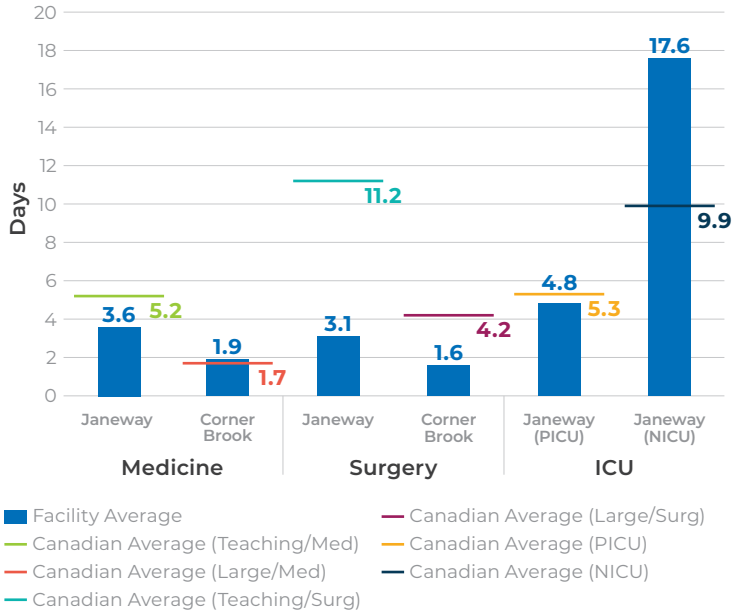


Fig. 2. Pediatrics Acute Length of Stay

- Pediatrics LOS is lower than Canada, except for the Janeway NICU.

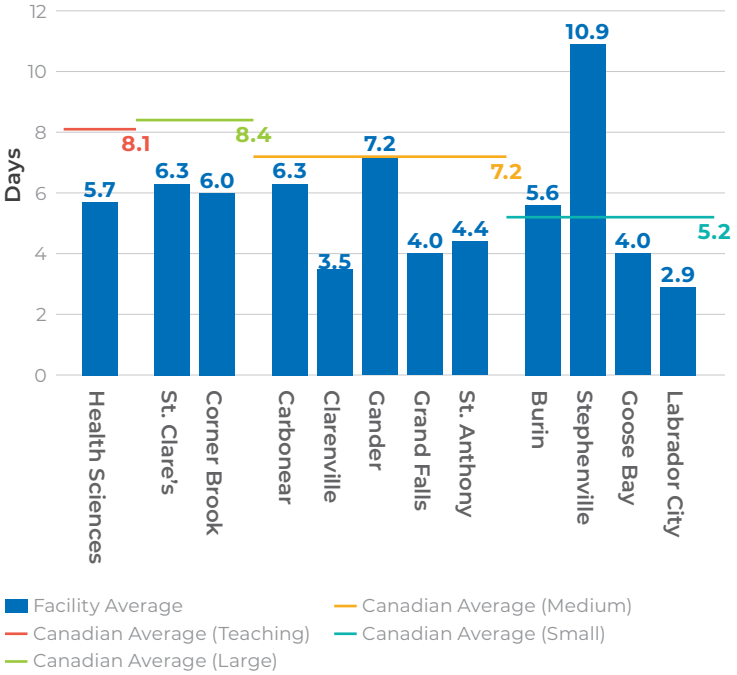


Fig. 3. Surgery Length of Stay

- Surgery LOS is lower than Canada, except in Stephenville.

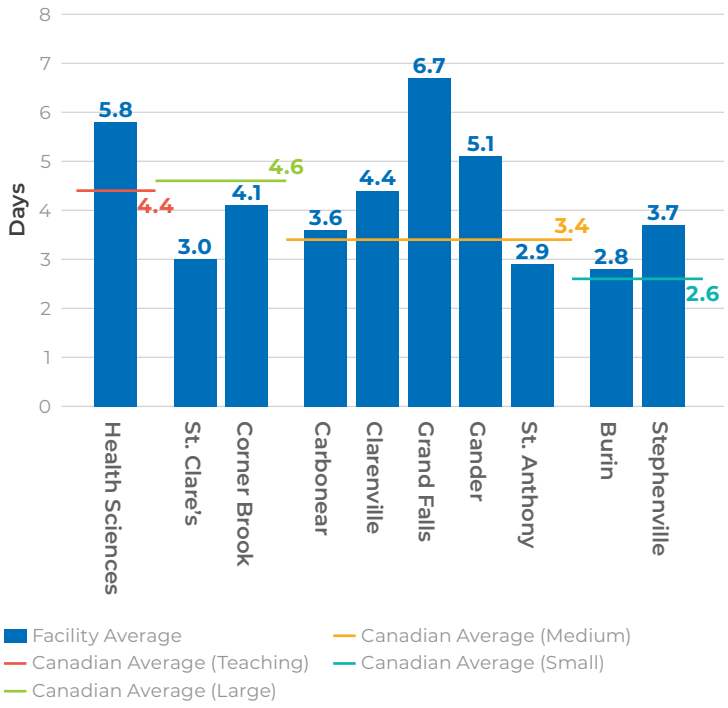


Fig. 4. ICU Length of Stay

- ICU LOS is higher than Canada at the Health Sciences Centre, Clarenville, Grand Falls, Gander, and Stephenville.

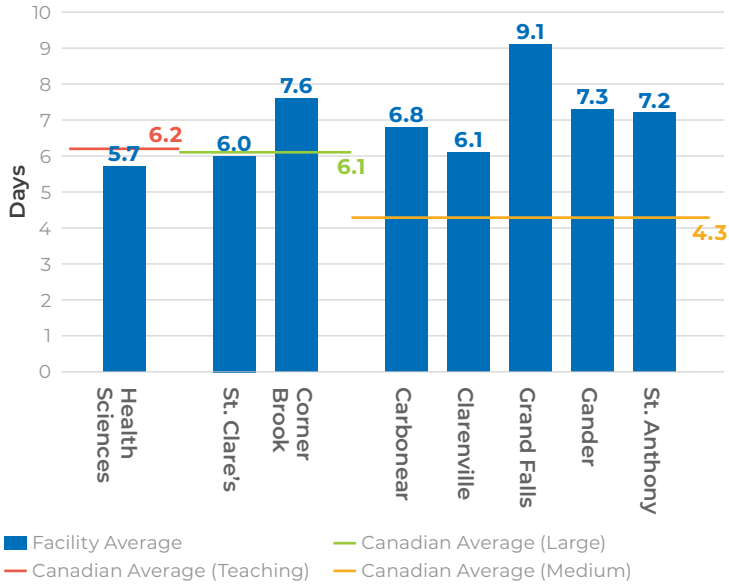


Fig. 5. Medicine Acute Length of Stay (Teaching/Large/ Medium Hospitals)

- Medicine LOS outside St. John's is higher than Canada, and in four of these hospitals occupancy is >85% which contributes to capacity pressure.

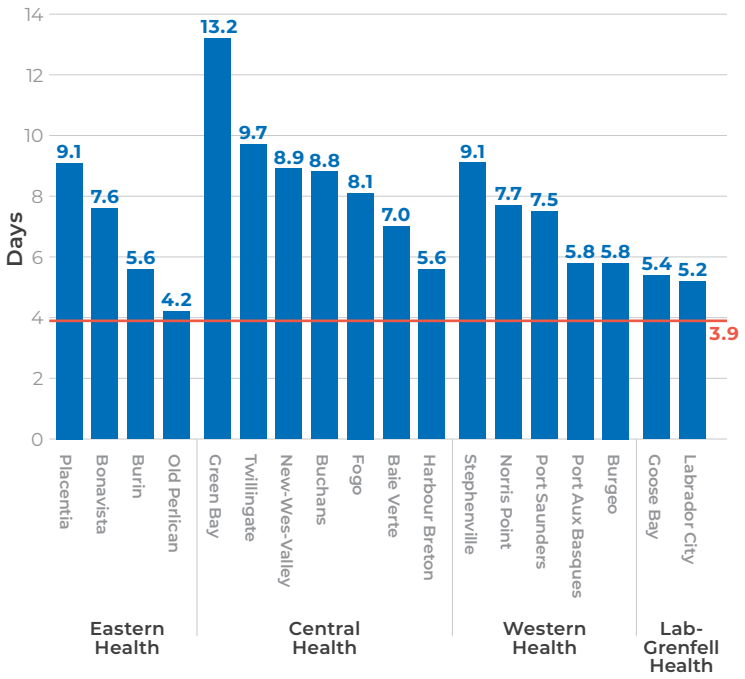


Fig. 6. Medicine Acute Length of Stay in Small Hospitals

- LOS in all the small hospitals is higher than the Canadian average.

Conclusions

1. The high acute length of stay in NL is primarily due to increased length of stay for medicine patients.

2. With the current acute LOS, 621 medicine beds are required in the province, but if the average LOS was similar to Canada, 461 medicine beds would be required (assuming 85% occupancy and 10% ALC).

3. It is possible that the causes of increased ALC are also contributing to higher acute LOS.

Prediction of Optimal Number of Acute Care Hospital Beds Required Based on an Optimal Occupancy, Alternate Level of Care, and Length of Stay

Objective

To determine the optimal number of beds required in the acute care hospitals of NL based on occupancy, alternate level of care (ALC), and length of stay (LOS) compared to the number assigned currently and to current usage.

Practice Points

1. The number of beds per 100,000 population in NL is 25% higher than in Canada. The rate outside St. John's is double that in St. John's.

2. Occupancy is below 85% in five of 12 hospitals and above 90% in seven hospitals. Optimal occupancy is 85%.

3. NL has the highest ALC rate in Canada at about 20% of hospitalization days, with the highest rates in Central Health and Western Health.

4. LOS is 21% higher in NL compared to Canada, attributed predominantly to increased LOS in medicine beds.

Methods

1. Currently assigned beds for 2018/19 were obtained from the Department of Health and Community Services.

2. Optimal usage assumed occupancy to be 85%, ALC to be 10%, and LOS at the current LOS or corresponding Canadian average, whichever was the lesser.

3. Current use is actual usage by patients including ALC as a separate category. Current usage data were obtained from NL Centre for Health Information.

Results

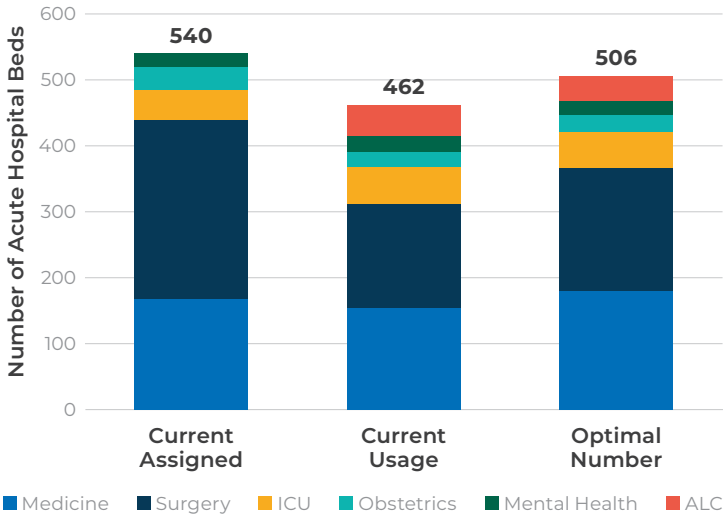


Fig. 1. Acute Hospital Beds in St. John's (Health Sciences Centre and St. Clare's) Currently Assigned, Currently Used, and Predicted Optimal Number by Acute Care Type

- For St. John's, the optimal number of beds is 6% (N=34) lower than the number assigned.

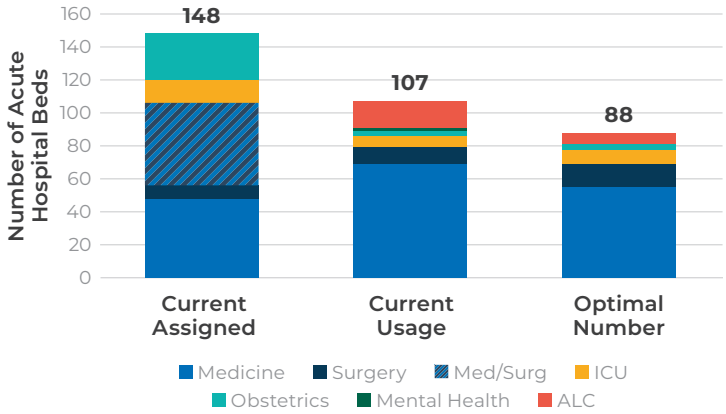


Fig. 2. Acute Hospital Beds in the Three Rural Hospitals of Eastern Health Currently Assigned, Currently Used, and the Predicted Optimal Number by Acute Care Type

- The optimal number of acute hospital beds required in Carbonear, Clarenville and Burin is 41% (N=60) less than currently assigned.

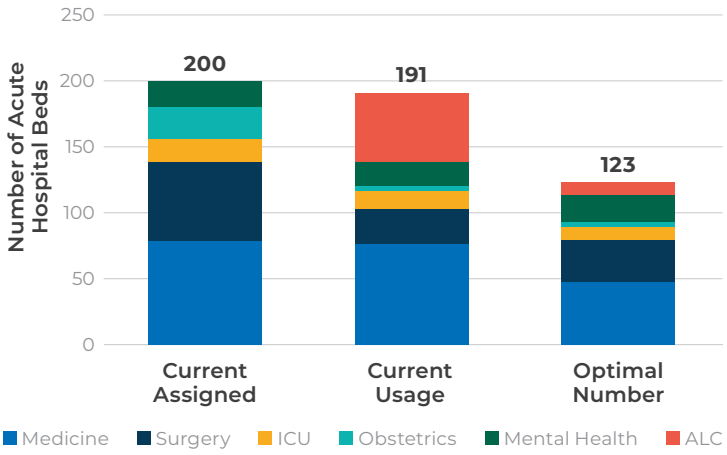


Fig. 3. Acute Hospital Beds in Gander and Grand Falls Currently Assigned, Currently Used, and the Predicted Optimal Number by Acute Care Type

- The optimal number of acute hospital beds required in Gander and Grand Falls is 38% (N=77) less than currently assigned.

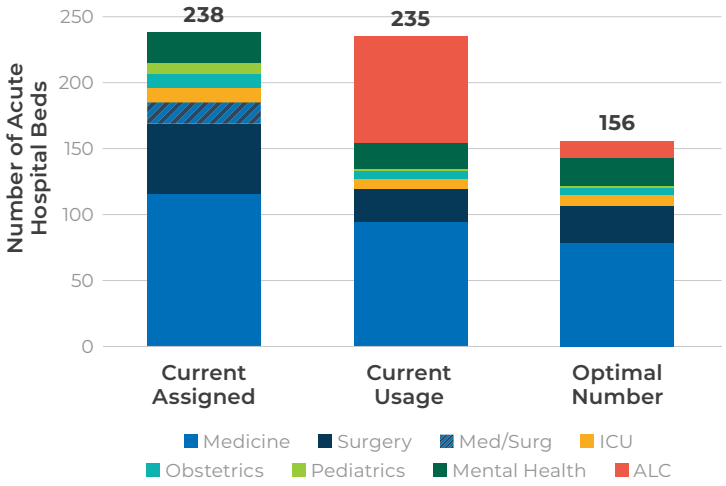


Fig. 4. Acute Hospital Beds in Corner Brook and Stephenville Currently Assigned, Currently Used, and Predicted Optimal Number by Acute Care Type

- The optimal number of beds required in Corner Brook and Stephenville is 34% (N=82) less than currently assigned.

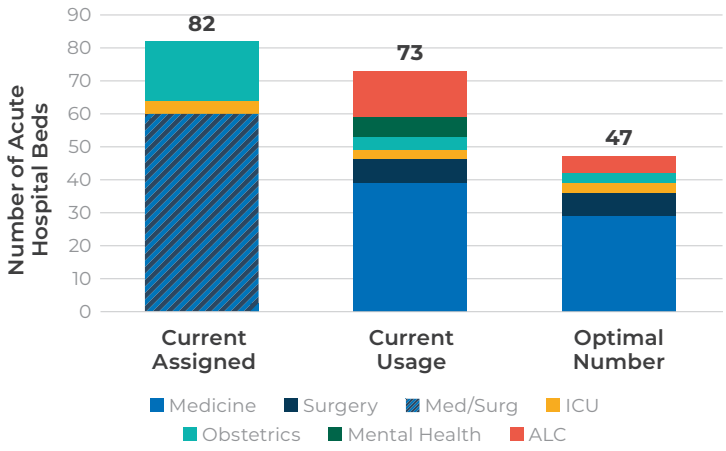


Fig. 5. Acute Hospital Beds in Labrador-Grenfell Currently Assigned, Currently Used, and Predicted Optimal Number by Acute Care Type

- Acute hospital beds required in Labrador-Grenfell is 43% (N=35) less than currently assigned.

Conclusions

1. Bed usage in Eastern Health is unique in the province, with hospitals in St. John's operating near optimal levels and relatively close to matching assigned beds, while outside of St. John's there is already a surplus of hospital beds, which would be further increased if the high medicine LOS and high ALC in these hospitals was addressed.

2. Outside Eastern Health capacity problems are driven by the high rate of ALC and high LOS for medicine patients. Addressing these issues would result in lower demand for hospital beds, below the number of beds currently available in these regions.

Impact of Potential Closure of Obstetrics Units on Time for Mother to Travel to the Nearest Obstetrics Unit

Objective

To determine the impact on travel time to obstetrics services if three obstetrics units in NL were closed.

Practice Points

1. In 2018/19, the number of births in Burin was 101 and in St. Anthony it was 46. Both Gander and Grand Falls-Windsor have an obstetrics unit and are within an hour of each other.

2. Centralization of obstetrics services and closure of some current facilities would increase travel time for mothers who would otherwise deliver at those facilities. Some mothers would have to relocate for some weeks pre-partum to a community with an obstetrics unit if their travel time was >90 minutes.

Methods (PI: A. Simms)

1. Numbers of births in the province and estimated travel time to the nearest obstetrics services were projected for the year 2030 for each obstetrics facility in the province.

2. The impact of closing some obstetrics services (Burin, St. Anthony, and Gander) on travel time was calculated.

Results

Table 1. Estimated Births (Year 2030): Current Obstetrics Configuration

Facility Location	Births	Travel >90 minutes (count)	Travel >90 minutes (%)
Carbonear	410	3	0.6%
St. John's	2,051	24	1.2%
Burin	75	0	0.0%
Clarenville	125	0	0.0%
Gander	226	2	0.7%
Grand Falls-Windsor	233	36	15.5%
Corner Brook	389	44	11.4%
St. Anthony	48	25	52.2%
Happy Valley-Goose Bay	182	38	20.9%
Labrador City	84	9	10.2%
Total	3,823	181	4.7%

Table 2. Estimated Births (Year 2030): Services Removed from 3 Facilities

Facility Location	Births	Travel >90 minutes (count)	Travel >90 minutes (%)
Carbonear	410	3	0.6%
St. John's	2,051	24	1.2%
Burin	0	0	0.0%
Clarenville	258	92	35.8%
Gander	0	0	0.0%
Grand Falls-Windsor	401	51	12.7%
Corner Brook	429	85	19.8%
St. Anthony	0	0	0.0%
Happy Valley-Goose Bay	190	46	24.1%
Labrador City	84	9	10.2%
Total	3,823	309	8.1%

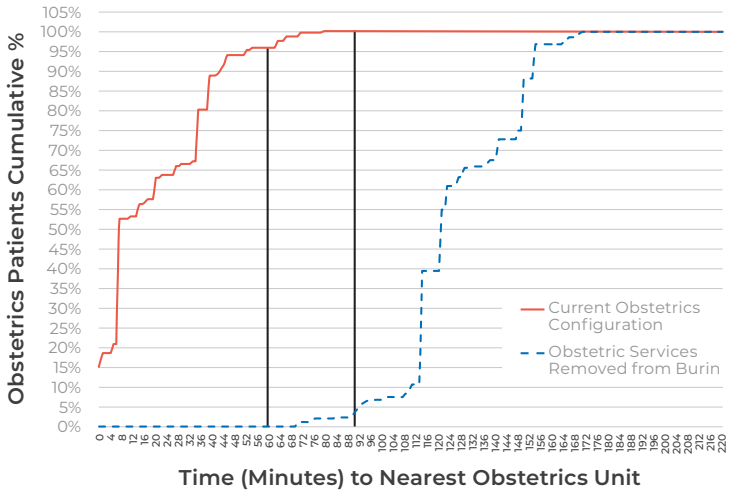


Fig. 1. Estimated Travel Time in 2030 if Burin was Open or Closed

- In 2030, all of the anticipated 75 mothers in Burin would have a travel time <90 minutes, but if Burin Obstetrics Unit was closed, 73 would have a travel time >90 minutes to the next closest obstetrics facility.

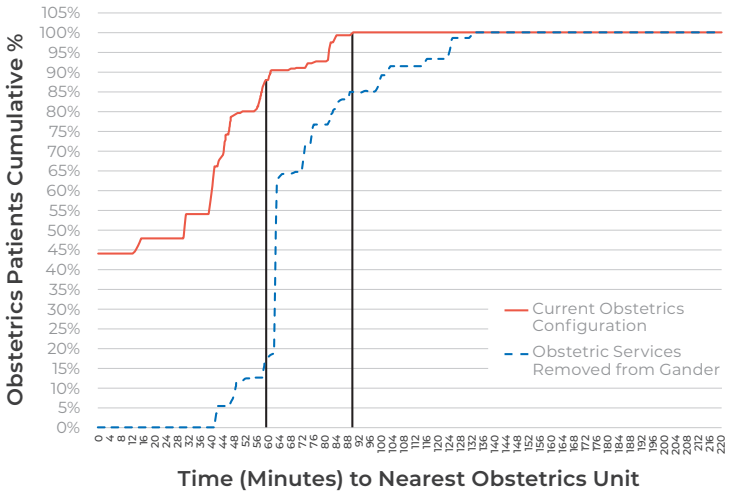


Fig. 2. Estimated Travel Time in 2030 if Gander was Open or Closed

- In 2030, 224 of the anticipated 226 mothers in Gander would have a travel time <90 minutes, but if Gander Obstetrics Unit was closed, 34 would have a travel time >90 minutes to the next closest obstetrics facility.

