Health Care Cost Avoidance and Resource Reallocation/Restructuring

Krista Mahoney, PhD | Karen Dickson, PhD
NL Health System

NL health budget (2019/20)

- $3 billion: population 526,000
- 38% of provincial budget
High Per Capita Spending

Provincial government health expenditure, 2019/20

- Canada (average) $4,611
- Newfoundland $5,177
- Prince Edward Island $5,118
- Alberta $4,851
- Nova Scotia $4,806
- Saskatchewan $4,759
- Manitoba $4,718
- New Brunswick $4,643
- Quebec $4,385
- Ontario $4,275
- British Columbia $4,718

Doctors per 100,000 population
- Newfoundland 138
- Nova Scotia 134
- British Columbia 134
- New Brunswick 133
- Alberta 126
- Quebec 122
- Ontario 116
- Saskatchewan 113
- Prince Edward Island 110
- Manitoba 109

Nurses per 100,000 population
- Prince Edward Island 1592
- Newfoundland and Labrador 1591
- New Brunswick 1522
- Nova Scotia 1455
- Saskatchewan 1334
- Manitoba 1331
- Alberta 1222
- Quebec 1186
- British Columbia 1100
- Ontario 1096

Source: CIHI

Canada (average) $4,175
British Columbia $4,385
Ontario $4,643
Quebec $4,385
Alberta $4,275
Manitoba $4,275
Saskatchewan $4,175
Nova Scotia $4,175
New Brunswick $4,175
Prince Edward Island $4,175
Newfoundland and Labrador $4,175
Health System Scoring

Health System Performance

- Care Processes
  - Preventative Care
  - Safe Care
  - Coordinated Care
  - Engagement and Patient Preferences

- Administrative Efficiency
  - Affordability
  - Timeliness

- Access

- Equity

- Health Care Outcomes
  - Population Health Outcomes
  - Mortality Amenable to Health Care
  - Disease-Specific Outcomes

Source: Commonwealth Fund
Health care value (outcomes/costs) is poor in NL in comparison to other provinces

Source: C. D. Howe Institute/Commonwealth Fund
NL Health System Ranks Low on Health Outcomes

Source: C. D. Howe Institute/Commonwealth Fund
## Significant Demographic Change

### St. John’s

<table>
<thead>
<tr>
<th>% Change</th>
<th>1996-2016</th>
<th>2016-2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-12%</td>
<td>-7%</td>
</tr>
<tr>
<td>0-14</td>
<td>14%</td>
<td></td>
</tr>
<tr>
<td>15-64</td>
<td>12%</td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td>7%</td>
<td></td>
</tr>
</tbody>
</table>

### Island (excluding St. John’s)

<table>
<thead>
<tr>
<th>% Change</th>
<th>1996-2016</th>
<th>2016-2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-17%</td>
<td>-15%</td>
</tr>
<tr>
<td>0-14</td>
<td>-45%</td>
<td>-32%</td>
</tr>
<tr>
<td>15-64</td>
<td>-23%</td>
<td></td>
</tr>
<tr>
<td>65+</td>
<td>-26%</td>
<td></td>
</tr>
</tbody>
</table>

### Labrador

<table>
<thead>
<tr>
<th>% Change</th>
<th>1996-2016</th>
<th>2016-2036</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-6%</td>
<td>-1%</td>
</tr>
<tr>
<td>0-14</td>
<td>-23%</td>
<td>-10%</td>
</tr>
<tr>
<td>15-64</td>
<td>-1%</td>
<td>-9%</td>
</tr>
<tr>
<td>65+</td>
<td></td>
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</tr>
</tbody>
</table>

Source: Finance Gov NL
Part 1:  
Cost Avoidance
Quality of Care NL is a CIHR funded research and evaluation program that aims to improve the quality of health care in NL by facilitating evidence-based change to ensure the right treatment gets to the right patient at the right time.

Our partnership with Choosing Wisely Canada enables the promotion of guidelines and recommendations to support the reduction of unnecessary tests, procedures and treatments.
Choosing Wisely Targets

Over-prescribing Antibiotics for viral infections
Our Change Strategies

- Report Cards and Academic Detailing
- Health Care Restructuring
- Implementation and eOrdering
- Engagement with the Public, Care Providers and Decision-Makers
Value and Economic Assessment

• Developed to assess the value and economic impact of program outcomes
• Interviewed PIs to assess perceptions related to:
  • Cost effectiveness
  • Wait times
  • Direct and indirect medical costs
  • Quality of life
  • Health care resources/teams
Results of 2018-19:
Currently 60+ projects ongoing

• 69% of projects were provincial in scope
• 55% of project interventions were less costly and more effective
• 53% of projects expected reductions in wait times
• 79% of projects expected reductions in direct medical costs
• 72% of projects expected improvement in patient quality of life
• 50% of projects expected to free up time for health care teams
### Value and Economic Assessment

