



JUNE 2016

The Cost of Chronic Health Conditions to New Brunswick

Who we are

New Brunswickers have a right to be aware of the decisions being made, to be part of the decision-making process, and to be aware of the outcomes delivered by the health system and its cost. The New Brunswick Health Council (NBHC) will foster this transparency, engagement, and accountability by engaging citizens in a meaningful dialogue, measuring, monitoring, and evaluating population health and health service quality, informing citizens on health system performance and recommending improvements to health system partners.

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Le coût des problèmes de santé chroniques au Nouveau-Brunswick

Chronic health conditions and sustainability

New Brunswick is in a serious economic situation; what impact will chronic health conditions and related health services have on this?

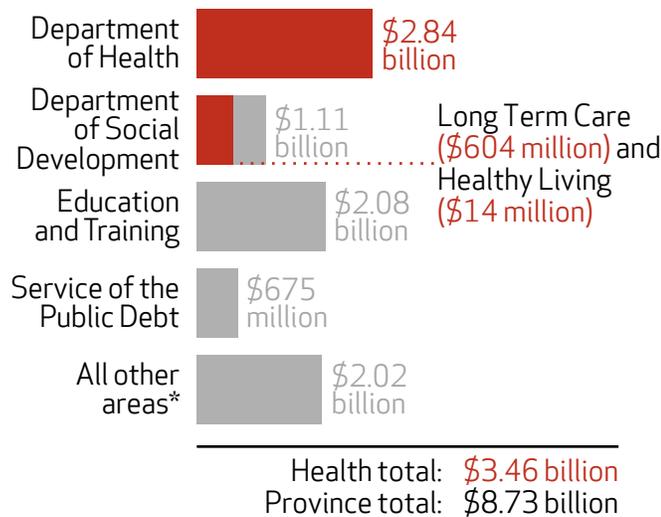
The New Brunswick health system

In New Brunswick, health system spending is split approximately 70:30 between the public and private sectors. Led by the Department of Health, with some additional activities being performed by the Department of Social Development (Long Term Care and Healthy Living), public funding covers human resources and professional fees; infrastructure such

as hospitals, clinics and medical equipment; and additional expenses related to delivering programs and services.

Beyond this \$3.46 billion public investment in health, private expenditures account for 30% of health system spending, including prescription medications, dental care and professional services, among others.

Figure 1. Public spending on health services in 2014-2015: \$3.46 billion (39% of provincial expenditures)



*Including Protection Services, Economic Development, Labour and Employment, Resources, Transportation and Infrastructure and Central Government

Source: Government of New Brunswick, Consolidated Financial Statements, Volume 1, Public Accounts for the fiscal year ended 31 March 2015

Why this topic?

As discussed in our 2015 report [Health System Sustainability in New Brunswick](#) and our 2016 report on population health, [Recognizing and Focusing on Population Health Priorities](#), New Brunswickers are:

- among the unhealthiest when compared to Canadians in other provinces
- experiencing more chronic health conditions at a younger age
- becoming a population whose average age is increasing faster than most other jurisdictions in Canada

This brief looks at the impact of these factors on the financial situation of the New Brunswick health system, primarily from a cost of service perspective. The upcoming brief in the fall of 2016 will further illustrate the extent to which currently provided health services meet these needs.

Health expenditures: pressures and projections

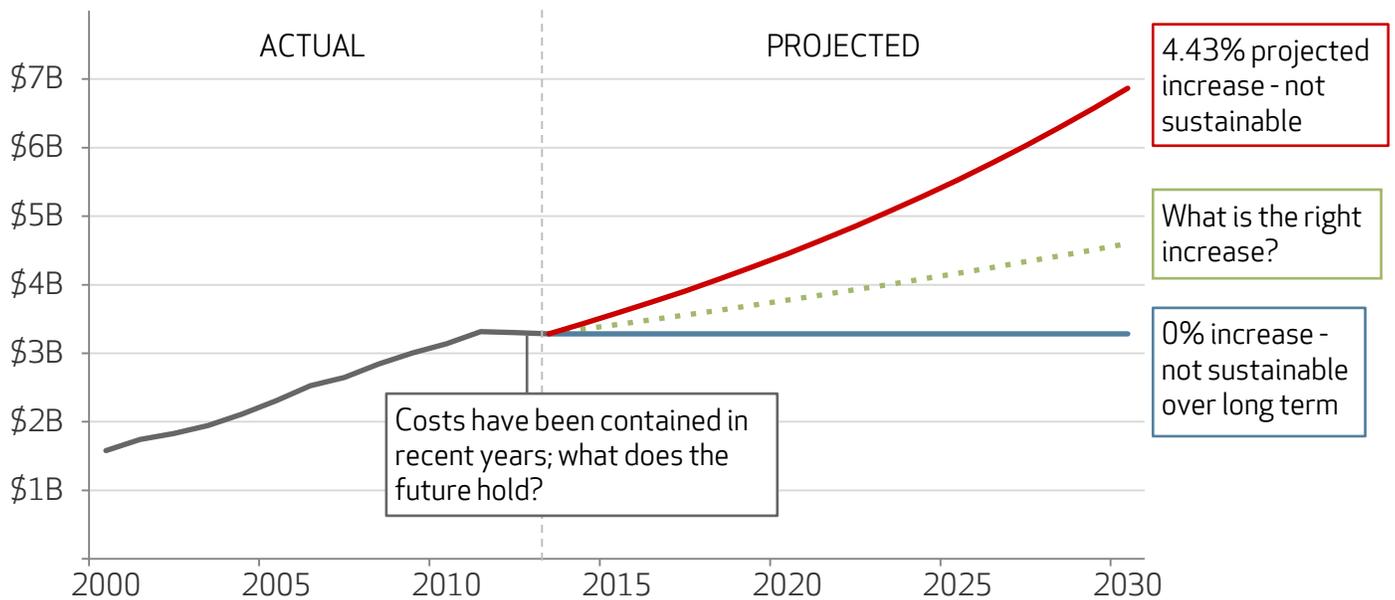
In 2012, in collaboration with the NBHC, the Canadian Institute of Actuaries produced a report on health spending trends in the province.^[1] Their model projected increases in health care costs at an annual average of 4.4% (split as 1.3% for aging, 1.1% for increased utilization and technology, and 2% for inflation). This 4.4% increase is not sustainable.