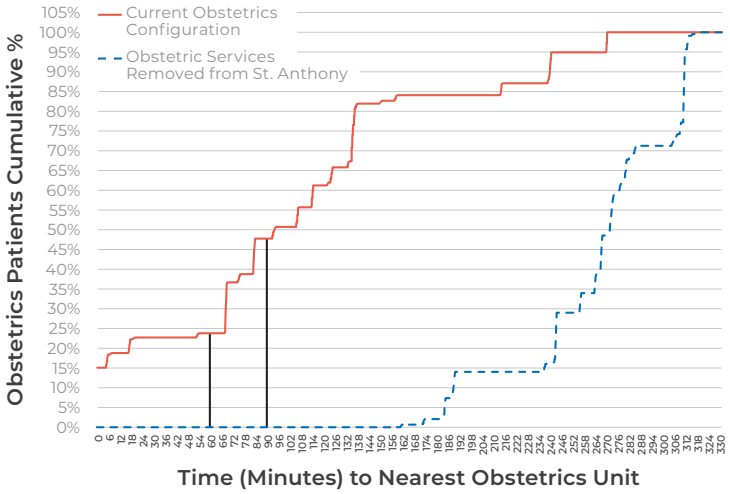


Fig. 3. Estimated Travel Time in 2030 if St. Anthony was Open or Closed

- In 2030, 23 of the 48 anticipated mothers in St. Anthony would have a travel time <90 minutes, but if St. Anthony Obstetrics Unit was closed, all 48 would have a travel time >90 minutes to the next closest obstetrics facility.

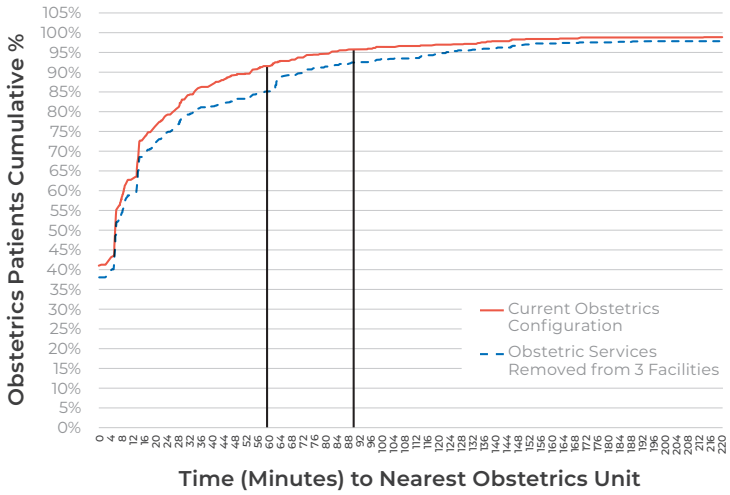


Fig. 4. Estimated Travel Time in 2030 if Three Obstetrics Facilities were Open or Closed

- In 2030, 181 (4.7%) of the 3,823 anticipated mothers in NL would have a travel time >90 minutes, but if three obstetrics facilities were closed, 309 (8.1%) would have a travel time >90 minutes to the next closest obstetrics facility.

Conclusions

1. Removing obstetrics services from Burin, St. Anthony, and Gander would increase travel time to >90 minutes for 128 mothers who would otherwise deliver at those facilities. This would increase the percentage of mothers in NL who would have to travel for >90 minutes from 5% to 8%.

2. As a result, these anticipated additional 128 mothers may have to relocate to a community with an obstetrics unit pre-partum.

3. Centralization of services would require unquantified costs for infrastructure, e.g. midwives, transport, travel, and accommodation added to both the health system and the patient.

An Estimate of the Number of Full-Time Equivalent (FTE) Family Physicians Working in Newfoundland

Objective

To estimate the number of FTE Family Physicians (FPs) working in Newfoundland (island only), both fee-based and salaried, using measures of clinical practice.

Practice Points

1. According to the Canadian Medical Association, NL has the highest number of doctors per capita in Canada, but it is unknown how many are actually working in family practice, and whether they are working full-time.

2. For fee-based FPs, analysis of billings would give some indication of days worked.

3. For salaried FPs, measures of clinical practice, using expected rates derived from fee-based FPs, could be used to indicate FTE numbers.

Methods

1. The NLMA published their estimates, gleaned from knowledge of their enrolled members.

2. In 2017, number of antibiotic prescriptions and of hemoglobin (Hb) and of serum creatinine tests were obtained for all FPs, as well as number of billings for fee-based FPs. Hb and serum creatinine were nearly always bundled, so rate of creatinine tests was not used for the estimate.

3. It was assumed that the top 2 quintile of billings represented FTE, 3rd quintile 0.6 FTE, 4th quintile 0.4 FTE and 5th quintile 0.2. From this, the number of fee-based FTE FPs was determined.

4. For each quintile of billings, median and interquartile range was calculated for number of antibiotics and for number of Hb tests, and these measures of clinical practice were extrapolated to non-fee-based doctors to estimate FTEs.

5. The number of non-fee-based FTEs was the average of the predictions from the two metrics.

Results

Eastern Health (EH)

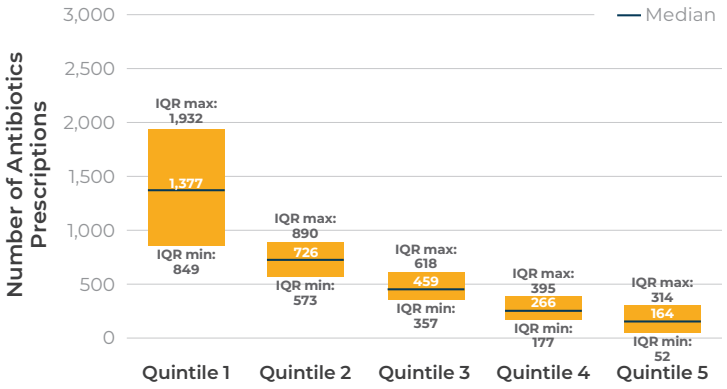


Fig. 1. Median and interquartile range of antibiotic prescriptions by quintile of billings for fee-based FPs in EH.

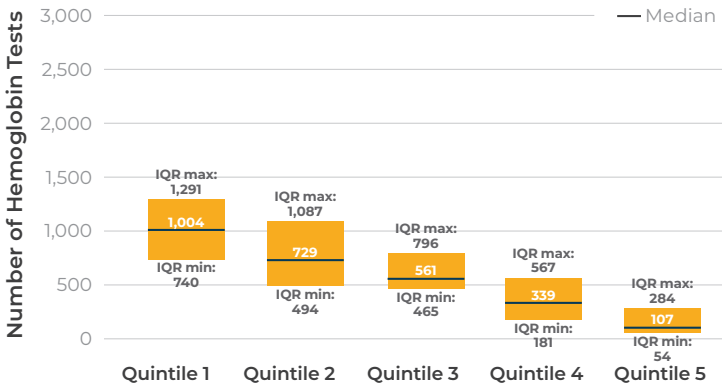


Fig. 2. Median and interquartile range of Hb tests by quintile of billings for fee-based FPs in EH.

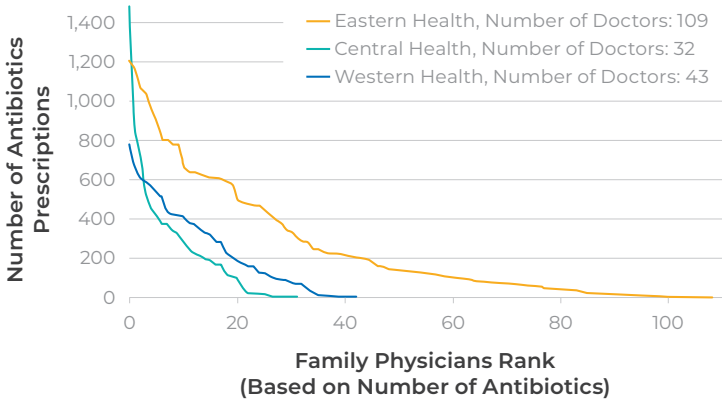


Fig. 3. Number of antibiotics prescribed by non-fee-based FPs ranked by FP in each region.

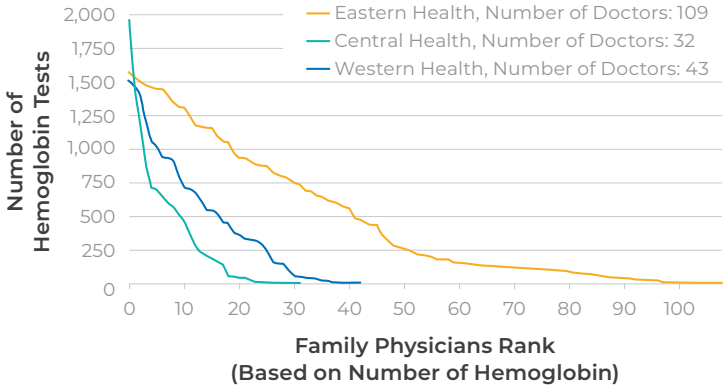


Fig. 4. Number of Hb tests ordered by non-fee-based FPs, ranked by FP in each region.

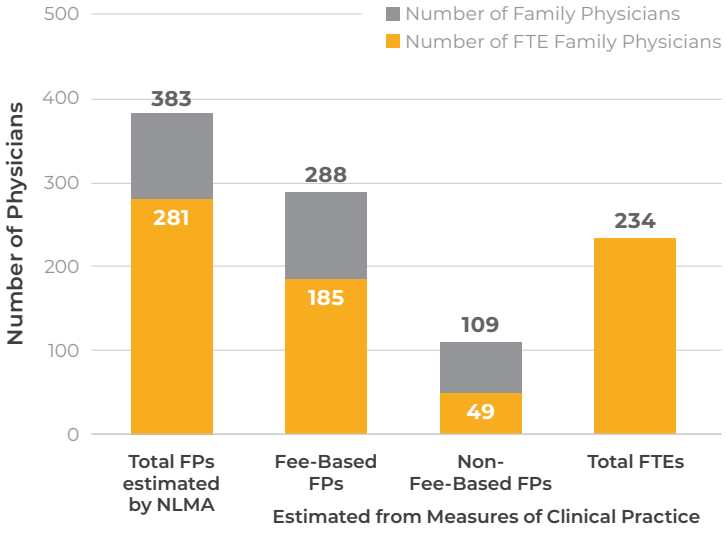


Fig. 5. Number of FTE FPs estimated in EH by the NLMA and by measures of clinical practice.

- NLMA had a record of 383 FPs in EH and estimated 281 FTE FPs in clinical practice.
- Clinical practice data identified 397 FPs.
- Billings suggested 116 full time fee-based FPs and a further 172 FPs in the bottom 3 quintiles who represented 69 FTEs.
- Estimate of clinical practice of 109 non-fee-based FPs suggested a further 49 FTEs for a total of 234 FTEs in EH.

Central Health (CH)

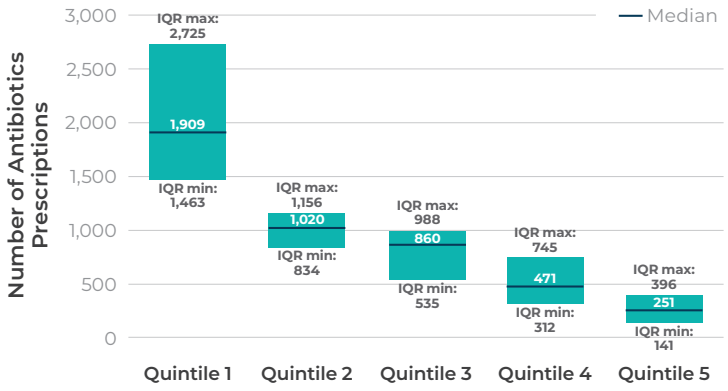


Fig. 6. Median and interquartile range of antibiotic prescriptions by quintile of billings for fee-based FPs in CH.

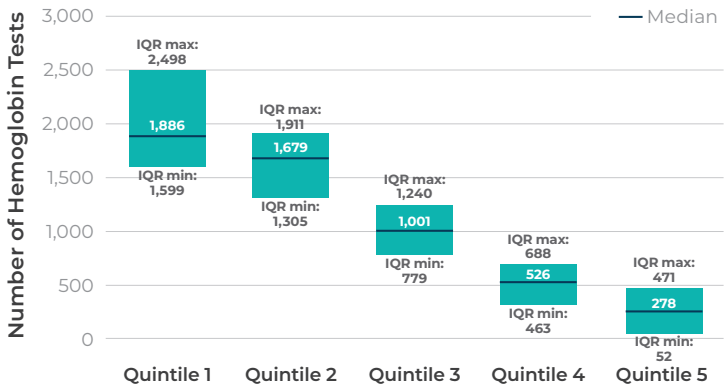


Fig. 7. Median and interquartile range of Hb tests by quintile of billings for fee-based FPs in CH.

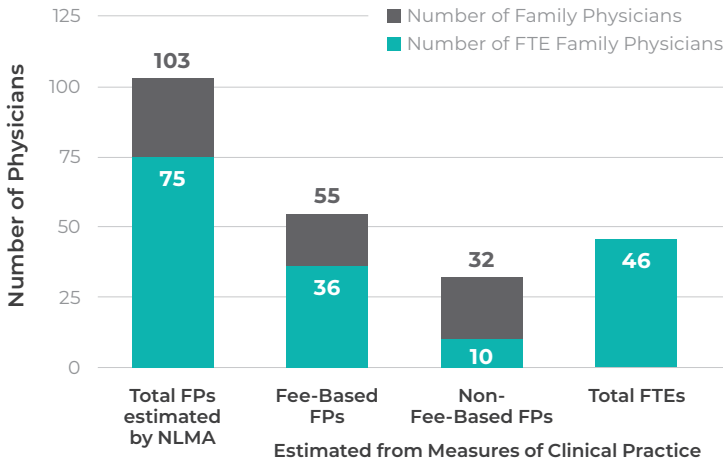


Fig. 8. Number of FTE FPs estimated in CH by the NLMA and by measures of clinical practice.

- NLMA estimated 75 FTEs in family practice.
- Clinical practice data identified 87 FPs.
- Billings suggested 22 full-time fee-based FPs and a further 33 FPs in the bottom 3 quintiles who represented 14 FTEs.
- Estimates of clinical practice of 32 Salaried FPs suggested 10 FTEs.
- The total FTEs in CH was 46.

Western Health (WH)

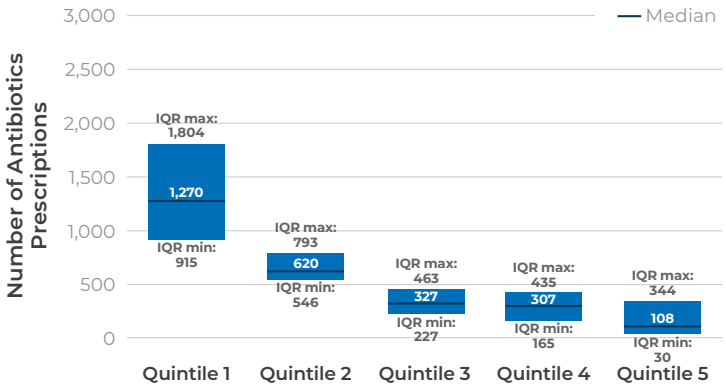


Fig. 9. Median and interquartile range of antibiotics prescriptions by quintile of billings for fee-based FPs in WH.

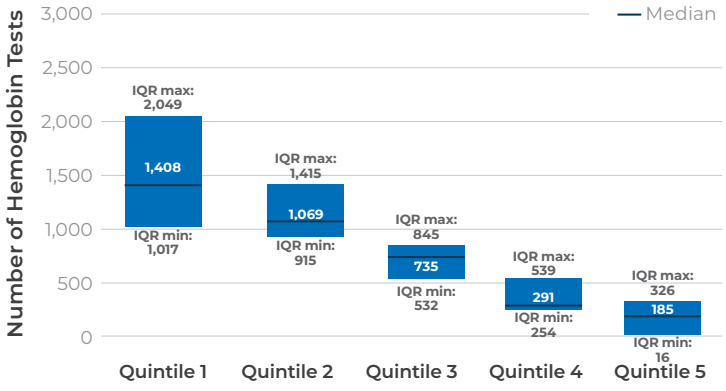


Fig. 10. Median and interquartile range of Hb testing by quintile of billings for fee-based FPs in WH.

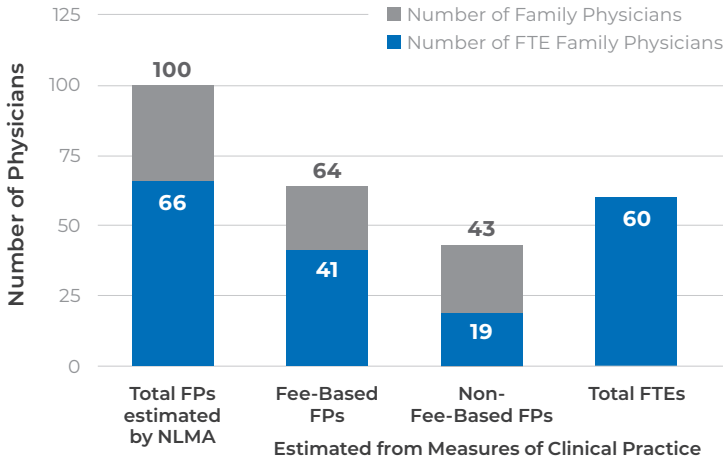


Fig. 11. Number of FTE FPs in WH estimated by the NLMA and by measures of clinical practice.

- NLMA had a record of 100 FPs in WH, and estimated 66 FTEs in family practice.
- Clincal practice data identified 107 family physicians.
- Billings suggested 26 full-time fee-based FPs and a further 38 FPs in the bottom 3 quintiles who represented 15 FTEs.
- Estimates of clinical practice of 43 non-fee-based FPs suggested a further 19 FTEs.
- The total FTEs in WH was 60.

Conclusions

1. NLMA have estimated that 383 FPs in EH represent 281 FTEs. From billings and assuming that measures of clinical practice in fee-based FPs apply to non-fee-based FPs, we estimate 234 FTEs.
2. In CH, of 103 FPs, NLMA estimated 75 FTEs and our data suggests 46. Clinical practice data identified 15 fewer FPs than NLMA.
3. In WH, of 100 FPs, NLMA estimated 66 FTEs and our data suggests 60.
4. Although NL has the highest rate of doctors per capita, the number of FTE FPs is substantially less than the number registered: 72% of those registered estimated by the NLMA and 59% based on estimates of clinical practice.
5. It is likely that non-fee-based doctors see fewer patients than fee-based, and metrics of clinical practice are based on those of fee-based family physicians.

Quality of Care NL

After-Hours Care Provisions by Family Physicians and Non-Urgent Emergency Department Visits in St. John's

Objective

To describe the relationship between after-hours care provisions by Family Physicians (FPs) who were practicing full time in St. John's and non-urgent emergency department (ED) visits made by adult patients from St. John's who were patients of those FPs.

Practice Points

1. In Canada, wait times for patients in EDs are rising year-on-year and are already among the highest of OECD countries.

2. Self-reported wait times in EDs in NL are the second highest compared to the other provinces in Canada, with 39% waiting 4 or more hours in an ED before receiving any care.

3. 60% of all patients who present to EDs in Canada have no need for emergency care, and this is an important contributor to long wait times.

4. There are some primary care options for patients outside of normal FP working hours, but often EDs are the only option during this time.

Methods (J Siromani)

1. FP and ED Visit data on patients from the St. John's Metro region across the 4-year study period (1 Apr 2011 - 31 Mar 2015) were obtained from NL Centre for Health Information and from the Academic Family Medicine clinics.

2. Non-urgent ED visits were defined by a Canadian Triage & Acuity Scale (CTAS) score of 4 or 5.

3. Fee-For-Service FPs were categorized into those with (1) less than 5% of billings for after-hours, (2) 5-14%, (3) 15-24%, or (4) greater than 24% for after-hours billings. Academic FPs comprised a fifth group, which had an FP available on-call to provide telephonic advice/triage and accept patient visits where necessary.

4. Non-urgent ED visit rates were compared across these groups using a statistical method that adjusts for group differences (e.g. sex, age, and comorbidity).

Results

Table 1. Non-urgent Emergency Department Visits Made by Patients from St. John's

	Number of Patients	Percent
0 visits	68,630	57.5
1–4 visits	45,704	38.3
5–9 visits	3,968	3.3
10–19 visits	959	0.8
20 or more visits	182	0.2
Total	119,443	100.0

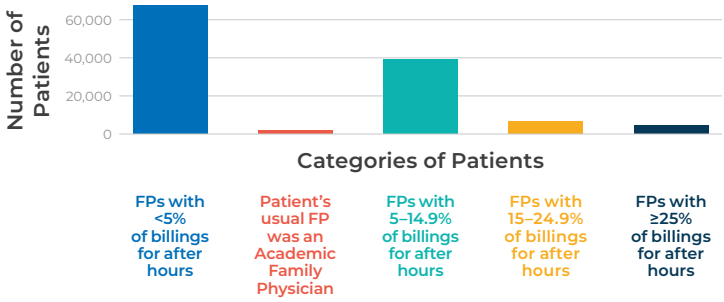


Fig. 1. Patients with Non-urgent ED Visits Categorized by Their Usual (Respective) Family Physicians

- Patients of Memorial University affiliated Academic FPs were 17% less likely to make non-urgent ED visits compared to FPs with little or no after-hours practice.

- There was no difference in non-urgent ED visits for patients of FPs who submitted 5-14%, 15-24%, or greater than 24% of billings for after-hours care compared to FPs with little or no after-hours care.

Conclusions

1. The model of care provided by Academic FPs is associated with a lower number of non-urgent ED visits.

2. The after-hours care provided by Fee-For-Service FPs does not appear to prevent non-urgent ED visits.

3. Results were adjusted for some differences in case-mix between physician groups, but this adjustment may not have been complete, which is a limitation.

What is the Best Method to Reduce Low-Value Care? An Example Using Blood Urea Testing by Family Physicians across Newfoundland (Island Only) Regions

Objective

To determine whether the nudge of audit, feedback and academic detailing had an additional effect on the more aggressive intervention of changing the requisition form on blood urea testing by Family Physicians (FPs).

Practice Points

1. Blood urea is a redundant test of kidney function in stable out-patients as it is almost always ordered with serum creatinine.

2. Interventions to reduce unnecessary laboratory utilization include education, audit and feedback, alteration of requisition forms, or administrative restrictions on performing tests.

3. FPs prefer education, audit and feedback to restrictions on ordering.

Methods

1. NL Centre for Health Information provided blood urea and serum creatinine data on outpatients in NL from 1 Apr 2015 - 31 Mar 2018.

2. Urea was removed from the laboratory requisition in Eastern Health (EH) in August 2016 and in Western Health (WH) in spring 2016.

3. FPs in EH received feedback on their ordering of urea in fall 2016 and academic detailing between fall 2016 and spring 2017.

Results

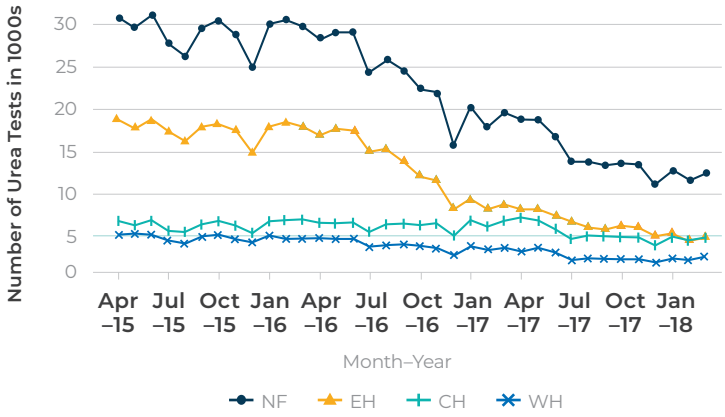


Fig. 1. Volume in Thousands of Blood Urea Tests per Month by Region

- There was little difference in serum creatinine testing in EH and WH over the three years.