#### Projects expecting reductions of >$100,000 in direct medical costs

<table>
<thead>
<tr>
<th>Project Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access to Weight Management and Treatment for Obesity in NL: An Innovative Patient-Centred Approach</td>
</tr>
<tr>
<td>Antibiotic Overuse</td>
</tr>
<tr>
<td>Choosing wisely in the screening and monitoring of hypothyroidism in NL</td>
</tr>
<tr>
<td>DKA Project: A focus in DKA prevention in the adolescent and young adult population</td>
</tr>
<tr>
<td>Drop the Pre-Op</td>
</tr>
<tr>
<td>Enhanced Recovery After Surgery (ERAS) - Thoracic</td>
</tr>
<tr>
<td>Enhanced Recovery After Surgery (ERAS) - Colorectal</td>
</tr>
<tr>
<td>Potential Unnecessary Laboratory Testing</td>
</tr>
<tr>
<td>Predictions of Need for Institutional LTC in NL</td>
</tr>
<tr>
<td>Remote Monitoring in Patients with COPD and/or Heart Failure</td>
</tr>
<tr>
<td>The effectiveness of a falls prevention program in PCH and risk factors for falls</td>
</tr>
<tr>
<td>Utilization of Medicine Beds and ACL in NL</td>
</tr>
<tr>
<td>Utilization of Obstetric and Pediatric Acute Care Beds in NL</td>
</tr>
<tr>
<td>Utilization of Surgery Acute Care Beds in NL</td>
</tr>
</tbody>
</table>
Specific cost avoidance outcomes:
- Over the last 2 years, cost avoidance to the health care system = approximately $2.8 million
## Cost Avoidance

<table>
<thead>
<tr>
<th>Projects demonstrating specific cost avoidance (estimated)</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reductions in Unnecessary Biochemical Testing</td>
<td>$563,644</td>
<td>$563,644</td>
</tr>
<tr>
<td>Reductions in Pre-Op Testing</td>
<td>$97,000</td>
<td>$97,000</td>
</tr>
<tr>
<td>Reductions in Antibiotics Prescriptions</td>
<td>$88,680</td>
<td></td>
</tr>
<tr>
<td>Reductions in Hospital stays and readmissions - ERAS</td>
<td>$575,000</td>
<td></td>
</tr>
<tr>
<td>Implementation of Comprehensive Geriatric Assessment</td>
<td>$140,000</td>
<td></td>
</tr>
<tr>
<td>Reductions in Allergy Testing</td>
<td></td>
<td>$64,000</td>
</tr>
<tr>
<td>Reductions in Antipsychotic use in LTC</td>
<td></td>
<td>$210,000</td>
</tr>
<tr>
<td>Reductions in Antibiotics Prescription by Family Doctors</td>
<td></td>
<td>$460,000</td>
</tr>
</tbody>
</table>

**Total cost avoidance: $2,858,968**
Cost Avoidance example using a Choosing Wisely Canada Recommendation

Recommendation: “Drop the Pre-op”

Don’t perform
• standard baseline laboratory studies (bloodwork),
• ECG or
• chest X-ray

for asymptomatic pre-operative patients undergoing low risk, non-cardiac surgery.
Pre-op tests at Health Sciences Centre and St. Clare’s
The Cost of Pre-Op Testing in St. John’s

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th>Creatinine $8</th>
<th>INR $12</th>
<th>Hemoglobin $11</th>
<th>CXR $68</th>
<th>ECG $50</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 (pre)</td>
<td>3997</td>
<td>4235</td>
<td>1573</td>
<td>4756</td>
<td>1135</td>
<td>2787</td>
</tr>
<tr>
<td>2017 (post)</td>
<td>4039</td>
<td>4027</td>
<td>1223</td>
<td>4621</td>
<td>607</td>
<td>1711</td>
</tr>
<tr>
<td>Reduction N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>208</td>
<td>5%</td>
<td>350</td>
<td>135</td>
<td>528</td>
<td>1076</td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>22%</td>
<td>3%</td>
<td>47%</td>
<td>39%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost Avoidance</td>
<td>$1,664</td>
<td>$4,200</td>
<td>$1,485</td>
<td>$35,904</td>
<td>$53,800</td>
<td></td>
</tr>
</tbody>
</table>

Actual cost avoidance = $97,053

Potential Additional Cost Avoidance/Year = $106,568
Example of Lowering Hospital Stays: Enhanced Recovery After Surgery

- ERAS coordinator started at St. Clare’s on 6 East:
  - promoted guidelines, provided training and feedback
- Rebound effect after coordinator left unit
- QCNL designed sustainability strategy with nurses, managers and doctors
- e-Tools were developed to provide visual reminders
Enhanced Recovery After Surgery