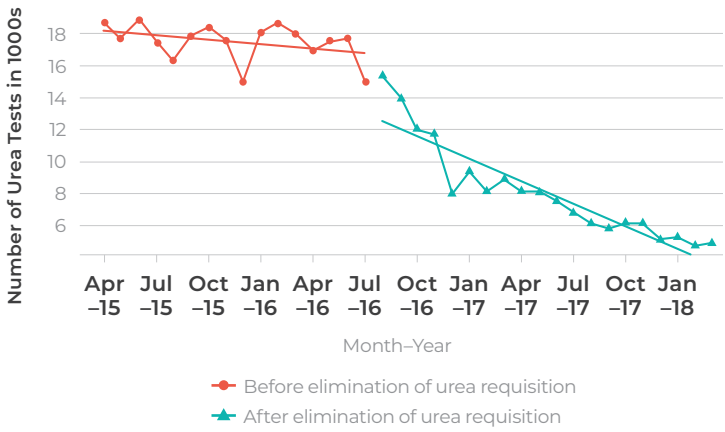


Fig. 2. Volume in Thousands of Blood Urea Tests per Month at EH

- Analysis reveals a statistically significant breakpoint when the requisition changed in EH ($p<0.001$). Urea test volume reduced by 35% within four months. A further reduction to a total of 63.6% was seen after feedback and academic detailing.

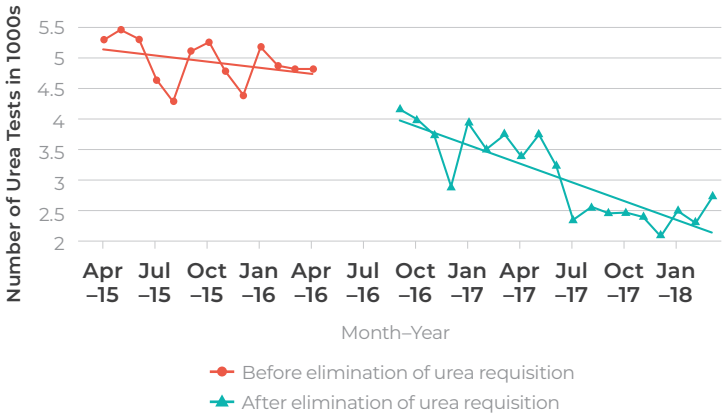


Fig. 3. Volume in Thousands of Blood Urea Tests per Month at WH

- Analysis also revealed a statistically significant breakpoint aligned with requisition change in WH (p=0.0018) with urea test volume reduced by 38.1% by the end of the study period.

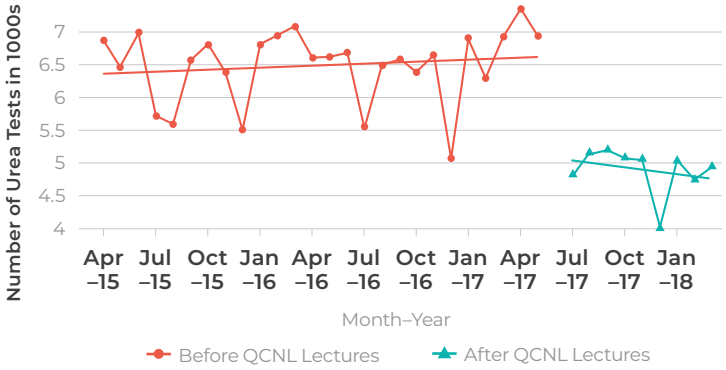


Fig. 4. Volume in Thousands of Blood Urea Tests per Month at CH

- Until June 2017 there was little change in CH ordering (who did not change the requisition form). After this time there was a 24.6% reduction (p<0.001) in the region in testing which coincided with lectures from Quality of Care NL on unnecessary biochemical testing.

Conclusions

1. Elimination of blood urea on laboratory requisitions was associated with a reduction in test orders in both EH and WH.

2. Academic detailing had a separate effect additional to the effect of changing the requisition form.

3. A small commitment of time to provide lectures in CH was associated with a 25% reduction.

Quality of Care NL

Wide Variability in the Diagnosis of Critical Coronary Artery Disease in Patients with Unstable Angina: Data for Physicians who Referred Patients for Cardiac Catheterization

Objective

To determine the rate of diagnosis of critical coronary artery disease (CAD) in patients referred for cardiac catheterization (CC) with unstable angina, analyzed by referring physicians.

Practice Points

1. Unstable angina is unexpected chest pain in patients in whom serum troponins are not elevated. Without a diagnosis, the pain or discomfort usually occurs while resting, sleeping or with little physical exertion. It may come as a surprise, last longer than stable angina, usually unrelieved by rest or medicine, and may get worse over time.

Methods

1. Patients in the APPROACH database who had CC for acute coronary syndrome because of unstable angina from 2007-2017 were analysed.

2. Critical CAD was defined as ≥1 coronary artery with ≥70% stenosis or ≥50% stenosis of left main coronary artery.

Results

- During the past decade the number of CCs done for unstable angina decreased from 435 in 2008 to 323 in 2017, a decrease of 25.7%.

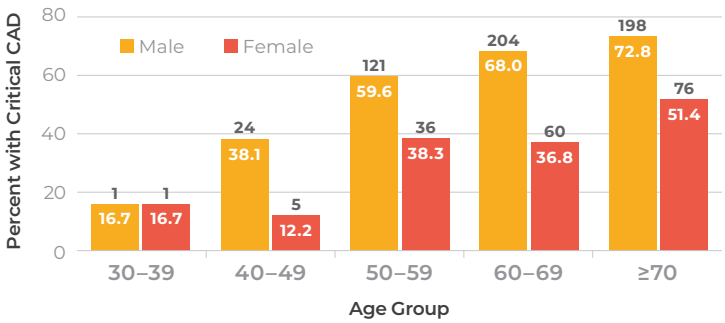


Fig. 1. Percentage of Males and Females with Unstable Angina Diagnosed as Having Critical CAD by Age (2014-2017)

- Diagnosis of critical CAD in patients referred because of unstable angina was low in all females and in males less than 60 years of age.

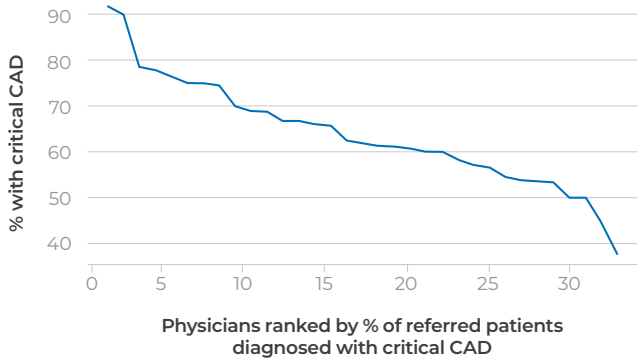


Fig. 2. Percentage of Male Patients with Unstable Angina Diagnosed with Critical CAD Ranked by Referring Physician

- The percentage of referred male patients diagnosed with critical CAD ranged from 40% to 90% when analysed by referring physician.

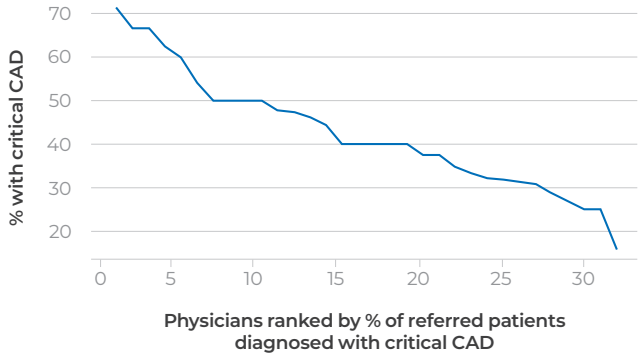


Fig. 3. Percentage of Female Patients with Unstable Angina Diagnosed with Critical CAD Ranked by Referring Physician

- The percentage of referred female patients diagnosed with critical CAD ranged from 20% to 70% when analysed by referring physician.

Conclusions

1. There is wide variability in the rate of diagnosis of critical CAD in patients with unstable angina when ranked by referring physician.

2. A careful history is necessary to determine whether the chest pain is consistent with unstable angina.

3. In patients with stable vital signs diagnosed as having unstable angina, if there is no history of CAD, a coronary CT may be indicated, and if there is a history of CAD, a nuclear myoview study may define the risk of ischemia. CC may not be necessary.

Quality of Care NL

Wide Variability in the Diagnosis of Critical Coronary Artery Disease in Patients with Non-ST Elevation Myocardial Infarction (NSTEMI): Data for Physicians who Referred Patients for Cardiac Catheterization

Objective

To determine the rate of diagnosis of critical coronary artery disease (CAD) in patients referred for cardiac catheterization (CC) with NSTEMI, analyzed by referring physician.

Practice Points

1. Acute coronary syndrome is caused by STEMI, NSTEMI, and unstable angina. The differentiation between NSTEMI and unstable angina is the presence of elevated troponin levels.

2. For the diagnosis of acute myocardial necrosis (NSTEMI), elevation of high sensitivity troponin above 99 percentile of the upper reference value is required. Additionally, evidence for a serial increase or decrease ≥20% is required if the initial level is elevated.

3. The typical NSTEMI is classified as type 1 involving decreased blood flow to the heart due to CAD. However demand ischemia (type 2) is due to cardiac supply/demand mismatch rather than CAD. The management of type 2 myocardial infarction (MI) is directed primarily at the precipitating cause such as dysrhythmias, severe anemia, severe hypertension, stroke, etc., and cardiac catheterization is unnecessary.

Methods

1. Patients in the APPROACH database who had CC for acute coronary syndrome indicated because of NSTEMI from 2007-2017 were analysed.

2. CAD was defined as ≥1 coronary artery with ≥70% stenosis or ≥50% stenosis of left main coronary artery.

Results

- During the past decade the number of CCs done for NSTEMI has increased from 525 in 2008 to 895 in 2017, an increase of 70.5%.

- The diagnosis of critical CAD in patients with NSTEMI is lower in females than males. (Fig. 1)

- The percentage of male patients diagnosed with critical CAD ranged from 40% to 90% when analysed by referring physician. (Fig. 2)

- The percentage of female patients diagnosed with critical CAD ranged from 30% to 100% when analysed by referring physician. (Fig. 3)

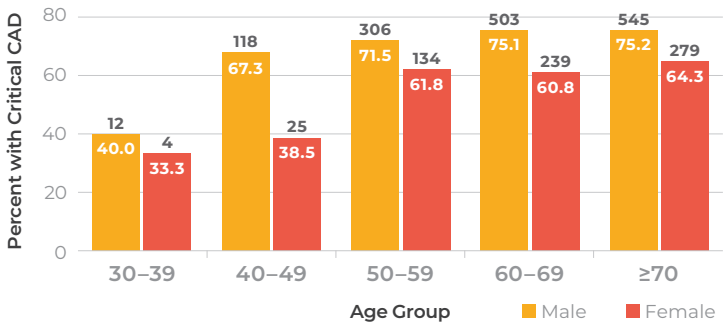


Fig. 1. Percentage of Males and Females with NSTEMI Diagnosed as Having Critical CAD by Age (2014-2017)

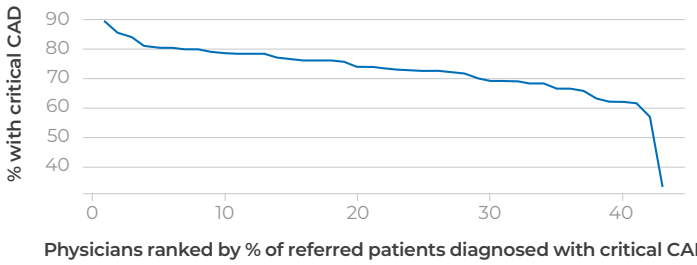


Fig. 2. Percentage of Male Patients with NSTEMI Diagnosed with Critical CAD Ranked by Referring Physician

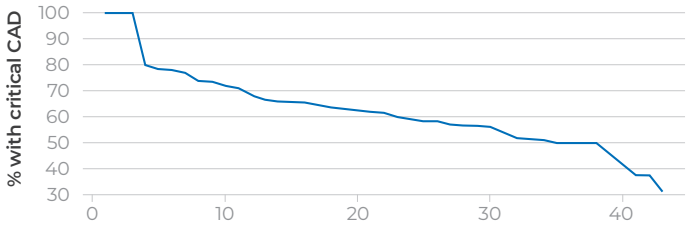


Fig. 3. Percentage of Female Patients with NSTEMI Diagnosed with Critical CAD Ranked by Referring Physician

Conclusion

1. There is wide variability in the rate of diagnosis of critical CAD in patients with NSTEMI when ranked by referring physician.

2. In patients with atypical symptoms for NSTEMI, consideration should be given to alternate causes of elevated troponins prior to ordering a CC, particularly if there is solitary elevation of troponin levels, or serial levels do not reveal ≥20% change in levels, or conditions predisposing to demand ischemia are present.

Quality of Care NL

Improvement in Access to Colonoscopy in Eastern Health But Not in Western Health

Guideline

Access to colonoscopy should be guided by priority as defined by the Canadian Association of Gastroenterology (CAG).

Practice Points

1. Optimal times for **Priority 1 (Urgent):** 0-14 days; **Priority 2 (Non-Urgent):** 0-60 days; **Priority 3 (Baseline Screening):** 0-182 days

2. Previous review of colonoscopy referrals in 2016 and 2017 showed that access was not optimal, but that it had improved in Eastern Health (EH) but not in Western Health (WH).

Methods

1. Data was obtained from Community Wide Scheduler for five hospitals in EH: Burin, Carbonear, GB Cross, Health Sciences Centre (HSC) and St. Clare's Mercy (SCM), and from two hospitals in WH: Western Memorial (WM) and Sir Thomas Roddick (STR).

2. During 2017, waitlist management was ongoing in the Tri-Peninsulas' hospitals of EH and continued in the remaining two city hospitals in 2018. A formal utilization review was not performed in WH.

3. Referral rates and wait time evaluation was compared regionally and by year.

Results

Table 1. Summary of Colonoscopy Referral Rates

	Referral Rate per 1,000 persons (≥20 yrs)					
	Eastern Health			Western Health		
	2016	2017	2018	2016	2017	2018
Priority 1	6.4	5.6	5.7	6.2	4.8	4.6
Priority 2	18.9	18.7	19.3	26.4	30.5	40.2
Priority 3	4.9	4.3	3.2	2.1	1.2	1.3
Total	30.2	30.6	28.2	34.7	36.5	46.1

- WH referrals for priority 2 indications were substantially higher than for EH, particularly in 2018.

Table 2. Comparison of Median Time to Colonoscopy by Priority and Region for 2016–2018 Data

	Median Time to Colonoscopy (Days)								
	Priority 1			Priority 2			Priority 3		
Region	2016	2017	2018	2016	2017	2018	2016	2017	2018
Tri-Peninsulas[1]	14	9	9	135	78	51	NA	119	165
St. John's[2]	22	20	17	41	40	42	211	132	95
Eastern Health	17	13	11	57	51	47	286	126	118
Western Health	12	13	14	49	63	84	153	207	185

[1] Burin, Carbonear & GB Cross
[2] HSC & SCM

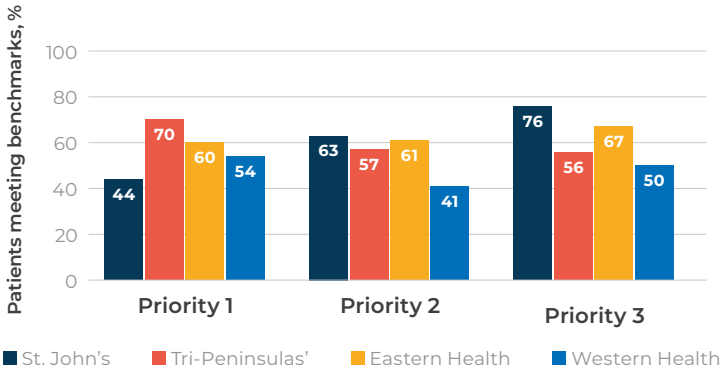


Fig. 1. Percentage of Patients Meeting Benchmarks by Priority and by Region in 2018

Conclusions

1. From 2016–2018, population rates for priority 1-3 colonoscopy decreased slightly for EH but increased substantially for WH. This was due to an increase in priority 2 referrals in WH.

2. Access to colonoscopy, defined by priority, has significantly improved from 2016–2018 in EH but has deteriorated in WH. Improvement in EH was associated with utilization review in these hospitals.

3. Percentage of patients meeting benchmarks for optimal time to access colonoscopy, defined by priority, was not optimal in either EH or WH.

Quality of Care NL

Quality of Care NL Report: Data for Physicians Performing Colonoscopy

Objective

To provide individual physicians feedback on access to colonoscopy in their practice, in order to improve wait times for colonoscopy referrals.

Results

Table 1. Sample of Practice Points Data Provided to Individual Physicians Performing Colonoscopy

	Priority 1		Priority 2		Priority 3	
	2017[1]	2018[2]	2017[1]	2018[2]	2017[1]	2018[2]
Individual						
Total # of colonoscopies	61	72	152	143	14	6
% of colonoscopies meeting target wait time	45%	46%	38%	23%	75%	100%
Ranking among Colonoscopists in EH	22nd	20th	17th	26th	14th	1st
Hospital – SCM						
Total # of colonoscopies[3]	366	304	1,332	1,332	355	259
# of Colonoscopists	20	19	21	19	17	16
% of colonolscopies meeting target	43%	46%	76%	68%	67%	78%
Eastern Health						
Total # of colonoscopies[3]	1,439	1,421	3,973	4,028	1,101	804
# of Colonoscopists	33	33	33	33	32	30
% of colonolscopies meeting target	56%	60%	55%	61%	62%	67%

[1] 2017: Total number of referring physicians in EH by priority – P1 (n=33), P2 (n=33), P3 (n=32)
[2] 2018: Total number of referring physicians in EH by priority – P1 (n=33), P2 (n=33), P3 (n=30)
[3] Colonoscopy totals include only those referrals with an identified referring physician.

Choosing Wisely NL

Use of Oesophageal-Gastro-Duodenoscopy in Eastern Health

Choosing Wisely Canada Recommendation

Avoid performing an endoscopy for dyspepsia without alarm symptoms for patients under the age of 65 years.

Practice Points

1. Wait time benchmarks for oesophageal-gastro-duodenoscopy (OGD) are:

   Priority 1 (Urgent): 0-14 days
   - ◇ High likelihood of cancer, progressive/rapid dysphagia, odynophagia

   Priority 2 (Non-Urgent): 0-60 days
   - ◇ Iron deficiency, confirmation of celiac disease, reflux, dyspepsia, stable dysphagia

   Priority 3 (Screening): 0-182 days

2. Dyspepsia occurs in at least 20% of the population and, although it does not affect life expectancy, it can significantly impact quality of life and is responsible for substantial health care costs.

3. OGD is an accurate test for diagnosing dyspepsia. Most guidelines recommend as the first line approach for managing dyspepsia either empirical proton pump inhibitor therapy or a non-invasive test for *Helicobacter pylori*, and then offering therapy if the patient is positive. If the patient has alarm features (such as unintentional weight loss, anemia, progressive dysphagia, persistent vomiting, palpable mass) endoscopy is appropriate.

Methods

1. Baseline data for 2018 was obtained from Community Wide Scheduler for five hospitals in Eastern Health (EH): Burin, Carbonear, GB Cross, Health Sciences Centre (HSC) and St. Clare's Mercy (SCM).

2. Referral rates and benchmark performance were compared for those 20 to 64 years of age and those 65 years and older.

Results

Table 1. Number of OGD Referrals by Region and by Priority in EH in 2018

	Tri-Peninsulas[1]		St. John's[2]		Eastern	
	20-64 yrs	65+ yrs	20-64 yrs	65+ yrs	20-64 yrs	65+ yrs
Priority 1	416	546	391	361	807	907
Priority 2	963	601	1,425	815	2,388	1,416
Priority 3	15	16	112	48	127	64
Total	1,394	1,163	1,928	1,224	3,322	2,387

[1] Burin, Carbonear & GB Cross
[2] HSC & SCM

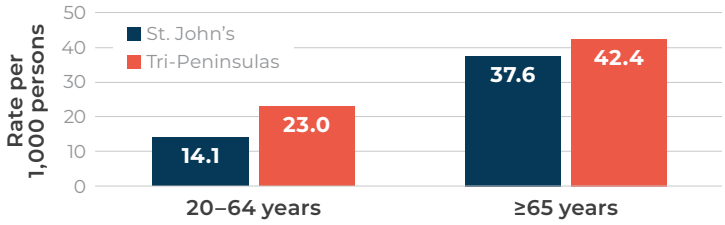


Fig. 1. OGD Rates per 1,000 Persons (≥20 Years) by Age and by Region

- Referral rate per 1,000 persons (aged 20-64 yrs) in the Tri-Peninsulas' region is 63% higher than in St. John's. In people ≥65 yrs, the rate is 13% higher in the Tri-Peninsulas'.

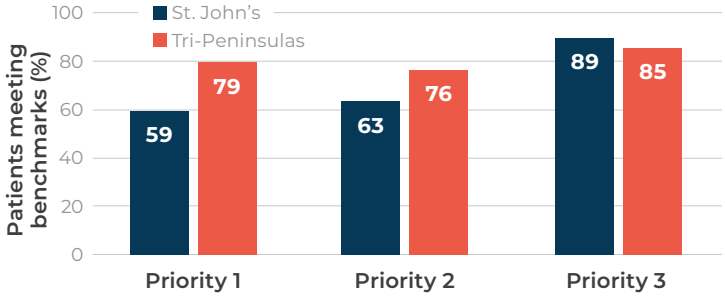


Fig. 2. Percentage of Patients Meeting Benchmarks for Access to OGD by Priority and by Region

Conclusions

1. Rate of OGD referrals per 1,000 people (aged 20-64 years) in the Tri-Peninsulas' is 63% higher than in St. John's. Avoidance of endoscopy for dyspepsia without alarm features, for patients under 65 years, should be encouraged.

2. Access to OGD is better in the Tri-Peninsulas' region than in St. John's.

Quality of Care NL

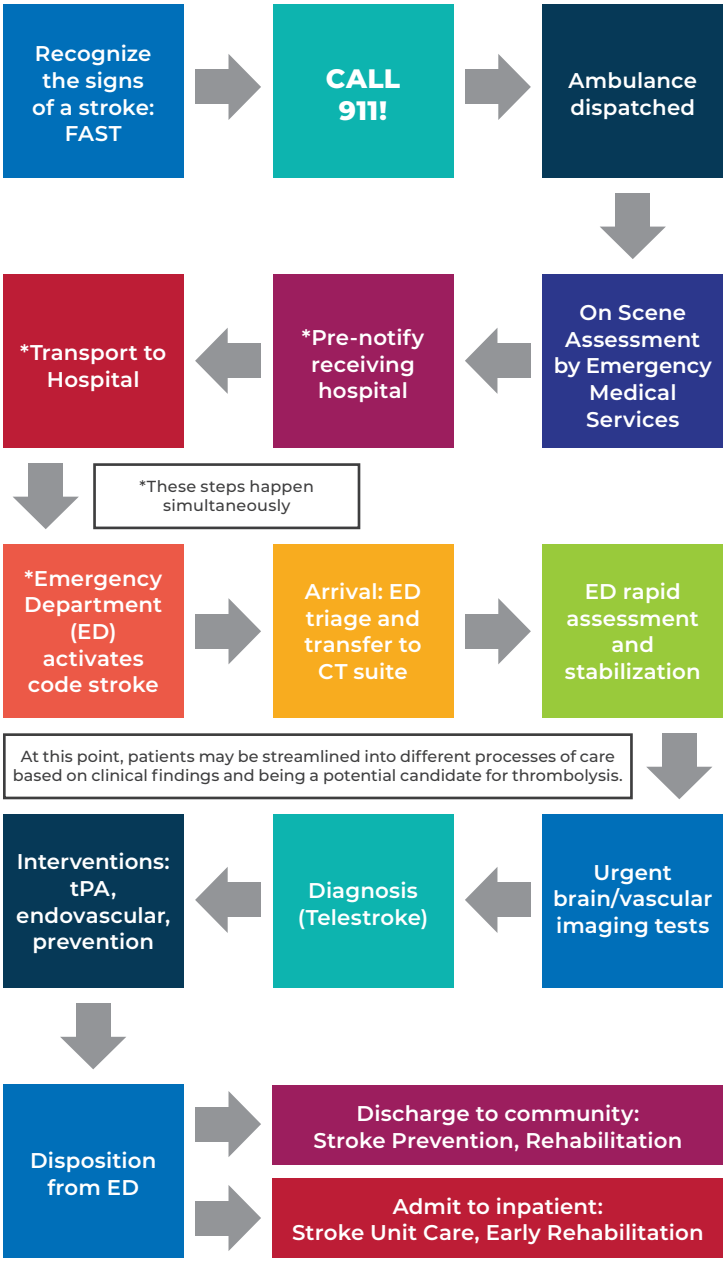
Questions to Ask to Improve Thrombolysis Rates in Ischemic Stroke in NL

Objectives

1. To improve thrombolysis rates in ischemic stroke in NL.
2. To have Door-to-Needle Time (DTNT) under 30 minutes.

Practice Points:

1. Thrombolysis with tPA is a proven intervention that will improve outcomes in ischemic stroke.
2. There were 750 ischemic strokes identified in NL in 2017/18, of which 9.6% received thrombolysis.
   - Target rates should be greater than 25%.
3. Thrombolysis rate in Eastern Health (EH) was 9.4%, Central Health (CH) 9.4%, Western Health (WH) 8.1%, and Labrador-Grenfell Health (LGH) 18.6%.
4. Knowledge Translation efforts by Quality of Care NL in 2016/17 did not lead to overall improvements in rates in EH hospitals.
5. Improvements in thrombolysis rates will require change in stroke care processes and monitoring of times to event in each process of care.

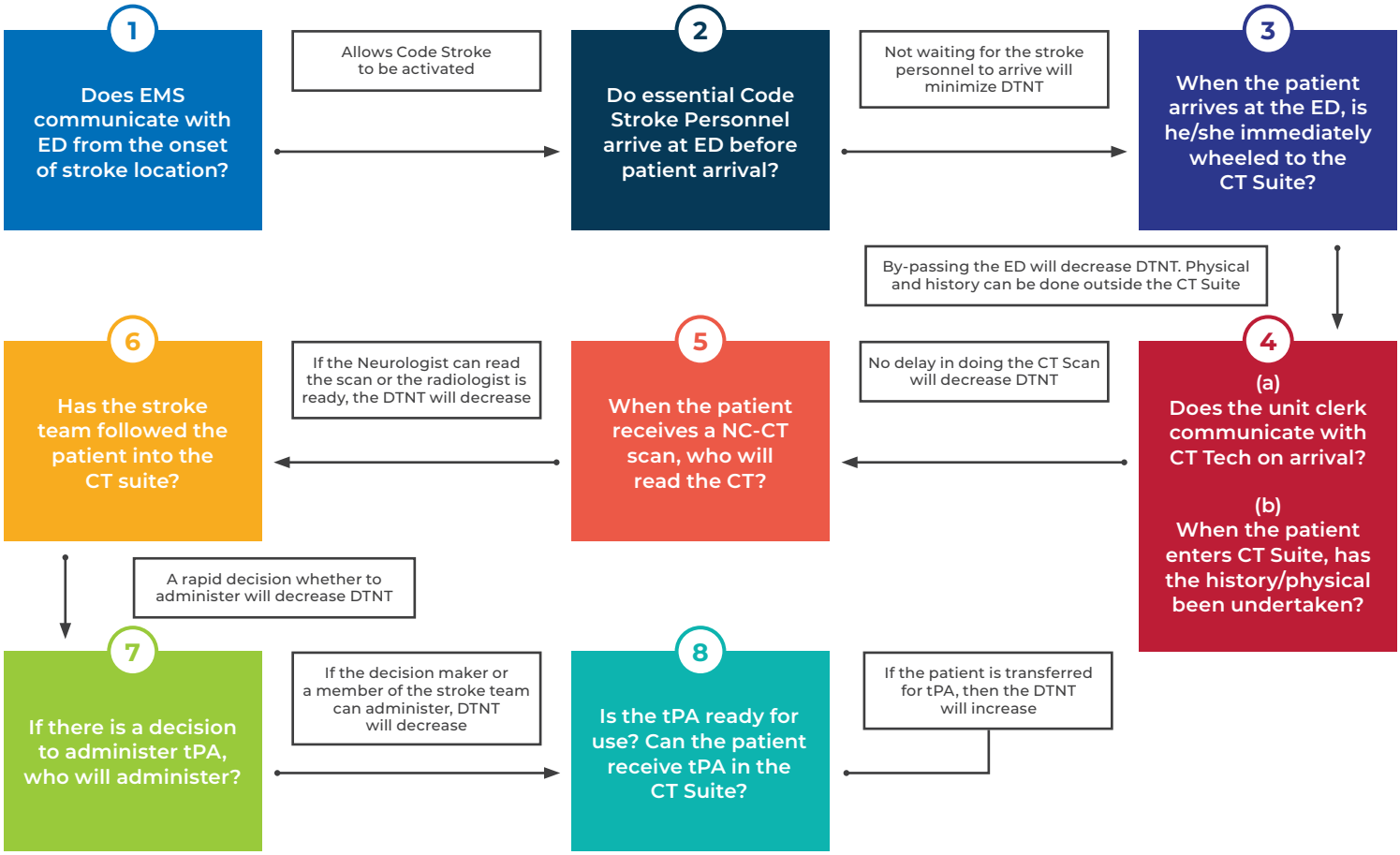


Abbreviations

FAST:
•**F:** Face = is it drooping?; •**A:** Arms=Can you raise them both?;
•**S:** Speech= Is it slurred or jumbled?; •**T:** Time = To call 9-1-1 right away

ED: Emergency Department

Fig. 1. The Acute Stroke Care Pathway: Is there a local Code Stroke?



Abbreviations

EMS: Emergency Medical Services; **DTNT:** Door-to-Needle Time; **tPA:** Tissue Plasminogen Activator

Fig. 2. Questions to Ask to Improve Door-to-Needle Time for Thrombolysis

- Time from symptom onset to ambulance arrival.
- Time from Ambulance arrival to ED arrival.
- Time from ED arrival to CT suite arrival.
- Time from CT suite arrival to CT report.
- Time from diagnosis of ischemic stroke to infusion of thrombolysis.

◇ The Door-to-Needle Time goal should be <30 minutes. Keeping track of these times to events will show what needs improvement.

◇ If tPA is not used, is there a way of providing the explanation?

Fig. 3. Times to Events Critical to Measure in the Hyper Acute Stroke Care Process

Conclusions

1. Thrombolysis rates in ischemic stroke in NL are poor.
2. Implementation of change in a complex process such as acute stroke care, requires buy-in from health care providers and administrators of EDs to identify and reform the barriers to optimal care.
3. Sustainability of change requires monitoring of time to each event in the care process.

Quality of Care NL

Quality of Care NL Report: Health Sciences Centre

Hospital Utilization

Table 1. Hospital Utilization – Health Sciences Centre (HSC)

Stays (2018/19)	Beds (2017/18)	Average LOS (Days) (2018/19)	Occupancy (2017/18)	Cost/Stay (2017/18)	% Patients admitted through ED (2018/19)	ALC LOS (Days)
19,556	328	6.5	90	$5,482	40.9%	7,989 (8%)

Table 2. Acute Length of Stay (LOS) vs. Canadian Average

	Obstetrics		Surgery		Medicine		ICU	
	HSC	Can	HSC	Can	HSC	Can	HSC	Can
Days	3.0	6.0	5.7	8.1	5.7	6.2	5.8	4.4

Thrombolysis Rates for Ischemic Stroke

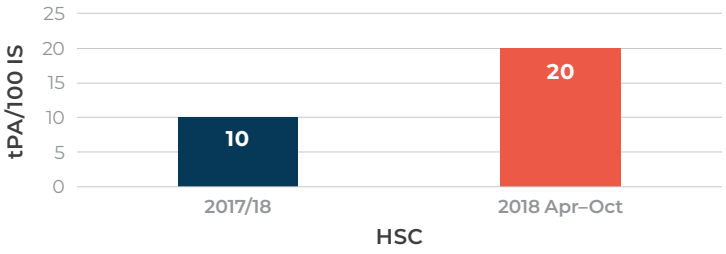


Fig. 1. Rate of tPA/100 Ischemic Strokes (IS)

Table 3. Number of tPA Administrations and of Ischemic Strokes (IS) – HSC

	N tPA	N IS
01 Apr 2017 – 31 Mar 2018	20	193
01 Apr 2018 – 31 Oct 2018	24	112

Note: **tPA** = Tissue Plasminogen Activator

Wait Time Evaluation for OGD and Colonoscopy

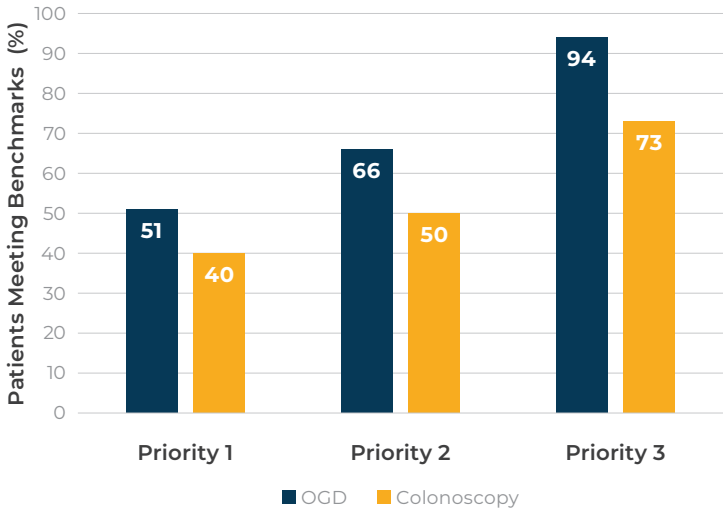


Fig. 2. Percentage of Patients Meeting Benchmarks by Priority 1–3 – HSC

Cardiac Catheterization

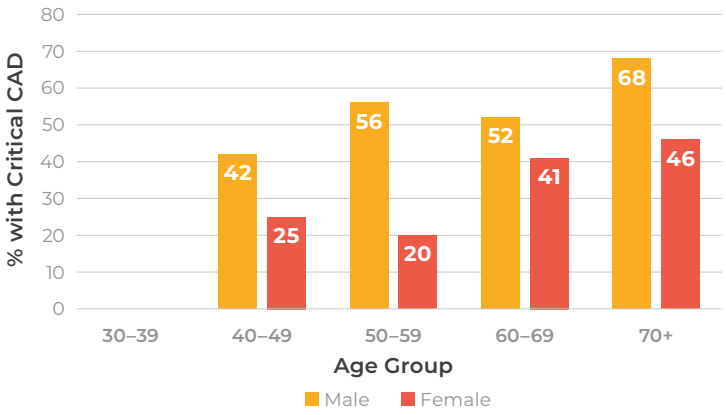


Fig. 3. Percentage of Males and Females with Stable Angina Diagnosed as Having Critical CAD by Age (2018)

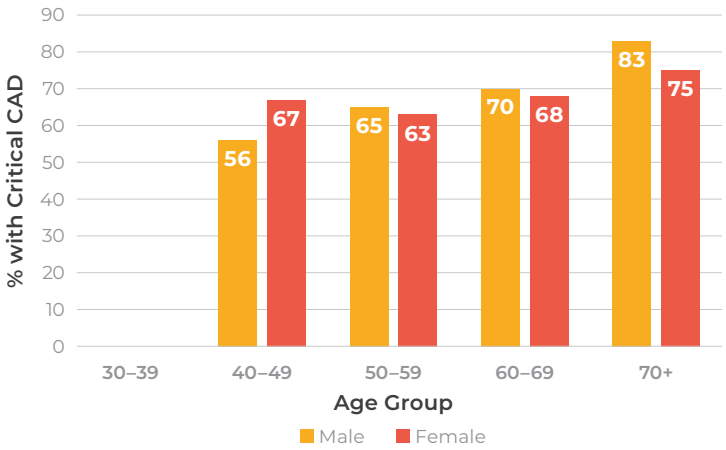


Fig. 4. Percentage of Males and Females with NSTEMI Diagnosed as Having Critical CAD by Age (2018)

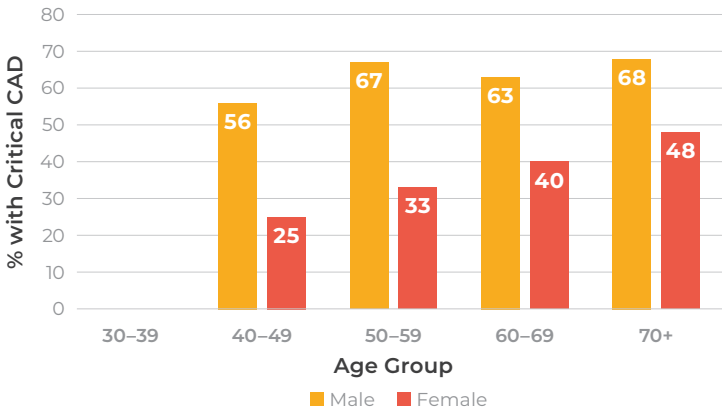


Fig. 5. Percentage of Males and Females with Unstable Angina Diagnosed as Having Critical CAD by Age (2018)

Pre-Operative Testing Prior to Low-Risk Surgery

Table 4. Volume of Low-Risk Surgeries and Pre-op Tests Informed by Year

	Low-Risk Procedures	Creatinine	Hemoglobin	INR	Chest X-Ray
2016	2,961	1,669	1,994	1,058	705
2017	3,001	1,601	2,041	616	417

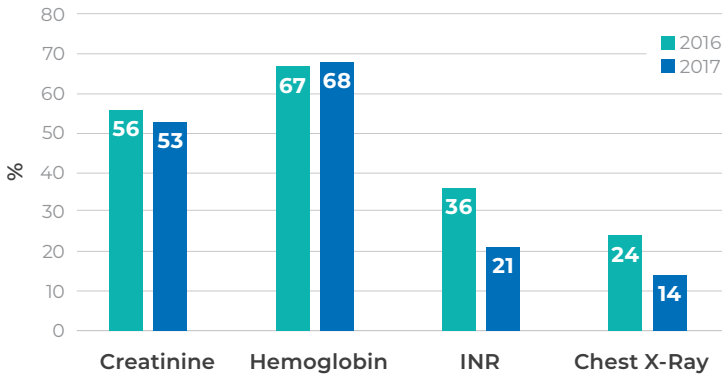


Fig. 6. Percentage of Low to Moderate Risk Surgeries with Pre-Operative Tests

Time from Abnormal Screening Mammography to Final Diagnostic Test

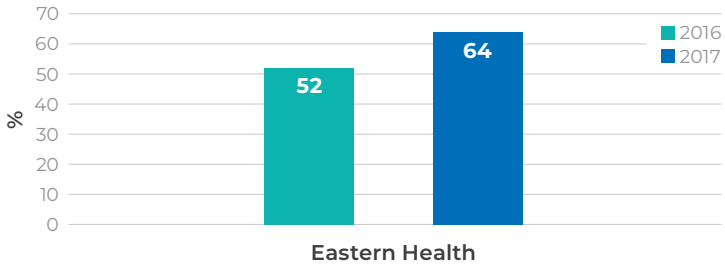


Fig. 7. Time to Final Diagnostic Test in Those who had Breast Biopsy: Percentage Achieved Within 7 Weeks – Eastern Health

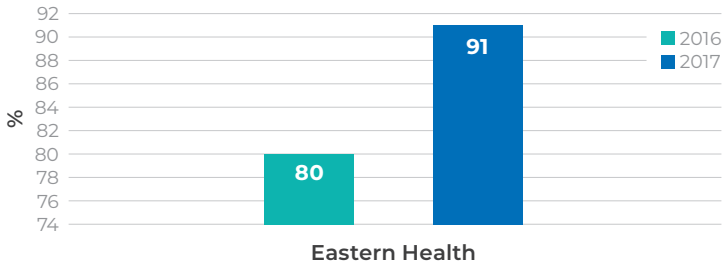


Fig. 8. Time to Diagnostic Test in Those Without Biopsy: Percentage Achieved Within 5 Weeks – Eastern Health

Demand for and Access to Orthopedic Interventions in St. John's

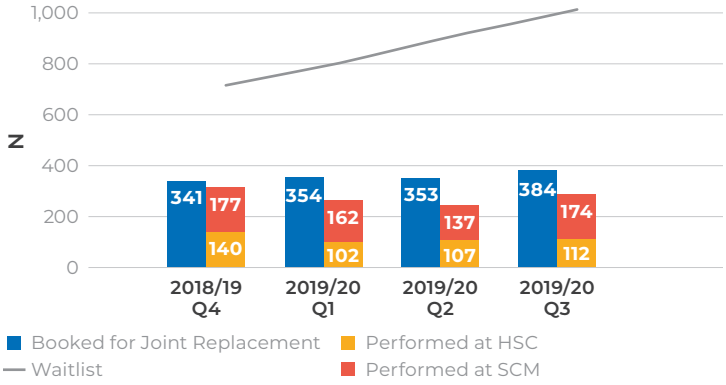


Fig. 9. Booking vs. Procedures Undertaken for Total Joint Replacement – HSC and St. Clare's

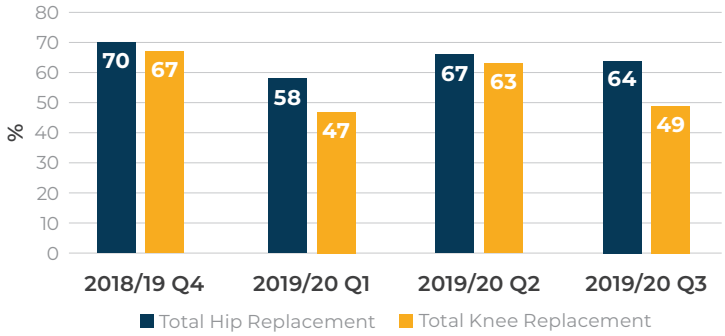


Fig. 10. Percentage of Total Joint Replacements Completed at 182 Days – HSC and St. Clare's

In-Hospital Use of Antibiotics

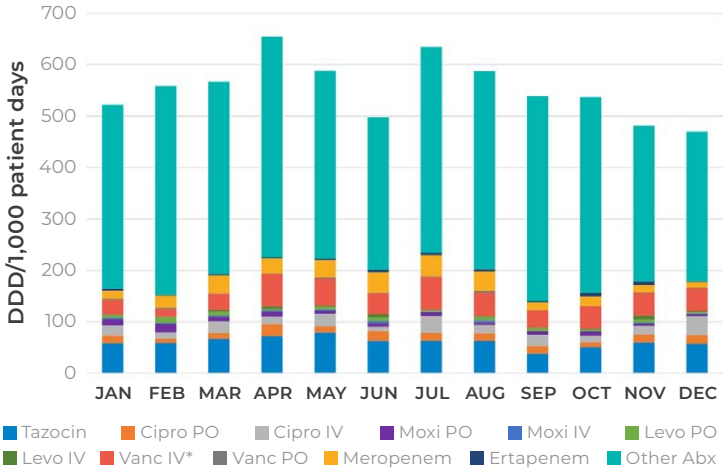


Fig. 11. Defined Daily Dose/1,000 Patient Days for 2019 by Month and Antibiotic – HSC

Conclusions

1. At the HSC, hospital utilization metrics were good, except occupancy of 91% which may predispose to capacity stress on occasion.

2. Percentage diagnosed with critical CAD using cardiac catheterization differed according to indication, age and sex. Better pre-cardiac catheterization work-up by referring physician is indicated.

3. Improvement in thrombolysis rates for ischemic stroke should be celebrated.

4. Improvement in time from abnormal screening mammography to final diagnostic test is also good.

5. Time to upper GI scope and colonoscopy for high priority patients is not optimal.

6. Time to joint replacement within 182 days is not optimal and wait list continues to grow.

7. High rates of pre-operative blood tests before low to moderate risk surgery persists.

8. Use of broad spectrum antibiotics is high and highly variable from month to month. High use will predispose to antibiotic resistant bacteria.

Choosing Wisely NL

Reduction in Pre-operative Testing for Low-Risk Surgery was Greater at St. Clare's Hospital than at the Health Sciences Centre

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. **modified wording for brevity*

Methods

1. In 2016, pre-op testing for low-risk surgeries was identified as an area of low-value care and the "Drop the Pre-op" campaign was adopted.

2. In January 2017, a medical directive was rolled out in two Eastern Health (EH) hospitals, St. Clare's (SCM) and the Health Sciences Centre (HSC).

Results

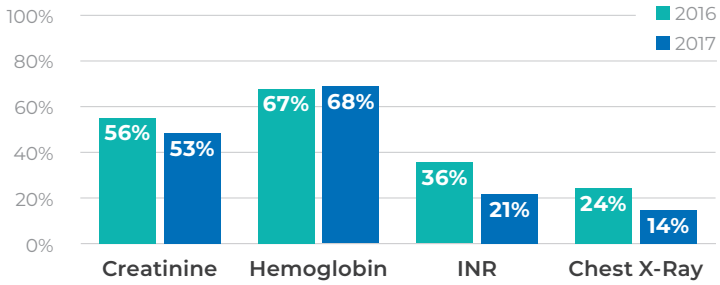


Fig. 1. Pre-operative Testing at Health Sciences Centre by Year

- Following the medical directive, there was little change in ordering of Hemoglobin (Hb) and Serum Creatinine at the HSC, but over 40% reductions in INR and Chest X-Ray.