Elective bowel resections at St. Clare’s: Length of Stay vs. Guideline Compliance

- April 2014 - Sept 2014: LOS = 38 days
- Oct 2014 - Mar 2015: LOS = 42 days
- Apr 2015 - Aug 2015: LOS = 7.24 days
- Sept 2015 - Feb 2016: LOS = 6.32 days
- Mar 2016 - Aug 2016: LOS = 5.44 days
- Sept 2016 - Feb 2017: LOS = 69 days
- Mar 2017 - Aug 2017: LOS = 6.41 days
- Sept 2017 - Aug 2018: LOS = 7.19 days

Postoperative compliance (%)
Enhanced Recovery After Surgery

Improvement in patient outcomes and potential for significant cost avoidance:

• Length of stay in hospital decreased (by 1.8 days) for 6 months following implementation compared to 2014

• $575,000 cost avoidance in hospital stays + readmissions

*Estimated cost for 2016 is a 1 year projection from 6 months of data
Example from Community Care: Antibiotic Prescriptions

Rate of Antibiotics Prescription by Family Doctor

Audit and Feedback
Academic Detailing

Number of Oral Antibiotics Prescriptions by Family Doctors
July 2017-June 2019
Pharmacy Network, province-wide, all ages

Reduction: 6.4 %

Source: NLCHI
Example from Community Care: Reducing Unnecessary Biochemical Testing

Audit and Feedback
AcademicDetailing

Blood Urea Tests

Last 6 months of 2015
210 (54.6%) doctors ordered more than 200 tests

Last 6 months of 2017
54 (14.0%) doctors ordered more than 200 tests

Rank of Family Doctors by Number of Tests Ordered

Source: Eastern Health
Removing From Form and Academic Detailing

Monthly Volume of Blood Urea Over Three Years

Source: Eastern Health
Academic Detailing Only

Monthly Volume of Creatine Kinase Over Three Years

Monthly Volume of Ferritin Over Three Years

Audit and Feedback
Academic Detailing

Source: Eastern Health
No Change to Form or Academic Detailing

Monthly Volume of Uric Acid Over Three Years

No intervention

Source: Eastern Health
• Currently our health system is providing relatively poor value for money
• We need to deliver good value for health care dollars
• By implementing evidence-based practice guidelines, we can improve outcomes, reduce harms, and reduce costs
• Required changes range from individual projects to larger system-based restructuring
Part 2:
Resource Reallocation and Restructuring
Restructuring Health Care

Acute care hospitals

Community based programs

Obstetrics/Peds

Surgery/ICU

Medicine

Home First

Long Term Care

Primary Care

Mental Health
Current Obstetrics Beds

Provincial beds: 115
Provincial births: 4,398
Births/bed: 38

Happy Valley-Goose Bay (O=1)
Births: 203; Beds: 4
Occ: 90%; Births/Bed: 51

St. Anthony (O=2)
Births: 69; Beds: 14
Occ: 65%; Births/Bed: 5

Labrador City (O=1)
Births: 103; Beds: 0

Corner Brook (O=5)
Births: 564; Beds: 11
Occ: 80%; Births/Bed: 51

Gander (O=2)
Births: 202; Beds: 10
Occ: 76%; Births/Bed: 20

Grand Falls-Windsor (O=4)
Births: 340; Beds: 14
Occ: 68%; Births/Bed: 24

Clarenville (O=3)
Births: 160; Beds: 9
Occ: 47%; Births/Bed: 18

Burin (O=2)
Births: 114; Beds: 9
Occ: 34%; Births/Bed: 13

St. John’s (HSC) (O=25)
Births: 2461; Beds: 34
Occ: 100%; Births/Bed: 72

St. John’s (HSC) (O=25)
Births: 2461; Beds: 34
Occ: 100%; Births/Bed: 72

Carbonear (O=2)
Births: 179; Beds: 10
Occ: 57%; Births/Bed: 18

O = # of obstetricians
Current surgery beds

Beds: 393+ med/surg

Inpatient Surgery

Year

Hospitalizations for Surgery and Day Surgery Visits

<table>
<thead>
<tr>
<th>Year</th>
<th>Day Surgery</th>
<th>Inpatient Surgery</th>
</tr>
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<tbody>
<tr>
<td>2001/02</td>
<td>42k</td>
<td></td>
</tr>
<tr>
<td>2002/03</td>
<td>87k</td>
<td></td>
</tr>
<tr>
<td>2003/04</td>
<td></td>
<td></td>
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<tr>
<td>2004/05</td>
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<tr>
<td>2005/06</td>
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<tr>
<td>2006/07</td>
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<td>2007/08</td>
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<td>2008/09</td>
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<td>2009/10</td>
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<tr>
<td>2010/11</td>
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<tr>
<td>2011/12</td>
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<tr>
<td>2012/13</td>
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<tr>
<td>2013/14</td>
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<tr>
<td>2014/15</td>
<td></td>
<td></td>
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<tr>
<td>2015/16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016/17</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: NLCHI