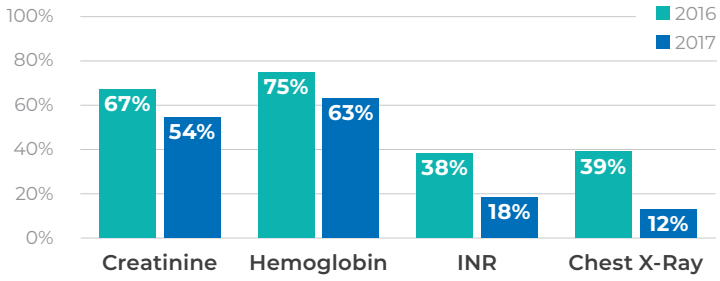


Fig. 2. Pre-operative Testing at St. Clare's Mercy Hospital by Year

- At SCM, the reduction in Hb and Serum Creatinine was over 20%, of INR 56%, and of Chest X-Ray 72%. However, at baseline, the percentage of patients tested was higher at SCM than HSC.

Table 1. Volume of Low-Risk Surgeries and Pre-op Testing: HSC vs. SCM

	Low-Risk Procedures	Creatinine	Hemoglobin	INR	Chest X-Ray
Health Sciences Centre					
2016	2,961	1,669	1,994	1,058	705
2017 (% Change)	3,001 (-1.4%)	1,601 (-4.1%)	2,041 (+2.4%)	616 (-41.8%)	417 (-40.9%)
St. Clare's					
2016	789	525	592	301	305
2017 (% Change)	739 (-4.1%)	396 (-24.6%)	465 (-21.5%)	134 (-55.5%)	86 (-71.8%)

- The HSC does four times the number of low-risk procedures compared to SCM.

Reported barriers to reducing pre-op testing from an Ontario study (Patey et al., 2012) include:

- unclear who is responsible for ordering the tests
- inability to cancel tests ordered by other doctors
- tests ordered based on who may be the attending anesthesiologist on the day of surgery
- surgeons ordering tests they thought anesthesiologist may need/want

Conclusions

1. The response to the medical directive to follow Choosing Wisely Canada guidelines regarding pre-operative testing before low-risk surgery was greater at SCM than at the HSC. This may reflect that barriers to implementation of the directive were greater and/or different at HSC compared to SCM.

Choosing Wisely NL

Reduction in Antibiotic Use for Urinary Tract Infections in 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. In long-term care facilities (LTCFs), antibiotics are prescribed more often for urinary tract infections (UTIs) than any other diagnosis.

2. Antimicrobial treatment studies for asymptomatic bacteriuria in older adults demonstrate no benefits and show increased adverse antimicrobial effects.

Methods

1. Data was obtained from the Infection Prevention and Control Programs of Eastern Health (EH), Central Health (CH) and Western Health (WH).

2. Antibiotic use rate was calculated as the number of prescriptions per 10,000 resident days.

3. Inappropriate antibiotic use was determined based on consensus criteria developed by each Regional Health Authority (RHA).

Results

Table 1. Antibiotic Use and Inappropriateness by RHA

RHA		2016	2017
Eastern Health	Antibiotics Prescribed; (N)	737	694
	Inappropriate Antibiotic Use; N (%)	506 (69)	364 (52)
Central Health	Antibiotics Prescribed; (N)	252	292
	Inappropriate Antibiotic Use; N (%)	115 (46)	164 (56)
Western Health	Antibiotics Prescribed; (N)	234	268
	Inappropriate Antibiotic Use; N (%)	140 (60)	180 (67)

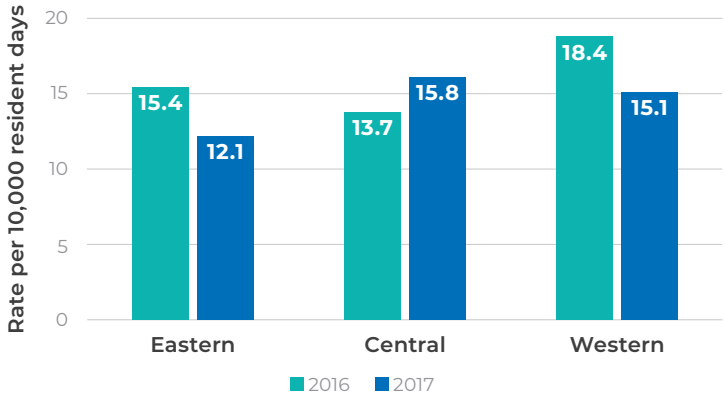


Fig. 1. Rate of Antibiotic Use in Long-Term Care Facilities Analyzed by RHA

- Rate of antibiotic use and percentage of inappropriate use varied by LTCF.

Conclusions

1. From 2016–2017, rate of antibiotic use decreased overall for both EH and WH but increased for CH. Inappropriateness rate decreased only for EH.

2. Overall, from 2016–2017, the percentage of antibiotics prescribed that were inappropriate decreased from 62% to 56% and varied by LTCF and RHA.

3. Inappropriate antibiotic use for asymptomatic bacteriuria in LTCFs in NL is still high. Targeted interventions to reduce inappropriate use are necessary.

Choosing Wisely NL

Community-Based Oral Antibiotic Use in NL: High-Use Groups

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.

See www.choosingwiselycanada.org/campaign/antibiotics-primary-care.

Practice Points

1. NL has the highest outpatient antibiotic prescription rate in Canada based on federal estimates among selected pharmacies.
2. In June 2017, the NL Pharmacy Network included prescriptions filled by 100% of pharmacies in NL.

Methods

1. Data from the NL Pharmacy Network on prescriptions for antimicrobials given to outpatients were provided by the NL Centre for Health Information from 1 Jul 2017 - 30 Jun 2019.
2. Indications for prescriptions were not available.
3. Urban and rural areas were defined by using the Forward Sortation Area-Definition.
4. 912,435 prescriptions, representing 2,841 unique prescribers, were written between 1 Jul 2017 - 30 Jun 2019. 70,026 non-oral prescriptions (7.7%) were excluded.

Results

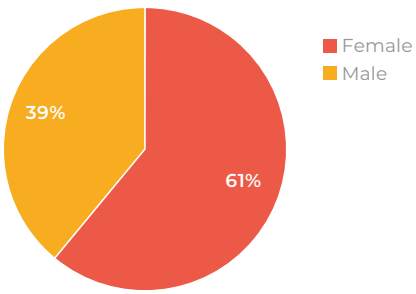


Fig. 1. Prescriptions by Sex

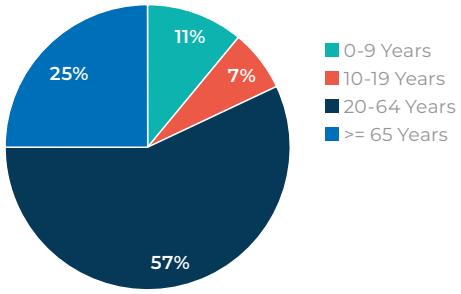


Fig. 2. Prescriptions by Age Group

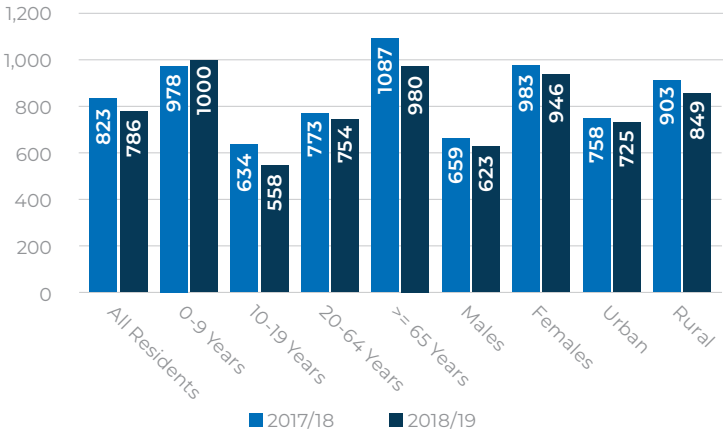


Fig. 3. Prescription Rate/1,000 Residents by Demographic Groups

- The rate per 1,000 residents decreased by 4.5% in 2017/18 compared to 2018/19.
- In 2018/19, females had 52% higher use of antibiotics than males, rural residents had a 17% higher rate than urban residents, and the highest rate were in children 0-9 years (1,000 prescriptions/1,000 children) and in the elderly (980/1,000).

Conclusions

1. NL has a lower Antimicrobial Usage (AMU) rate than reported by national publications. AMU rate has dereased modestly; however, it is still very high.
2. High use groups include women, children, the elderly and rural residents.
3. Different interventions may be needed to decrease antibiotics in high use groups. Future dated prescriptions may be useful for rural residents and children, whereas patient education on not prescribing antibiotics may help females and seniors.

Modest Reduction in Use of Oral Antibiotics by Health Care Providers but Continued High Inappropriate Use of Ciprofloxacin

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.

See www.choosingwiselycanada.org/campaign/antibiotics-primary-care.

Practice Points

1. NL has the highest use of antibiotics per capita in Canada.
2. Based on NLPDP data, there was a 9% decrease in the number of prescriptions of antibiotics by Family Physicians (FP) and 15% by Nurse Practitioners (NP) in 2017 compared to 2016.
3. In 2017, the NL Pharmacy Network started to capture all antibiotic prescriptions in the community.
4. Rates of Ciprofloxacin resistant E. coli (18%) are high in NL.
5. For respiratory tract infections, urinary tract infections, and skin and soft tissue infections, ciprofloxacin should be limited to conditions likely or proven to be caused by Pseudomonas aeruginosa.

Methods

1. Data from the NL Pharmacy Network on prescriptions for antimicrobials given to outpatients were provided by the NL Centre for Health Information from 1 Jul 2017 - 30 Jun 2019.

Results

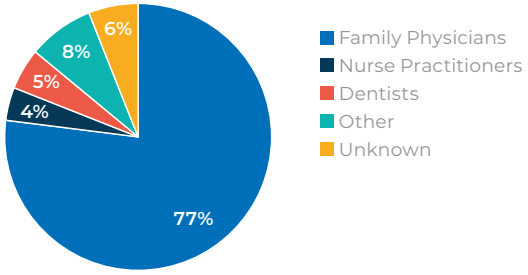


Fig. 1. Proportion of Prescriptions by Health Care Provider

- 77% of antibiotic prescriptions were provided by FPs, 5% by dentists, and 4% by NPs.

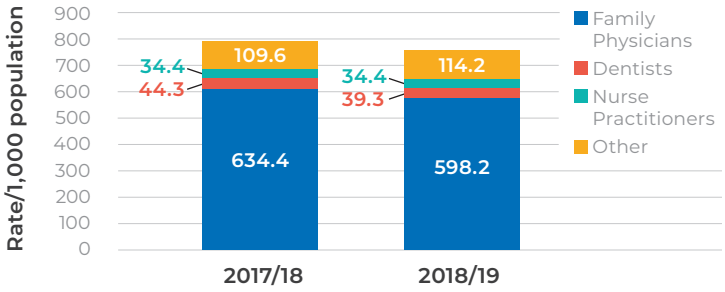


Fig. 2. Population Rate of Antibiotics Prescribed by Health Care Provider

- The rate of use of oral antibiotics in NL was 786/1,000 population. Rate of use of antibiotics by FPs decreased by 5.7%, 11.3% by dentists, and there was no change in NP's rate.

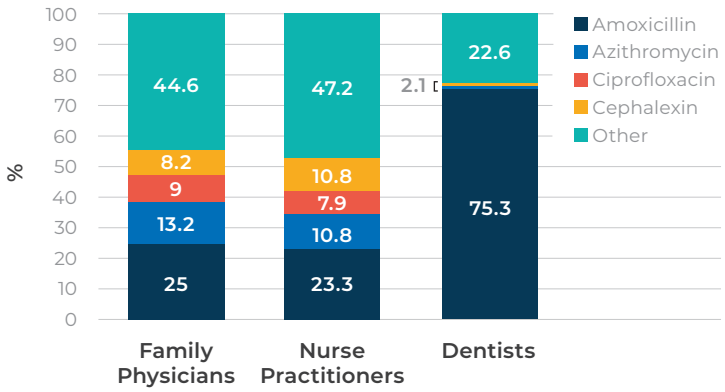


Fig. 3. Type of Antibiotics Prescribed by Health Care Provider

- Amoxicillin was the most prescribed drug by FPs, NPs and dentists at a rate of 25, 23.3, and 75.3% respectively.
- Ciprofloxacin comprised 9% of prescriptions by FPs, 7.9% by NPs and 0.3% by dentists.

Conclusions

1. There was a 6% reduction in use of oral antibiotics by FPs, 11% by dentists, and no change for NPs.
2. Use of antibiotics remains high.
3. Use of ciprofloxacin is high. Restricted use of ciprofloxacin is indicated in view of high E. coli ciprofloxacin resistance.

Choosing Wisely NL

Wide Variability in the Use of Antibiotics by Family Physicians

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.

See www.choosingwiselycanada.org/campaign/antibiotics-primary-care.

Practice Points

1. NL has the highest use of antibiotics per capita in Canada.
2. Based on NLPDP data there was a 9% decrease in the number of prescriptions of antibiotics by Family Physicians (FP) and 15% by Nurse Practitioners (NP) in 2017 compared to 2016.
3. In 2017, the NL Pharmacy Network started to capture all antibiotic prescriptions in the community.

Methods

1. Data from the NL Pharmacy Network on prescriptions for antimicrobials given to outpatients were provided by the NL Centre for Health Information from 1 Jul 2017–30 Jun 2019.
2. Indications for prescriptions were not available.
3. 912,435 prescriptions, representing 2,841 unique prescribers, were written between 1 Jul 2017–30 Jun 2019. 70,026 non-oral prescriptions (7.7%) were excluded.
4. Billing information from 2017 was derived from the MCP Fee-for-Service Physician Claims database.

Results

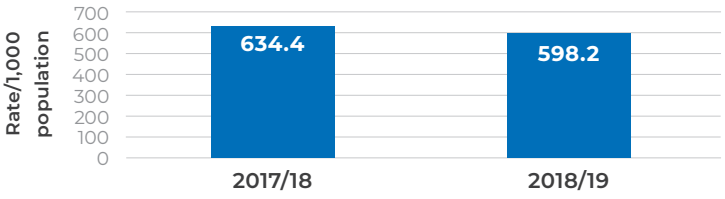


Fig. 1. Population Rate of Antibiotic Use by FPs

- Rate/1,000 population of antibiotic use by FPs decreased by 5.7% compared to 2017/18.

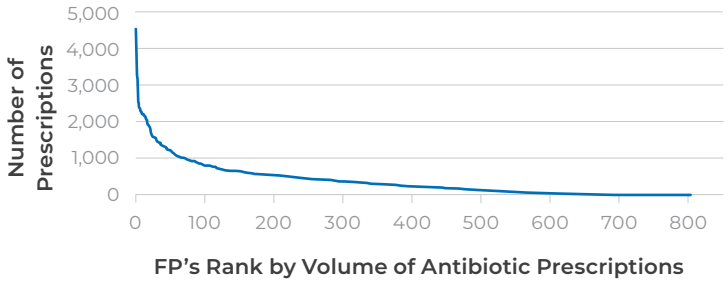


Fig. 2. Number of Oral Antibiotic Prescriptions Ranked by FP (1 Jul 2018 - 30 Jun 2019)

- 20% of FPs prescribed 58% of all oral antibiotics in 2018/19.

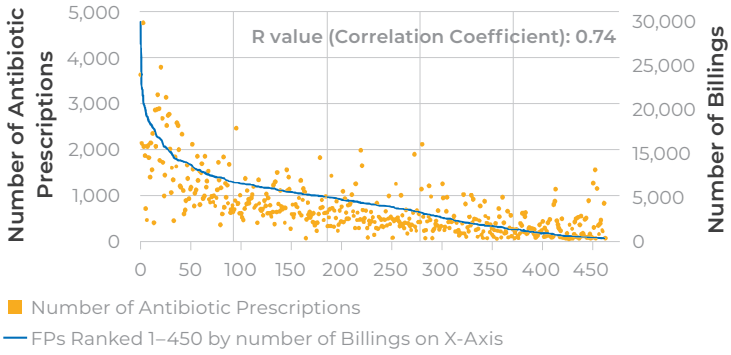


Fig. 3. Physicians Ranked by Number of Billings in 2017 (X-axis) and Matched with Number of Antibiotic Prescriptions (1 Jun 2017 – 31 May 2018) (Y-axis)

- There is a strong correlation between the number of antibiotics prescribed and the number of billings by FPs. However, within each quintile of billings (vertical line) there is still a wide variability by FP.

Conclusions

1. Although there was a decrease in the number of antibiotics prescribed comparing 2018/19 to 2017/18, some FPs were high prescribers.
2. The highest prescribers correspond to the busiest FPs, however there is wide variability as some FPs prescribe more antibiotics compared to their peers when matched by number of billings.

Quality of Care NL

Reduction in Creatine Kinase Tests by Family Physicians in NL

Guideline from College of Family Physicians of Canada

Testing Creatine Kinase (CK) and ALT levels at baseline on statin initiation or for monitoring is not required.

Perform CK as clinically indicated.

Practice Points

1. CK is a useful test in patients with a high index of suspicion for muscle disease.
2. Nearly 120,000 CK tests were performed in 2015/16 in NL, a population rate of nearly 1 in 4 people.
3. In 2016/17, Quality of Care NL provided audit, feedback and academic detailing to individual Family Physicians (FPs) in Eastern Health (EH).
4. Practice Points Volume 2 contained advice on use of CK and was sent to every FP in NL in 2017.

Methods

1. Testing for CK in NL was obtained from the NL Centre for Health Information for 1 Apr 2015 – 30 Mar 2018 (three years), and analysed by region, and by FP.
2. For EH and Western Health (WH) 2015/16 data served as baseline.
3. Data from Central Health (CH) for 2015/16 was problematic and data from 2016/17 was used as baseline in this region.

Results

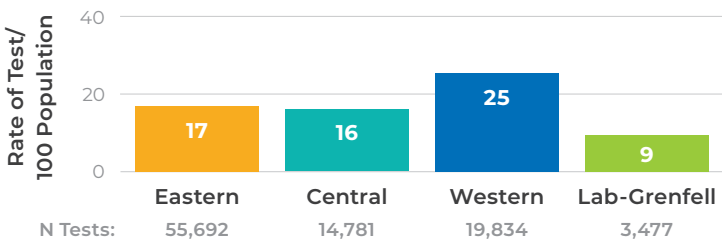


Fig. 1. Rate of CK Testing/100 Population by Region in 2017/18

- Rate of CK testing is highest in WH at 25 /100 population.

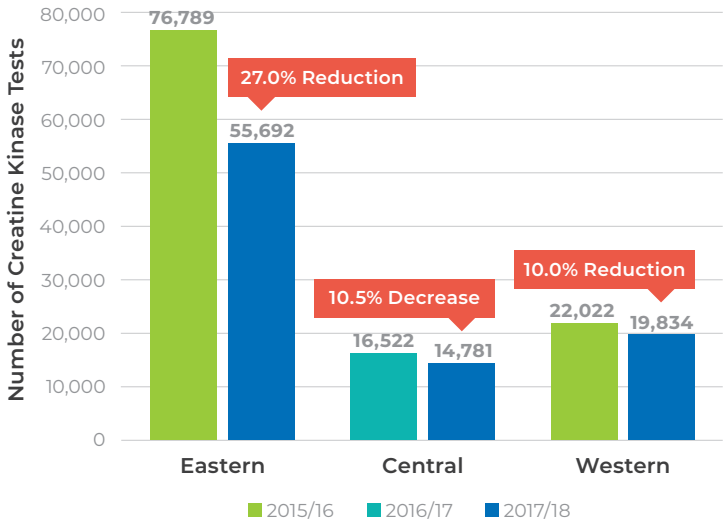


Fig. 2. Reductions in Number of CK Tests by Region

- Compared to baseline, CK testing was reduced in EH by 27%, by 10.5% in CH, and by 10% in WH.

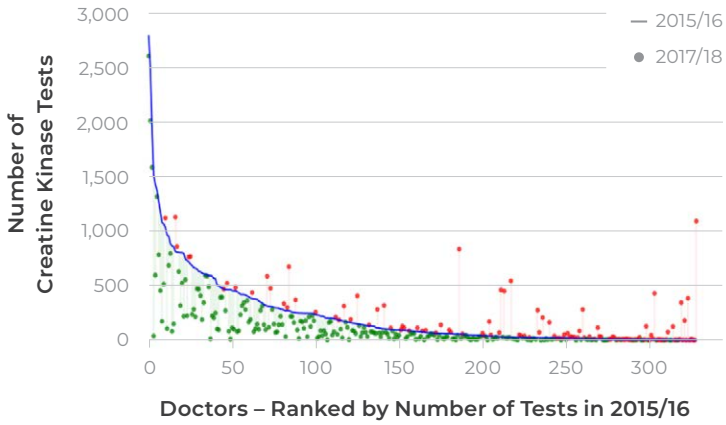


Fig. 3. Change in the Number of CK Tests at EH by FPs Comparing 2017/18 to 2015/16

Note: On the x-axis doctors are ranked by volume of tests in 2015/16 (solid line) and each individual FP's 2017/18 data is provided as a dot (linked by a vertical line to 2015/16 usage), with a reduction revealed by the dot being below the solid line and an increase by the dot being above the line.

- Of 329 FPs in EH, 65% had a reduction in testing in 2017/18 compared to 2015/16.
- A small number of very high users had little change in the volume of testing.

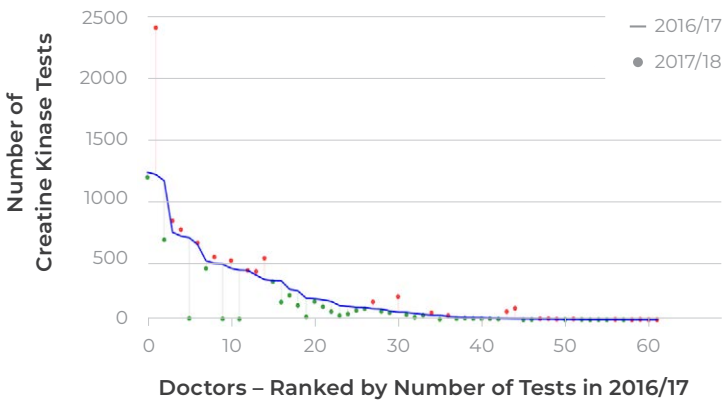


Fig. 4. Change in the Number of CK Tests at CH by FPs Comparing 2017/8 to 2016/7

See note of Fig. 3 for interpretation.

- Of 62 FPs in CH, 52% had a reduction in CK testing, mostly of small extent.
- In 2017/18 two FPs ordered >1,000 CK tests.

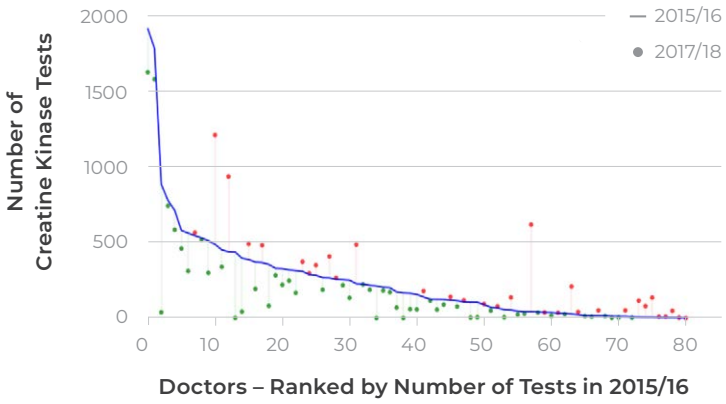


Fig. 5. Change in the Number of CK Tests at WH by FPs Comparing 2017/18 to 2015/16

See note of Fig. 3 for interpretation.

- Of 81 FPs at WH, 60% had a reduction in CK tests.
- Three FPs ordered >1,000 CK tests in 2017/18.

Conclusions

1. Rate of CK testing/100 population is highest in WH.
2. A small number of FPs ordered >1,000 CK tests annually.
3. In EH, audit, feedback and academic detailing was associated with 27% reduction in CK testing by FPs, compared to 10% in CH and WH.
4. Consideration should be given to taking CK from the requisition form and doing the test for a written order on the form.

Choosing Wisely NL

Reduction in Uric Acid Testing by Family Physicians in NL

Choosing Wisely Canada Recommendation

Don't request uric acid as part of the routine evaluation of cardiovascular risk, obesity, or diabetes.

Practice Points

1. Uric acid should not be measured routinely but it's measurement may be considered in the following situations:
   - ◇ Investigation of acute joint pain; follow-up of hypouricemic treatment,
   - ◇ Follow-up of patients with kidney disease and kidney stone disease,
   - ◇ Preclampsia; tumor lysis syndrome.
2. Nearly 90,000 uric acid tests were ordered by Family Physicians (FPs) in NL in 2015/16, a population rate of over 1 in 6 people.
3. Neither audit, feedback nor academic detailing was undertaken. Data on uric acid testing was reported in Practice Points (delivered to all FPs in NL) AFTER Apr 2018.

Methods

1. Testing for uric acid was obtained from the NL Centre for Health Information for I Apr 2015–30 Mar 2018 (3 years), and analysed by region and by FP. For Eastern Health (EH) and Western Health (WH) 2015/16 served as baseline, but data from 2016/17 was used as baseline in Central Health (CH).

Results

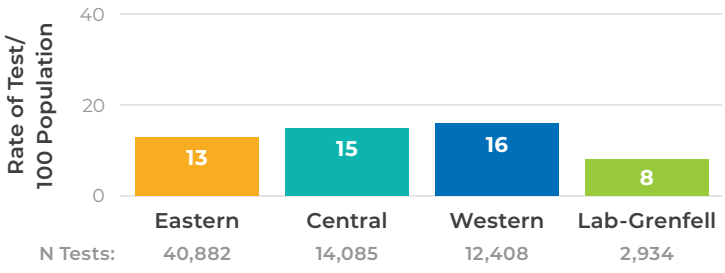


Fig. 1. Rate/100 Population of Uric Acid Testing by Region for 2017/18

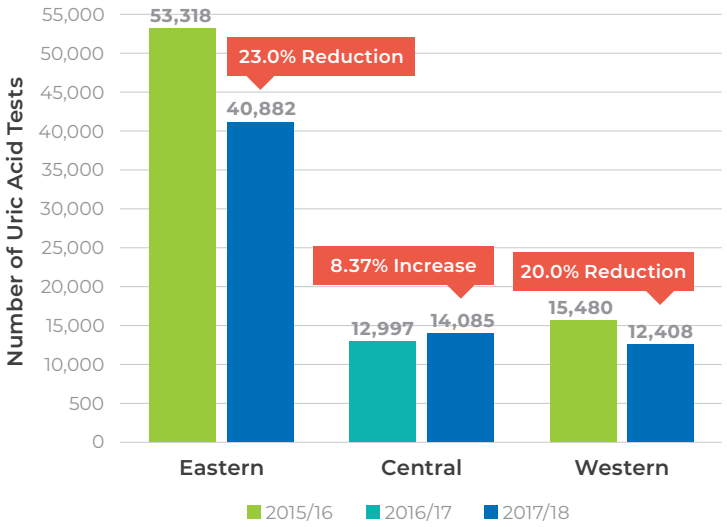


Fig. 2. Change in Uric Acid Testing by FPs Comparing Volume in 2017/18 to Baseline in Each Health Region

- Compared to baseline, uric acid testing decreased by 23% in EH and by 20% in WH, but increased by 8% in CH.

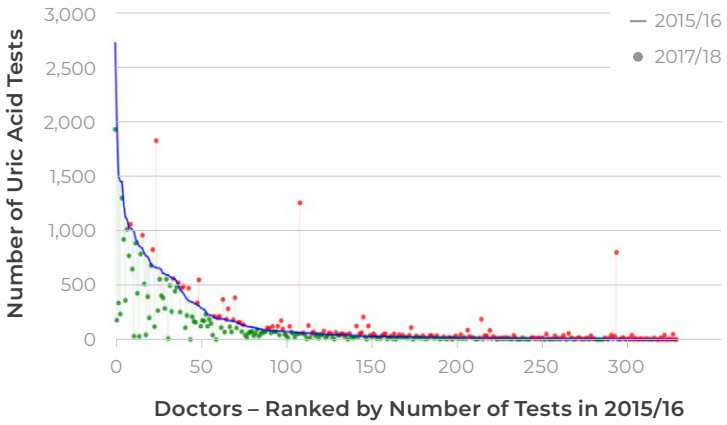


Fig. 3. Change in the Number of Uric Acid Tests at EH by Individual FPs Comparing 2017/18 to 2015/16

Note: On the x-axis doctors are ranked by volume of tests in 2015/16 (solid line) and each individual FP's 2017/18 volume is provided as a dot (linked by a vertical line to their 2015/16 data), with a reduction in testing revealed by the dot being below the line, and an increase by the dot being above the line.

- Most of the high users had a reduction in testing.
- Six FPs ordered >1,000 uric acid tests in 2017/18.

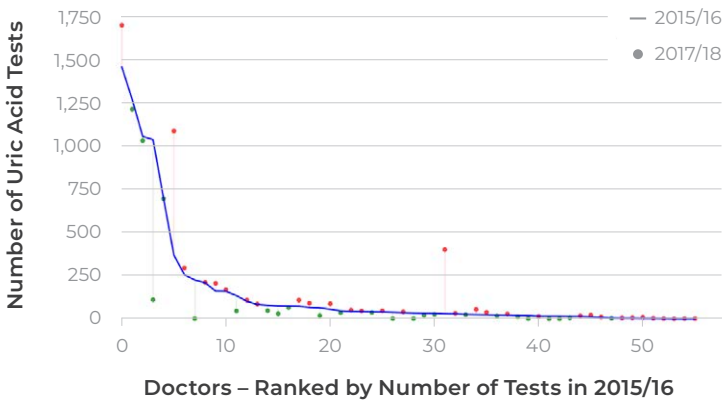


Fig. 4. Change in the Number of Uric Acid Tests at CH by Individual FPs Comparing 2017/18 to 2016/17

See note of Fig. 3 for interpretation.

- Four FPs in CH ordered >1,000 uric acid tests in 2017/18.

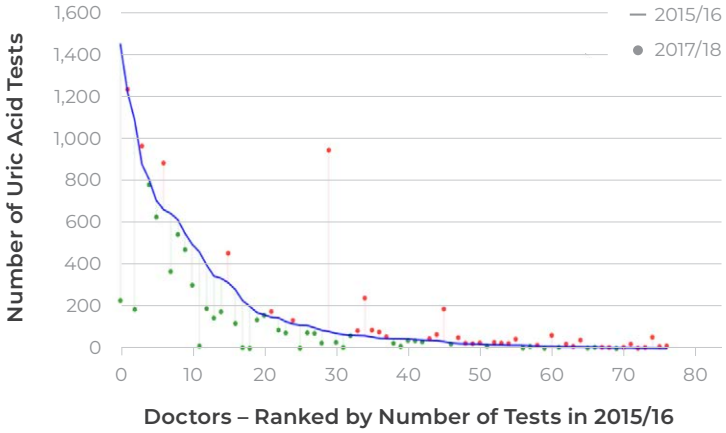


Fig. 5. Change in the Number of Uric Acid Tests at WH by Individual FPs Comparing 2017/18 to 2015/16

See note of Fig. 3 for interpretation.

- Two FPs ordered >1,000 uric acid tests in 2017/18.

Conclusions

1. The reduction in uric acid testing in EH and WH may have been the result of an increased awareness of potentially unnecessary testing induced by the Quality of Care NL campaign.

2. A small number of high users exist in each health region, but the ten FPs who ordered >1,000 tests each accounted for nearly a quarter of all tests.

Quality of Care NL

Little Change in Ferritin Testing by Family Physicians in NL

Guideline from Ontario Association of Medical Laboratories

Screening of the general population for iron deficiency is not indicated.

Practice Points

1. Patients with microcytic anemia and at-risk populations with signs and symptoms suggestive of anemia should be considered for ferritin testing.

   These at-risk groups include those with increased requirements for iron (menstruating females, pregnancy, lactation, and growing infants and children), people with increased blood loss, decreased intake, or decreased absorption of iron.

2. In 2015/16 130,000 ferritin tests were undertaken by Family Physicians (FPs) in NL, a rate of 1:4 of the population. At a cost of $10/test this ferritin testing amounted to $1.3 million.

3. Substantial screening for iron deficiency in low-risk groups without anemia (females >50 years, males) was undertaken in Eastern Health (EH).

4. In EH, audit, feedback and academic detailing on ferritin testing was undertaken in 2016/17.

5. Practice Points Vol. 2 contained advice on ferritin testing and was mailed to all FPs in 2017/18.

Methods

1. Data on ferritin testing from 1 Apr 2015 – 30 Mar 2018 was obtained from the NL Centre for Health Information, and analysed by region, and by FP. For EH and Western Health (WH), data for 2017/18 were compared to 2015/16, but for Central Health (CH) baseline was 2016/17.

Results

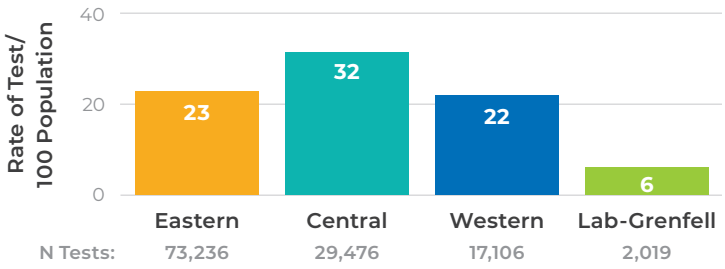


Fig. 1. Rate/100 Population for Ferritin Testing by FPs in the Four Health Regions in 2017/18

- Rate of ferritin testing was highest in CH (1:3 of population) but high also in EH and WH (nearly 1:4 of population).

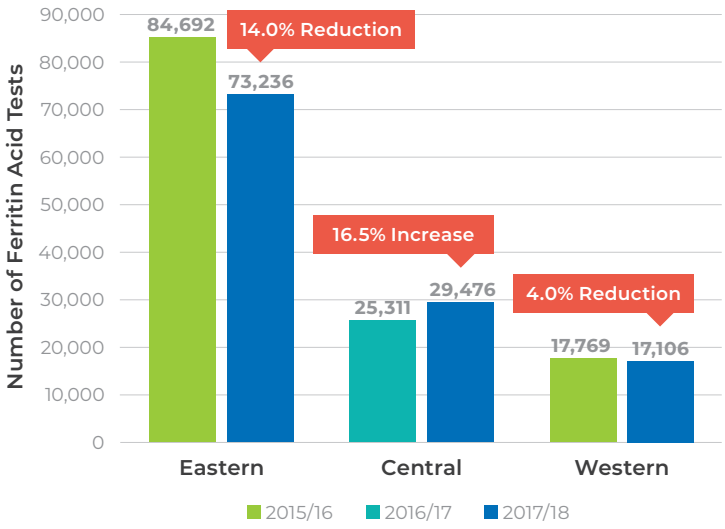


Fig. 2. Change in Ferritin Testing in 2017/18 Compared to Baseline Ordered by FPs Analysed by Health Region

- A reduction of 14.0% was observed in EH and of 4.0% in WH, but an increase of 16.4% occurred in CH.

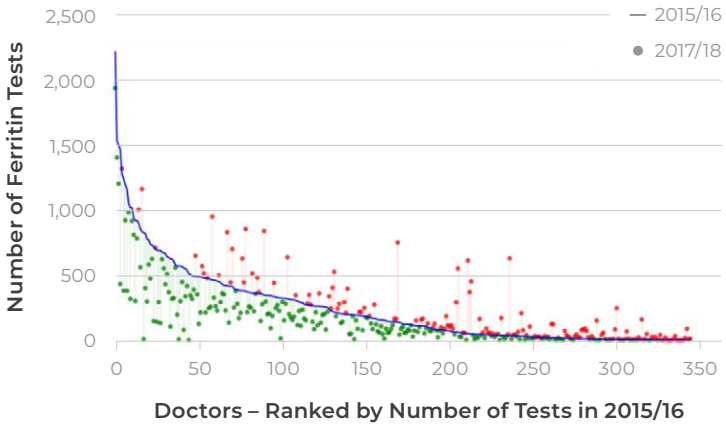


Fig. 3. Change in the Number of Ferritin Tests Ordered by FPs at EH Comparing 2017/18 to 2015/16

Note: On the x-axis doctors are ranked by volume of tests in 2015/16 (solid line) and each individual FP's 2017/18 data is provided as a dot (linked by a vertical line to their 2015/16 volume), with a reduction revealed by the dot below the solid line and an increase by the dot above the line.

- Of 345 FPs in EH, 43% had an increase or no reduction in ferritin testing.
- Six FPs ordered >1,000 tests annually.

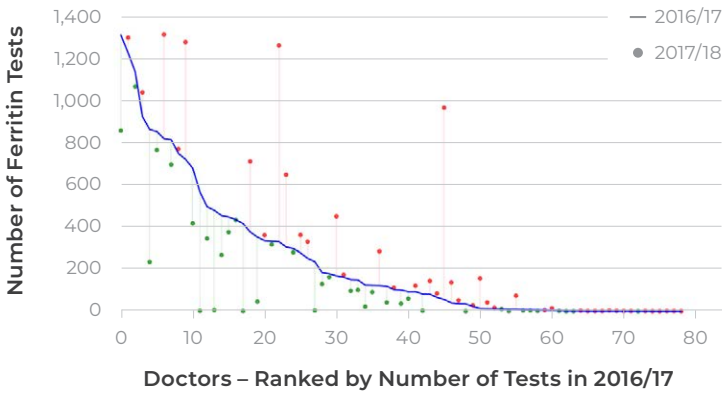


Fig. 4. Change in Number of Ferritin Tests by FPs in CH Comparing 2017/18 to 2016/17

See note of Fig. 3 for interpretation.

- Of 79 FPs in CH, 75% had an increase or no reduction in ferritin testing.
- Seven FPs ordered >1,000 tests annually.

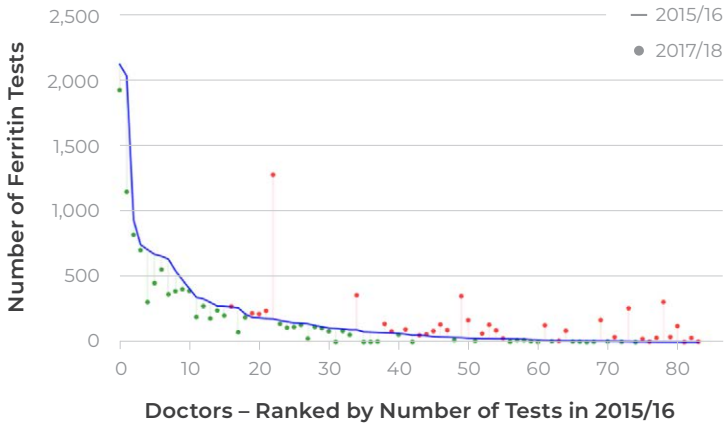


Fig. 5. Change in Number of Ferritin Tests by FPs in WH Comparing 2017/18 to 2015/16

See note of Fig. 3 for interpretation.

- Of 84 FPs in WH, 42% had an increase or no reduction in ferritin testing.
- Three FPs ordered >1,000 ferritin tests annually.

Conclusions

1. Ferritin testing is very high in NL, despite the fact that ferritin screening in groups at low risk for hypoferritinemia is not indicated.
2. A small number of FPs ordered >1,000 ferritin tests annually.
3. A small reduction in ferritin testing was associated with audit, feedback and academic detailing in EH.
4. In patients who have a hemoglobin ordered, reflex testing for ferritin should be undertaken in the laboratory in patients with anemia or microcytosis.
5. Consideration should be given to removing ferritin from the requisition form and ferritin undertaken when ordered in writing.

Choosing Wisely NL

Use of Anti-Nuclear Antibody Testing by Family Physicians in NL

Choosing Wisely Canada Recommendation

Don't order ANA as a screening test in patients without specific signs or symptoms of systemic lupus erythematosus (SLE) or another connective tissue disease.

Practice Points

1. The number of ANA tests ordered in NL relative to the incidence of connective tissue disease is very high. 57% of tests were ordered by Family Physicians (FPs).
2. ANA is not indicated unless a connective tissue disease is a significant possibility.
3. ANA > 1:80 is required to consider the presence of SLE. False positive results are quite common and a reason that ANA testing be only undertaken in people in whom a connective tissue disease is a strong possibility.
4. ANA is not indicated as a screening test to evaluate fatigue, back pain, and other musculoskeletal pain in the absence of other clinical manifestations to suggest connective tissue disease, nor is it indicated to confirm a diagnosis of rheumatoid arthritis or osteoarthritis.
5. ANA testing need only be ordered once.
6. ANA costs $24 a test.

Methods

1. ANA and anti-ds DNA tests ordered in NL from 1 Apr 2016 – 31 Mar 2018 (2 years) and undertaken at the Health Sciences Centre laboratory were analysed by FP, ordering specialty, age, and sex.
2. Billing information was available for 474 FPs in 2017.

Results

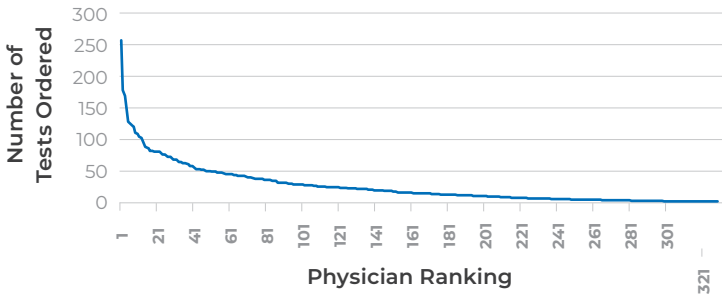


Fig. 1. Frequency of ANA Test Ordering Ranked by FP in 2 Years (N=9,120)

- 50 FPs ordered ≥50 ANA tests per year.

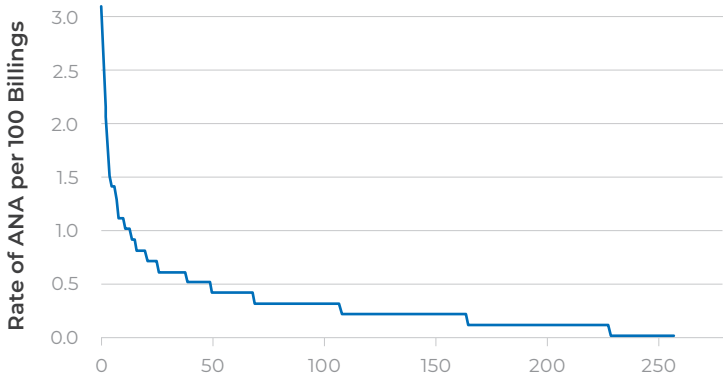


Fig. 2. Rate of ANA Testing/100 Billings Ranked by FPs' Rate of ANA Testing in 2017

- When analyzed by rate of ANA tests/100 billings the distribution was similar to that when analyzed by volume. A small minority of FPs have high rates of testing.

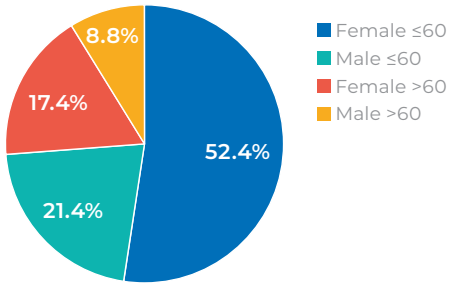


Fig. 3. Volume of ANA Tests Ordered by FPs by Age and Sex (N=9,120) (1 Apr 2016–31 Mar 2018)

- 48% of ANA tests are in low risk groups for a connective tissue disease: males and females ≥60 years.

Conclusions

1. Nearly half of ANA tests ordered by FPs are in patients at low risk for connective tissue disease.
2. About 50 FPs in NL have high volume/rate of ANA testing.
3. ANA testing should not be undertaken in patients without clinical manifestations suggestive of connective tissue disease.

Use of Thyroid Tests by Family Physicians in NL

Choosing Wisely Canada Recommendation

Don't use Free T4 or T3 to screen for hypothyroidism or to monitor and adjust levothyroxine (T4) dose in patients with known primary hypothyroidism, unless the patient has suspected or known pituitary or hypothalamic disease.

Don't do thyroid function tests in asymptomatic people.

Practice Points

1. In most people a normal Thyroid Stimulating Hormone (TSH) indicates either a normal endogenous thyroid function or an adequate T4 replacement dose.

2. TSH only becomes unreliable in patients with known or suspected pituitary or hypothalamic disease when TSH cannot respond physiologically to altered T4 or T3.

3. In stable patients, TSH needs to be monitored no more often than every six months.

4. Costs per test are: TSH $10, T4 $12, and T3 $9.

5. 84% of TSH tests are ordered by Family Physicians (FPs), as well as 79% of T4 tests, and 57% of T3 tests.

6. The practice of endocrinologists is substantially different from that of FPs which accounts for the higher rate of T4 and T3 testing undertaken by endocrinologists.

Methods

1. All TSH, T4, and T3 tests ordered by FPs in NL from 1 Apr 2018 - 31 Mar 2019 were analysed by year, age, sex, and clinician who ordered the test. The rate of TSH tests per 1,000 billings was calculated for 2017.