S/A = # of surgeons & anesthesiologists
Current Medicine Beds

Provincial Beds: 527 medicine beds + 132 medicine/surgery beds
Length of stay is 21% higher in NL than in Canada

Source: NLCHI
<table>
<thead>
<tr>
<th>Facility</th>
<th>Average Days</th>
<th>Year: 2018/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Sciences</td>
<td>5.7</td>
<td>Teaching</td>
</tr>
<tr>
<td>St. Clare's</td>
<td>6.0</td>
<td>Canadian Average (Teaching)</td>
</tr>
<tr>
<td>Corner Brook</td>
<td>7.6</td>
<td>Canadian Average (Large)</td>
</tr>
<tr>
<td>Eastern Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Health</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Teaching and large hospital defined by CIHI  Excludes ICU LOS*

*Source: NLCHI/CIHI*
Medicine Acute Length of Stay
Medium Hospitals

Year: 2018/19
Source: NLCHI/CIHI

<table>
<thead>
<tr>
<th>Facility</th>
<th>Average Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonear (Eastern Health)</td>
<td>6.8</td>
</tr>
<tr>
<td>Clareville (Eastern Health)</td>
<td>6.1</td>
</tr>
<tr>
<td>Grand Falls (Central Health)</td>
<td>7.3</td>
</tr>
<tr>
<td>Gander (Central Health)</td>
<td>9.1</td>
</tr>
<tr>
<td>St. Anthony (Labrador-Grenfell Health)</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Medium hospital defined by CIHI
Excludes ICU LOS
Medicine Acute Length of Stay
Small Hospitals

Small hospital defined by CIHI
Excludes ICU LOS

Eastern Health
- Placentia: 9.1
- Bonavista: 7.6
- Burin: 5.6
- Old Perlican: 4.2

Central Health
- Green Bay: 13.2
- Twillingate: 9.7
- New-Wes-Valley: 8.9
- Buchans: 8.8
- Fogo: 8.1
- Baie Verte: 7.0
- Harbour Breton: 5.6
- Stephenville: 9.1

Western Health
- Norris Point: 7.7
- Port Saunders: 7.5
- Port Aux Basques: 5.8
- Burgeo: 5.8
- Goose Bay: 5.4
- Labrador City: 5.2

Year: 2018/19

Source: NLCHI/CIHI
<table>
<thead>
<tr>
<th>Province</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newfoundland and Labrador</td>
<td>19.7</td>
</tr>
<tr>
<td>Prince Edward Island</td>
<td>19.6</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>17.6</td>
</tr>
<tr>
<td>Manitoba</td>
<td>16.8</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>16.7</td>
</tr>
<tr>
<td>Alberta</td>
<td>16.6</td>
</tr>
<tr>
<td>Ontario</td>
<td>15.9</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>13.9</td>
</tr>
<tr>
<td>British Columbia</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Source: CIHI

**Alternate Level of Care**

% ALC in NL hospitals is 25% higher than in Canada
ALC Length of Stay by Discharge Need

Year: 2018/19

Source: NLCHI
Assumptions for Optimal Bed Use

- Lesser of the facility current or Canadian average length of stay
- Occupancy of 85%
- Alternate level of care of 10%
Acute Care Beds
St. John’s (HSC & St. Clare’s)

Current Assigned
- Medicine
- Surgery
- ICU
- Obstetrics
- Mental Health
- ALC

Current Usage
- Medicine
- Surgery
- ICU
- Obstetrics
- Mental Health
- ALC

Optimal Usage
- Medicine
- Surgery
- ICU
- Obstetrics
- Mental Health
- ALC
Acute Care Beds
Rural Eastern Health (hospitals only)
Acute Care Beds
Western Health (hospitals only)
Ambulatory Care Sensitive Conditions

Hospitalization rate

- Canada: 327
- Saskatchewan: 463
- Newfoundland: 443
- New Brunswick: 434
- Prince Edward Island: 416
- Nova Scotia: 341
- Alberta: 338
- Quebec: 332
- Ontario: 314
- Manitoba: 314
- British Columbia: 294

Rate per 100,000 population <75 years

Source: CIHI

Year: 2017/18
Restructuring Health Care

Centralization of acute care services

Local provision of community-based services
Dollars & Sense
A conversation about improving our health care

April 16, 2020
7-9 pm
St. John's, NL

REGISTER: https://qcnlfutureforum.eventbrite.ca