Results

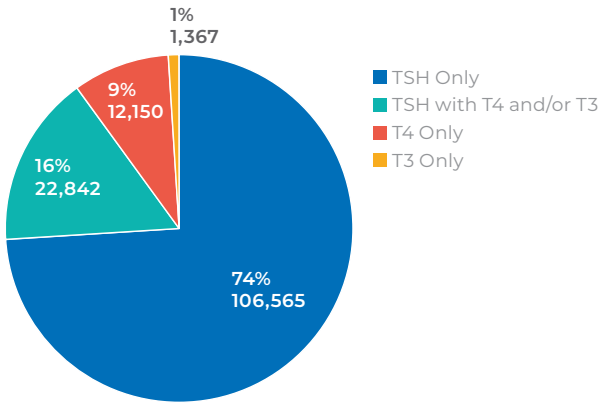


Fig. 1. Number of TSH, T4 and T3 Tests by FPs in 2018/19

- In 12 months there were 129,407 TSH tests ordered by FPs, 18% of which were accompanied by a T4 and/or T3 test order.

- Thyroid Tests amounts to one test per four people in the population.

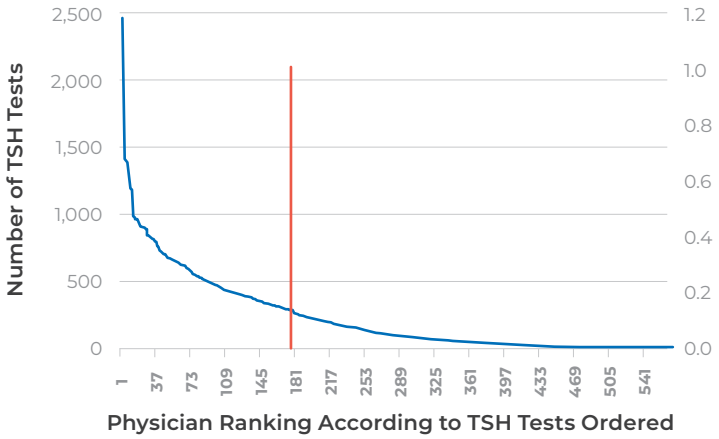


Fig. 2. Total TSH Tests Requested Ranked by FP in 2018/19

- 80% of total TSH tests were ordered by 31% of FPs (red line), 88 FPs ordered 500 or more TSH tests in 12 months.

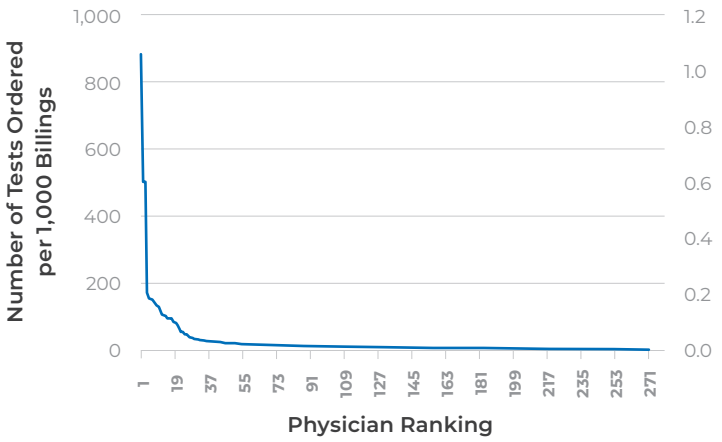


Fig. 3. Rate of TSH Tests Ordered per 1,000 Billings Ranked by FP in 2017

- 23 FPs ordered more than 50 TSH tests per 1,000 billings.

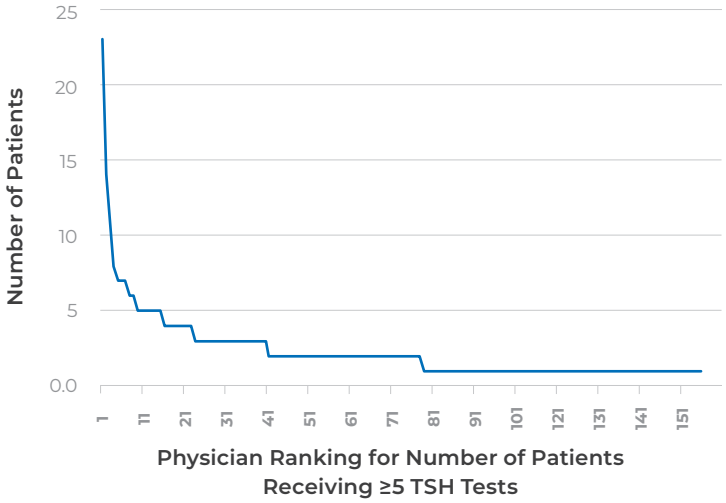


Fig. 4. Number of Patients Receiving Five or More TSH Tests Ranked by FP

- 156 FPs ordered five or more TSH tests for one patient over 12 months, 17 of which ordered five or more tests for five or more patients.

Conclusions

1. T4 and T3 ordering is frequently coupled with TSH testing. Reflex testing for T4 occurs within laboratories in patients with an abnormal TSH, making T4 and T3 ordering unnecessary.

2. In patients with known or suspected pituitary or hypothalamic disease the order for T4 or T3 should contain this information.

3. The number of patients receiving five or more TSH tests per year is high (N=511).

4. Some FPs ordered a large number of TSH tests per year, whether analyzed by number or by rate/1,000 billings.

Reduction in Serum IgE Allergy Tests in NL

Choosing Wisely Canada Recommendation

Do not perform screening panels (IgE tests) for allergy without previous consideration of pertinent medical history.

Practice Points

1. Most allergic reactions are immediate hypersensitivity reactions caused by IgE antibodies.

2. Common triggers include environmental allergens (pollens, pets, and dust), food, venom and medications. Symptoms occur within minutes to two hours after exposure.

3. Symptoms of food allergy include cutaneous (e.g. hives), respiratory (e.g. wheeze), gastrointestinal (e.g. vomiting) and cardiovascular (e.g. hypotension). Allergy testing for foods may be associated with high rates of false positives, up to 50%.

4. Allergy testing includes skin prick testing and serum specific IgE to the given allergen. Skin prick testing is more sensitive than specific IgE testing. Specific IgE testing for environmental allergens is not necessary.

5. Allergy testing should only be ordered if the history is suggestive of an allergic reaction and only to allergens suspected on history.

6. Ordering more than three IgE tests at a time may be inappropriate.

Methods

1. Provincial data from the Meditech Laboratory Information System from Eastern Health for 2015/16 was analyzed in 2017 and distributed in a physician campaign in May of 2018. Other educational resources were provided such as an accredited online module.

2. Potential inappropriateness was defined as ordering more than three serum specific IgE tests for one patient at one time.

3. Provincial data from 1 Jan 2017 – 31 Aug 2019 was obtained, analyzed and compared to the previous data to assess for change in ordering patterns.

Results

- In the 32 months from 1 Jan 2017 – 31 Aug 2019, 14,861 IgE tests were ordered and 66% of tests were bundled inappropriately, compared to 16,822 in the 24 months from 1 Jan 2015 – 31 Dec 2016, 69% of which were bundled inappropriately.

- There has been a 38% decrease in overall test ordering annually from 2015–2018, and adjusting for the remainder of 2019, the decrease is 50%.

- The largest decrease in test ordering was seen amongst Family Physicians and Pediatricians.

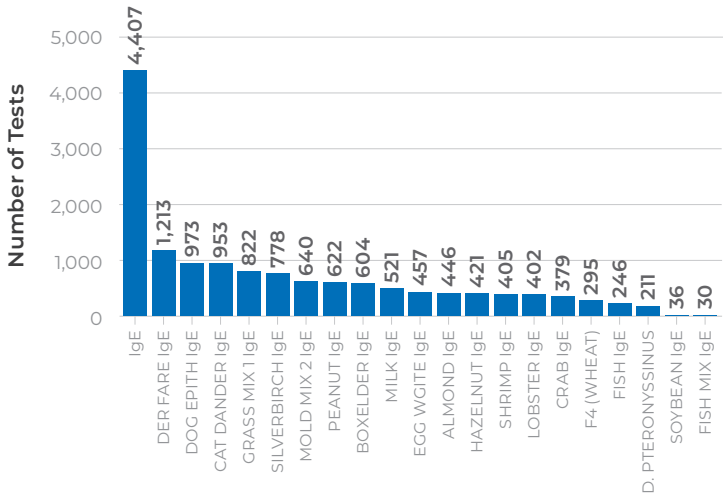


Fig. 1. Number of Orders for Each IgE Test (1 Jan 2017 – 31 Aug 2019)

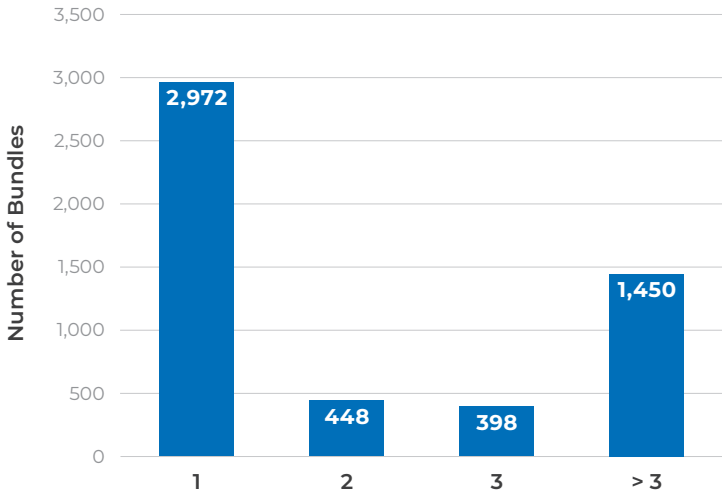


Fig. 2. Number of Bundles by Number of Tests per Bundle (1 Jan 2017 – 31 Aug 2019)

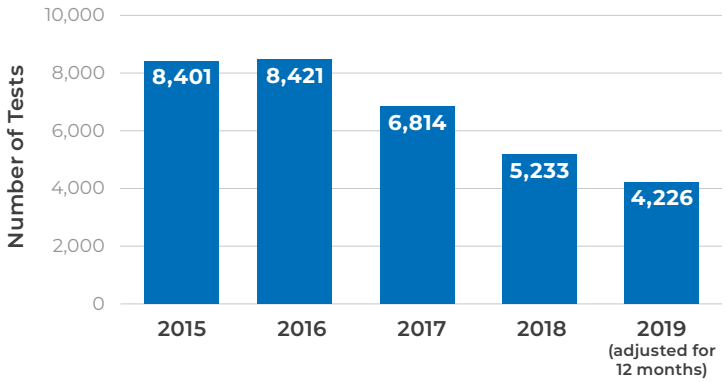


Fig. 3. Number of Tests per Year by all Specialties (1 Jan 2016 –31 Aug 2019 (Adjusted))

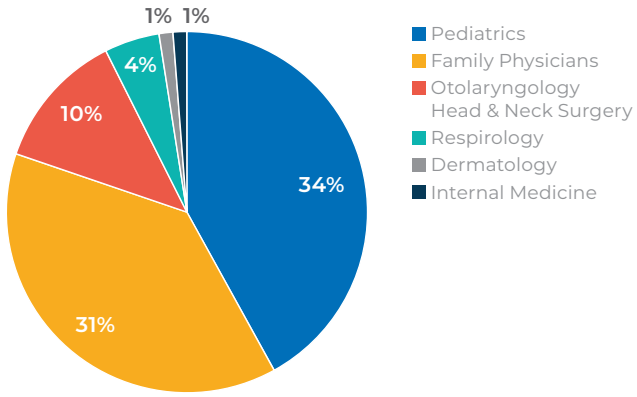


Fig. 4. Percentage of Tests Ordered by Specialty (32 Months)

Conclusions

1. Only order allergy testing if the history is suggestive of an allergic reaction and only to allergens specified on history.

2. Ordering of more than three IgE tests per bundle, which is likely inappropriate, is decreasing but still occurs quite frequently.

3. There has been a 50% reduction comparing serum IgE testing in 2019 to that in 2015.

High Rates of Inappropriate Referrals for Lumbar CT in Eastern Health

Choosing Wisely Canada Recommendation

Don't routinely image patients with low back pain regardless of the duration of symptoms unless:

- There are clinical reasons to suspect serious underlying pathology (ie. red flags: severe or progressive neurological deficits, suspicion of osteomyelitis, cancer or fracture).
- Imaging is necessary for the planning and/or execution of a particular evidence-based therapeutic intervention on a specific spinal condition.

Practice Points

1. The risk of cancer associated with radiation, particularly in younger people, needs to be balanced with the likelihood of benefit from CT imaging.
2. NL orders more CTs/1,000 people than any other province/territory, more than twice as many as Alberta, and 50% more than the overall Canadian rate (CADTH, March 2016).
3. In 2017, 13/1,000 people in NL had a spinal CT.
4. 83% of lumbar CT scans are ordered by Family Physicians (FPs).

Methods (Dr. A. Hall)

1. A retrospective audit of administrative electronic health records (Meditech and PACS) was performed for all adults (≥18 years) referred for lumbar spine CT by all FPs in Eastern Health in 2016.
2. Indications were categorized as appropriate (red flag present), unclear appropriateness (Radicular Syndrome) and inappropriate (nonspecific low back pain).

Results

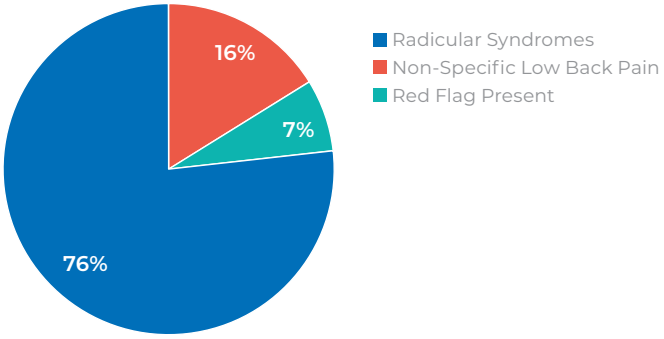


Fig. 1. Lumbar CTs in Adults Ordered by FPs (N=3,609)

- It is unknown the proportion of patients with radicular syndromes in which an epidural or surgery was being considered, which would enhance the degree of appropriateness.

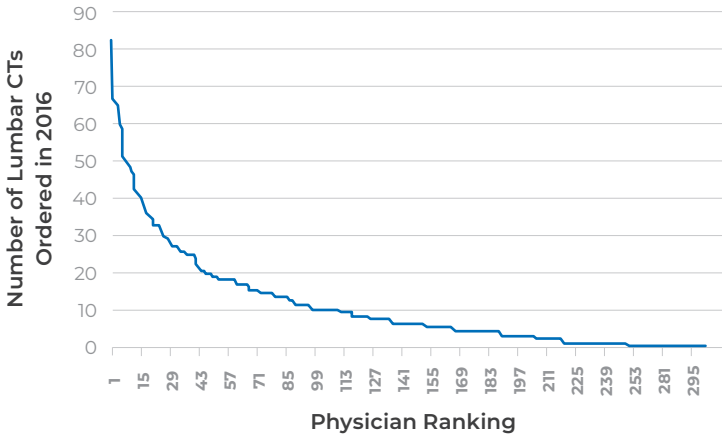


Fig. 2. CT Ordering Volume Ranked by FP

- 80% of lumbar CTs were ordered by a small number of FPs.
- 13% of FPs ordered ≥20 lumbar CTs in 2016.

Conclusions

1. The rate of inappropriate or questionable referrals for lumbar CT was high.
2. A small proportion of FPs order 80% of lumbar CTs.
3. The harm associated with radiation needs to be balanced against the likely benefits from CT imaging.

Engaging Mothers and Professionals to Make Maternal Mental Health a Critical Item in Primary Health Care

Objective

To explore ways to identify mothers who may be developing mental health issues during pregnancy and the early years of parenting, and to investigate opportunities to enhance supports and services available for these mothers.

Practice Points

1. While in Canada one in five women experiences perinatal mental health issues, in NL the incidence is higher at more than one in four.
2. When undetected and untreated, child development is put at risk for physical, cognitive, and socio-emotional problems that can last a lifetime.
3. Perinatal mental health care services and supports in NL are fragmented.
4. Mothers want Family Physicians (FPs) and public health nurses to openly discuss perinatal mental health.
5. FPs, public health nurses and other care providers want a coordinated and well integrated provincial model of perinatal mental health care.

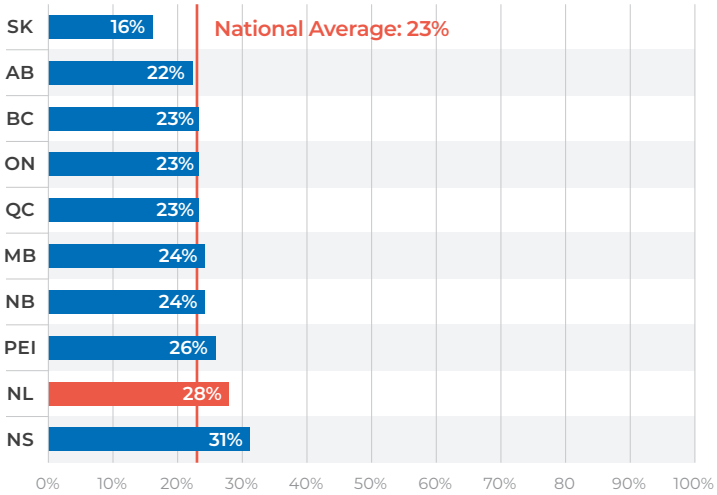


Fig. 1. Perinatal Mental Health Disorders in Canada

Methods (PIs: Martha Traverso-Yepez and Caroline Porr)

1. Environmental scans of the literature located best practice indicators, screening tools, and interventions.
2. Web-based internet searches in each provincial health region identified existing perinatal mental health supports and services.
3. Eastern Health prenatal chart review revealed the number of women with recorded history of mental health diagnoses.
4. 30 mothers and 32 health and social care providers participated in semi-structured interviews, sharing their first-hand experiences about perinatal mental health care in the province.
5. Several recommendations from interviews were confirmed by knowledge translation activities (a public town hall, a deliberative workshop for professionals and decision-makers, and webinars).

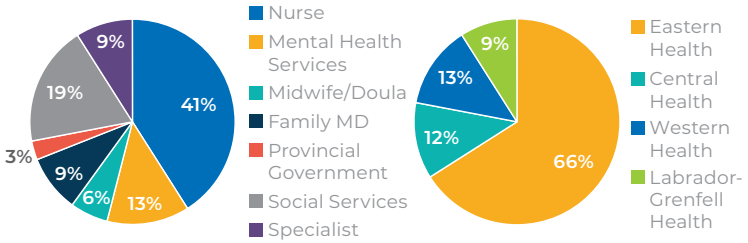


Fig. 2. Professionals Interviewed (N=32)

(Defined by type and health region)

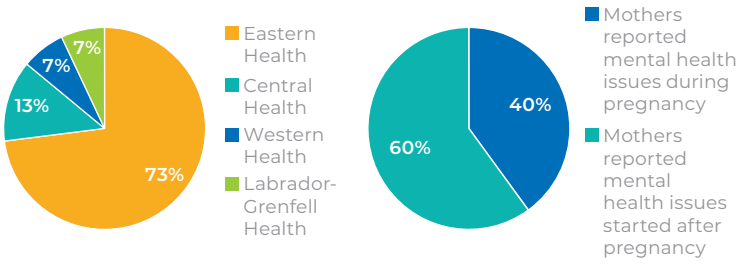


Fig. 3. Mothers Interviewed (N=30)

(Defined by health region and by time mental health issues started)

Results

- 20% of women with a completed prenatal record had a 'psychiatric history'; diagnoses included depression, postpartum depression, anxiety, generalized anxiety disorder, and others.
- FPs and public health nurses are often first contacts for perinatal mothers experiencing mental health issues. Most of them highlighted challenges to recognize, support, counsel, or make referrals, especially due to lack of awareness/knowledge about resources, programs or interventions to address maternal mental health.
- 20 out of 30 mothers received referrals to more than one mental health service, however only 11 reported effective referrals.
- Lack of standardized screening: 24 out of 30 mothers reported no formal screening.
- Barriers to accessing care that mothers reported included lack of information and referrals, experience of judgement, shame and stigma, a negative reaction from professional or the prevailing focus on physical health. Financial restraints, wait lists and fear of child protections were also mentioned.
- Facilitators to accessing care reported by mothers were encouragement/navigation/referrals support (i.e from family members, friends, professionals) and enhanced awareness about mental health challenges.

Changes in sleep, appetite, mood and social engagement

Limited interaction between mother and child, mother unresponsive to baby cues

Edinburgh Depression Scale (prenatally and postnatally)

Fig. 4. How Service Providers Identify Maternal Mental Health Issues

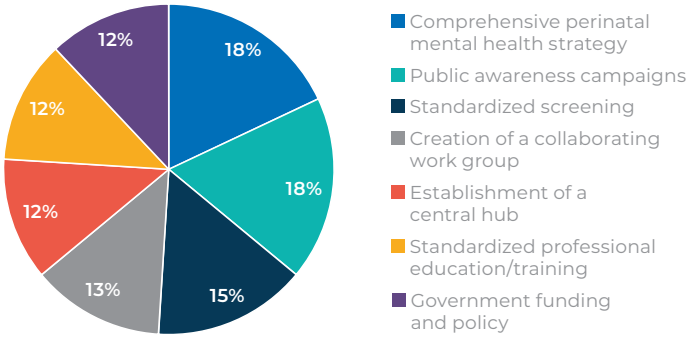


Fig. 5. Action Steps Identified from Deliberative Workshop

Conclusions

1. Perinatal mental health is becoming a public health concern in NL and beyond.
2. Critically important to improvements in perinatal mental health care are: public and provider awareness, professional training, standardized screening in conjunction with best relational practices, a perinatal mental health navigator, community-based peer support programs, and a central hub of interdisciplinary perinatal mental health providers.

Patient Engagement

Patient-Oriented Research (POR) is research that:

- Addresses patient priorities
- Engages patients as partners in the research
- Directly improves patient lives

This is research conducted **WITH** rather than **FOR** patients.

The Canadian Institutes of Health Research (CIHR) define patients as including:

- Individuals with personal experience of a health issue
- Informal caregivers, such as family and friends

In Patient-Oriented Research, patients bring **expertise** in the form of **lived experience**.

True Patient-Oriented Research doesn't happen without patient engagement and knowledge translation.

- According to the 2018/19 Value and Economic Assessment, of all Translational and Personalized Medicine Initiative (TPMI) projects ongoing in 2018/19, 41% of projects engaged patients in their research or evaluation projects.

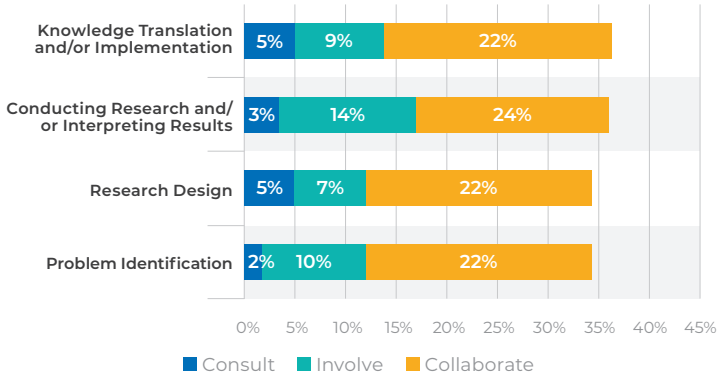
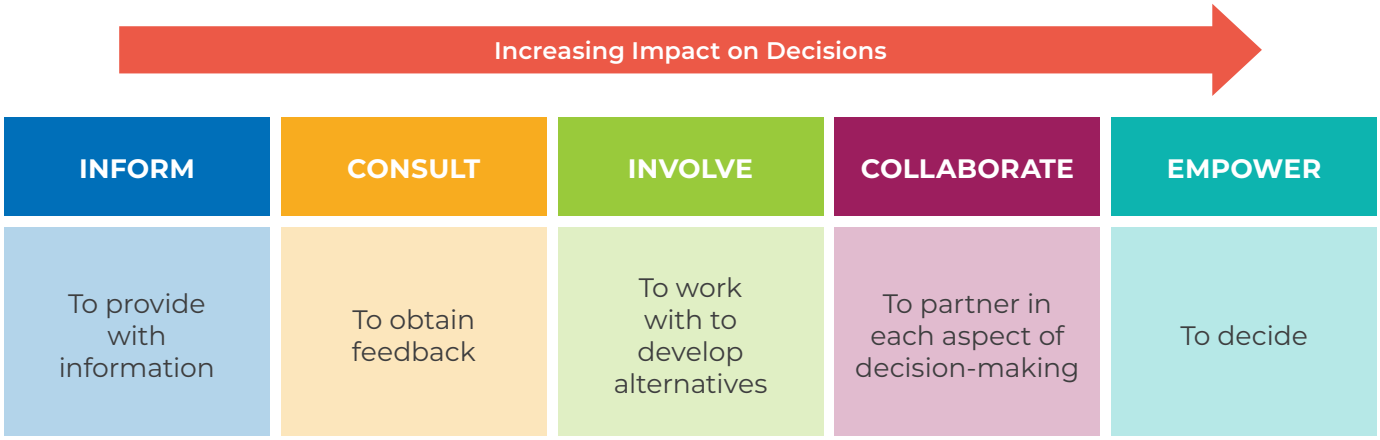


Fig. 1. Level of Patient Engagement in Projects of the TPMI Program (N=53)



Adapted from International Association of Public Participation (IAP2)

SPOTLIGHT: Meet the Patients

Dorothy Senior is a Patient Advisory Council Member with NL SUPPORT and Quality of Care NL. A 37-year career in the health care system in Newfoundland and Labrador and her personal experiences as a patient drew her to this opportunity to help improve the impact of health research in the province. A patient partner since 2016, she is a valued voice and advocate for patient perspectives in a variety of ways.

Dorothy is engaged in:

- **Governance:** She sits on the Steering Committee for Quality of Care NL, helping to set the strategic direction for improved health care in NL.
- **Public Engagement:** She provided the patient voice on a multidisciplinary panel during the Antibiotics FutureForum.
- **Project Review:** Dorothy reviews proposals for patient-oriented research (POR) projects to ensure they align with outcomes that matter to patients.
- **Future Planning:** Dorothy is a member of the applicant team currently developing the proposal for the next phase of the Strategy for Patient-Oriented Research in NL.
- **Capacity Development:** She is trained to deliver the CIHR's Foundation in Patient-Oriented Research curriculum to any stakeholder with an interest in POR
- **Research:** Dorothy is a patient partner on the multi-million dollar Rewarding Success grant, SurgeCon.

Dorothy Senior
Patient Advisory Council Member

"When I got involved with NL SUPPORT, I was blown away by the amount of research being done here."

"Research is for the patient. As a patient partner, I provide input that helps them focus it more on patients and remind them that it's not all scientific, that there's real people involved."

"Patients are important, they're really involved at every level, and for me it started here at NL SUPPORT, and NL SUPPORT is very much ahead of the game."

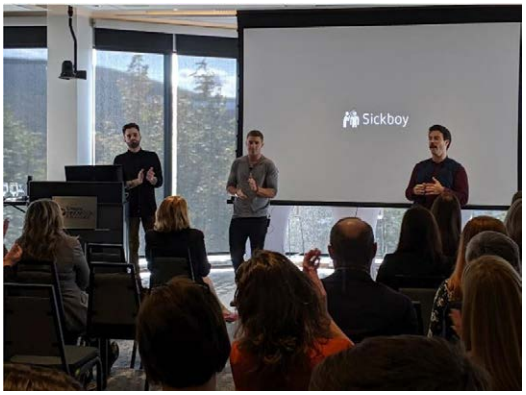
"When I first got involved with the grants, there was hardly any plain language, there was hardly anything about patients and it's changed so much and we're seeing it now in some of the work they're putting out there."

Public Engagement: Highlights of Work Undertaken by Quality of Care NL

A. SHARE Summit: 132 attendees

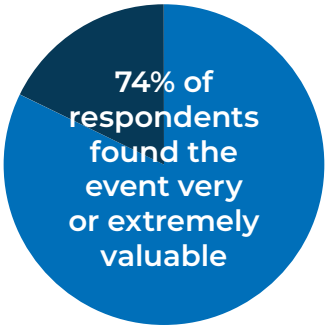
Science, Health and Research Education Summit

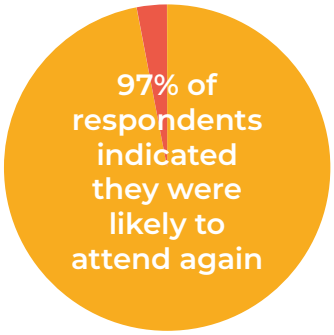
"For me, Sickboy team was one of the highlights. Hearing from patients is always meaningful."



SHARE (Science, Health and Research Education) Summit brought together stakeholders from all aspects of the health care system to share results and outcomes of the projects of Quality of Care NL, Choosing Wisely NL, NL SUPPORT, and Translational Genomics.

Survey Results





B. Antibiotics FutureForum: 66 attendees

"Need more of such sessions, it's very important and useful!"

As part of World Antibiotic Awareness Week (November 18-24, 2019), Quality of Care NL hosted the Antibiotics FutureForum. Open to the public, this event featured presentations from Canada's Chief Public Health Officer, Dr. Theresa Tam, specialists, economists, and a panel discussion with patients and various providers of health care services. The future of antibiotics is in our hands – we all have a role to play when it comes to combatting antibiotic resistance.

"As a student learning about antibiotics, it was a fascinating discussion on antibiotic resistance."

A press release and promotion of the Antibiotics FutureForum generated a response from local media outlets including television and radio interviews, and written articles.

Paid promotion of the event on Facebook throughout the month of November resulted in a boost in reach on the social media platform.

C. Flu Shot Clinic Outreach: 8 clinics; 40 hours

This fall, Quality of Care NL, Choosing Wisely NL and NL SUPPORT partnered with Eastern Health to share our resources at flu shot clinics in the St. John's area. Drawing on successful knowledge translation activities from previous events like Terrific Scientific, kids and parents were taught the difference between viruses and bacteria, and why antibiotics are not needed to treat a cold or flu, as well as how proper handwashing techniques help to reduce the spread of germs.

D. Keynote Presentation

Quality of Care NL's Clinical Lead, Dr. Pat Parfrey, delivered a 75 minute keynote presentation on improving the value of health care spending in Newfoundland & Labrador at a conference hosted by Memorial University's Department of Economics – *The Role of Universities and Other Institutions of Higher Education in Facilitating Economic, Social and Cultural Development in Peripheral Regions.*

E. Video Content

Quality of Care NL has a useful library of video content available on YouTube which helps the public understand topics such as antibiotic overuse, symptoms and treatment of stroke, and peripheral artery disease. **If you would like to request copies of these videos, including subtitles, for use in a clinic setting or learning environment, please contact info@qualityofcarenl.ca.**

Conclusions

1. Quality of Care NL is committed to creating opportunities for meaningful engagement with the public as users of the health care system, health care providers, and stakeholders/decision-makers.

2. A multi-faceted approach to public engagement that includes education, tools, resources, and events allows Quality of Care NL to broaden its reach and engage diverse audiences.

3. Quality of Care NL believes that by empowering the public to take a more active role in health care, we can collectively develop new and innovative solutions that will lead to better health outcomes for the people of NL.

Connect with us on social media and join our email list!

Knowledge Translation Through Theatre: Spotlight on *The Cut of It*

Objective

To evaluate audience members' perceptions of theatre as a knowledge translation strategy.

Practice Points

1. Knowledge translation is the process of communicating scientific evidence and sharing new knowledge in order to lead to improved health care services, products, and patient experiences.

Background

1. The performance was based on NL SUPPORT-funded research about the experiences of breast cancer patients.

2. The research team included Kathleen C. Sitter, Natalie Beausoleil, Gail Wideman, Erin McGowan, Erin Cameron, Alex Mathieson, and Rosemary Lester.

3. Playwright Meghan Greeley wrote the script, entitled *The Cut of It*.

4. White Rooster Theatre produced the original performances of *The Cut of It* from Nov 7 – 10, 2019 at the Resource Centre for the Arts.

5. The cast included three women with lived experience of breast cancer.

6. In total, 653 audience members attended the performances.

7. Public engagement funding was awarded in 2020 for performances in other health regions.

Wendi Smallwood & Ruth Lawrence in the White Rooster Theatre production of *The Cut Of It* by Meghan Greeley, based on research conducted by Dr. Kathleen C Sitter, Directed by Lois Brown. Funded and Supported by NL SUPPORT and CIHR. Photo by Vaida V. Nairn.

"Amazing work! It is wonderful to see research and art coming into one place. What a great way to communicate the findings with the average public."

"I lost my sister and mother to cancer; we need more information in such a touching way."

Methods

1. Audience members were asked to provide feedback about the use of theatre to share research results.

2. The questionnaire asked respondents the extent to which they agreed with five statements and included space for written comments.

Results

- 250 questionnaires were returned after the four performances. The average response rate for each performance was 39%.

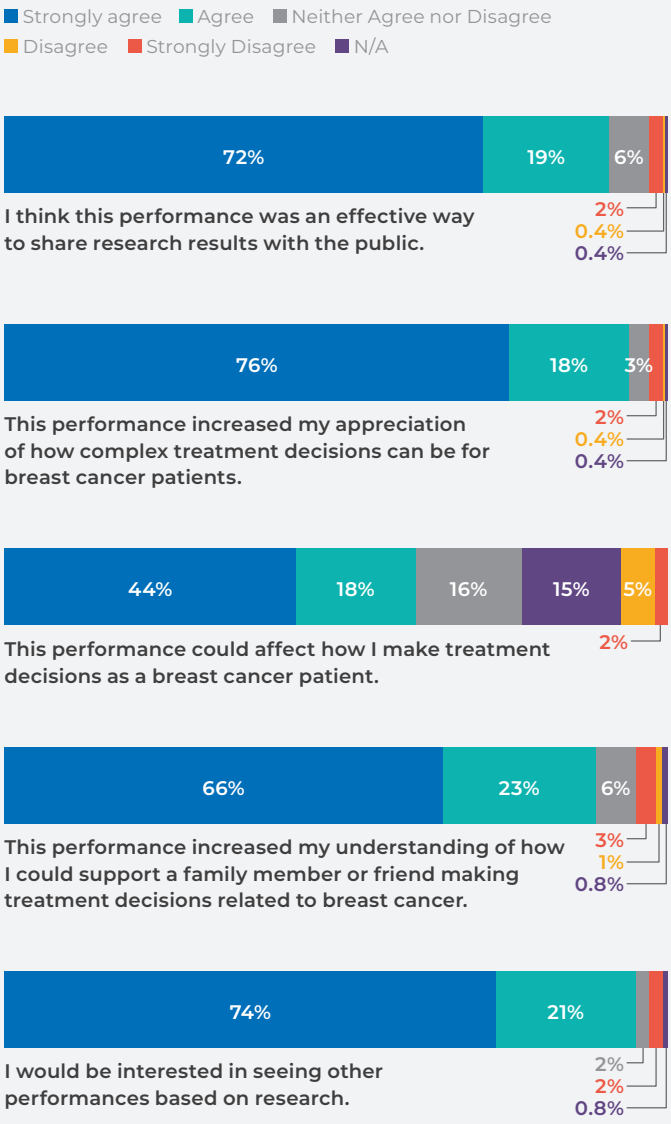


Fig. 1. Selection of Audience Member Quotes (N=143)

Excerpts from Stephanie Curran's "Experiencing *The Cut of It*: More Than Just A Review," published by The Racket Online on November 15, 2019

- "This is what is so beautiful about theatre. Along with seeing a beautiful show, the audience is lucky to learn things, educate themselves, see life through someone else's eyes. Everyone, in some way or another, will be affected by cancer in their lifetime, and this show hits home for every single person in the audience. Theatre as an art form is so important, and it's shows like this that takes art and raises it above just going to see a show, but going to experience a moment in time."

- "I hope, women especially, get to see this show and realize that this is the scary truth. Your life can be turned upside down in just a moment, and we need to know the signs and take action so we can keep ourselves aware of our bodies. Our bodies are our homes, we live and breathe each day in them, and it is so important to recognize when something is not right. Thanks to this show, I will be more aware of my body going forward. Art and education, now that's a beautiful pairing."

Conclusions

1. Over 90% of audience members agreed this performance was an effective way to share research results with the public.

2. Most respondents agreed that this performance could affect how they would make treatment decisions (62%) or support a family member or friend making treatment decisions related to breast cancer (89%).

3. This evaluation suggests that audience members perceived theatre to be an effective knowledge translation strategy.

Value and Economic Assessment of TPMI Projects

Objective

Assess Translational and Personalized Medicine Initiative (TPMI) projects and activities.

Practice Points

1. TPMI is the broad program that encompasses Quality of Care NL, Choosing Wisely NL, NL SUPPORT and Translational Genomics. TPMI was responsible for 58 projects in 2019.

2. Projects were generated from various stakeholders within the health care system, including, but not limited to: Researchers, Doctors, RHAs, Managers, Patients, Government, and Nurse Practitioners.

3. 30 projects involved evaluation of the health care system.

Methods

1. The Assessment Tool was developed in 2016 as an annual performance monitoring tool to assess TPMI projects and activities. The tool was modified annually to improve its method of capturing project value and outcomes, as they evolved.

2. The Assessment was completed in person with Principal Investigators (PIs). Outcomes are based on the PI's perception of the project.

Results

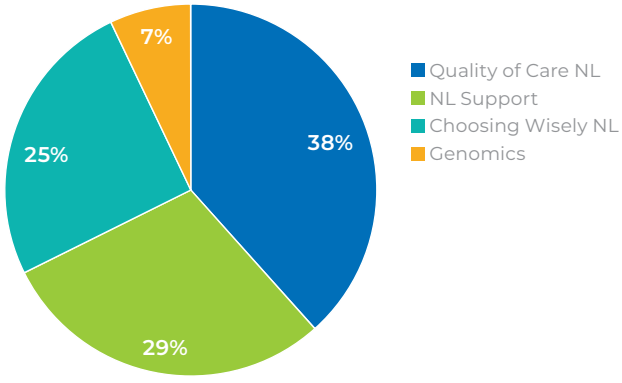


Fig. 1. Projects by Research Program (N=55)

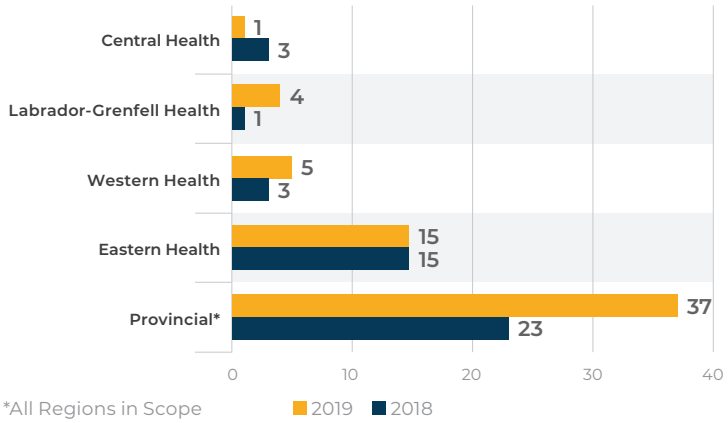


Fig. 2. Projects by Health Region

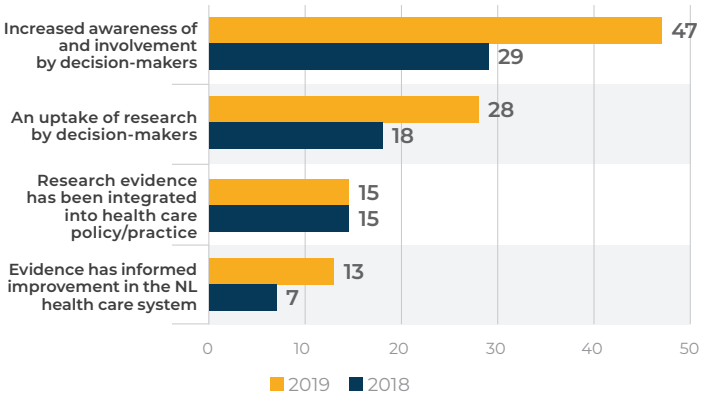


Fig. 3. Benefit to Decision-Makers

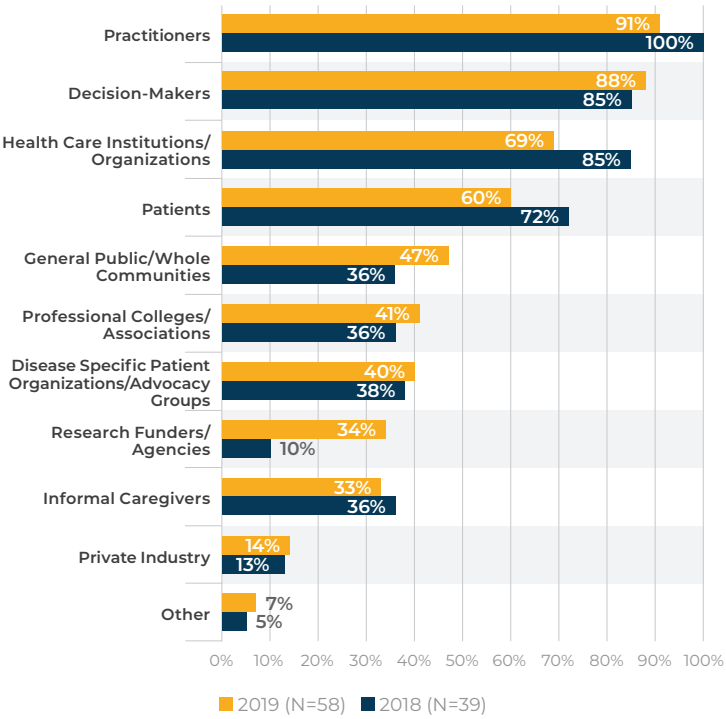


Fig. 4. Knowledge Users

- At the time of the assessment (April – June 2019):
  - 24 projects engaged patients
  - 45 projects had integrated Knowledge Translation
  - 10 projects led to the implementation of a proposed practice/policy change
  - 16 projects led to improved health outcomes for patients/public
  - 13 projects anticipate commercial potential

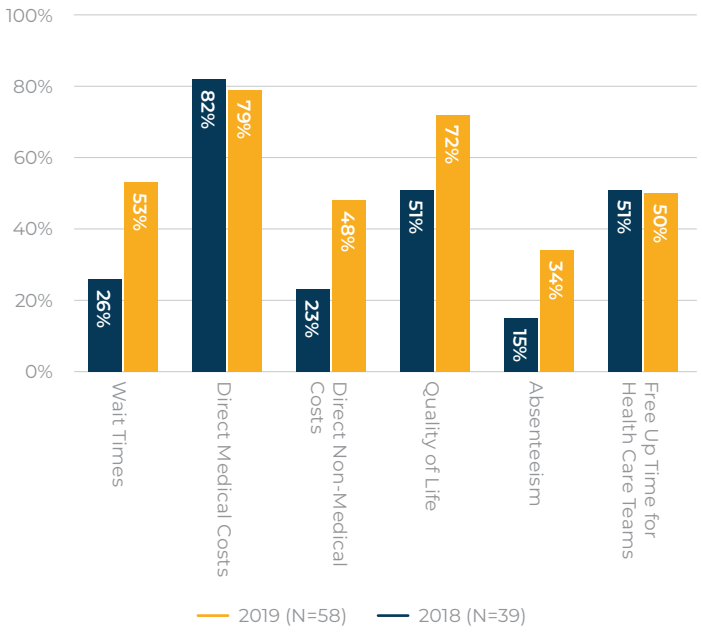


Fig. 5. Summary of Perceived Economic Impacts by Year

Table 1. Projects Resulting in Cost Avoidance

Projects	Approximate Cost Avoidance
IgE Testing	$64,000
Chest X-Ray, ECG & INR in Pre-Op Testing Before Mild to Moderate Risk Surgery in St. John's	$97,000
Antipsychotic Use Among Long-Term Care Residents in NL	$210,700
Antibiotic Prescription by Family Doctors in NL	$460,000
Unnecessary Biochemical Testing	$464,000
Total	$1,295,700

Note:

Reduction of antibiotic prescription by family doctors in NL of 6.4 % from 2017/8 to 2018/9 (N = 23,000 fewer).

Reduction of IgE testing of 50% compared to 2016 (N = 4,000 less).

Reduction in unnecessary biochemical testing in Eastern Health of 62% for urea testing, and 21–40% for five other tests.

Reduction of Chest X-ray (N = 528 less), ECG (N = 1,076 less) and INR (N = 350 less) in pre-op testing before mild to moderate risk surgery in St. John's.

Reduction of antipsychotic use among long-term care residents in NL of 9% compared to 2016 (N = 301 patients less).

Conclusions

1. A broad spectrum of stakeholders are engaging with TPMI to add knowledge to the health care system.

2. TPMI outcomes showcase the current and potential impact projects are having on the health care system.

3. As TPMI matures, and projects move through the research and evaluation cycles, project outcomes are being implemented within the system resulting in improved efficiencies, quality of care, and in many cases, cost avoidance.

Quality of Care NL

Our Partners

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

Newfoundland Labrador

MEMORIAL UNIVERSITY

Choosing Wisely Canada™

IBM

Canada

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CRNNL College of Registered Nurses of Newfoundland & Labrador
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Newfoundland & Labrador Nurse Practitioner Association NLNPA Caring beyond

NEWFOUNDLAND AND LABRADOR COLLEGE OF FAMILY PHYSICIANS
LE COLLÈGE DES MÉDECINS DE FAMILLE DE TERRE-NEUVE-ET-LABRADOR
A CHAPTER OF THE COLLEGE OF FAMILY PHYSICIANS OF CANADA
UNE SECTION DU COLLÈGE DES MÉDECINS DE FAMILLE DU CANADA

Eastern Health

Western Health

Central Health

Labrador-Grenfell Health

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