Managing these cost increases as part of the overall provincial budget could require difficult decisions about funding cuts to other government services. These cuts would not solve the problem as costs would continue to increase, and the possibility of reduced government revenue could make the situation even worse.

Likewise, a plan with no increases is not viable, as infrastructure and equipment must be maintained or replaced, and the aging population will require additional services. We must support a health system with targeted, sustainable, multi-year increases and service adjustments that address population health needs and trends.

The need to avoid both extremes is shown in Figure 3. From 2005-2006 to 2009-2010, spending increased yearly between 6% and 9%. During this same period, the prevalence of chronic health conditions also increased.

Figure 2. Projected growth trends and the possibility of unsustainability

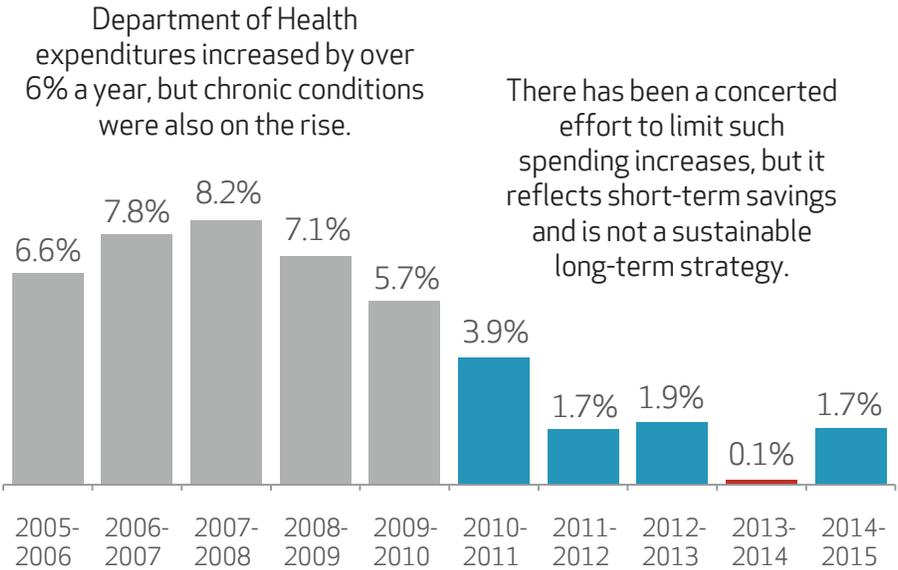


Source: NBHC in-house calculations based on the National Health Expenditure Database (2015) from the Canadian Institute for Health Information using the Canadian Institute of Actuaries' projection of a 4.43% annual increase

From 2010-2011 to 2014-2015, a concerted effort to limit spending growth drove reductions in the first two years, with spending growth being reduced below 1% in the remaining years. With a target of zero growth that was achieved in 2013-2014 through the deferral of capital and other expenses (an unsustainable approach over the long term), additional spending was necessary in 2014-2015 due to an increase in expenses in the Regional Health Authorities, an increase in Medicare payments and higher amortization expense.

The necessity of identifying performance outcomes, and achieving them through sustainable, targeted, multi-year funding growth is clear. This approach empowers health service providers to develop plans to achieve outcomes within a stable financial situation and avoids inefficiencies that can accompany high rates of funding growth.

Figure 3. Actual annual growth rate of Department of Health expenditures, from 2005 to 2015



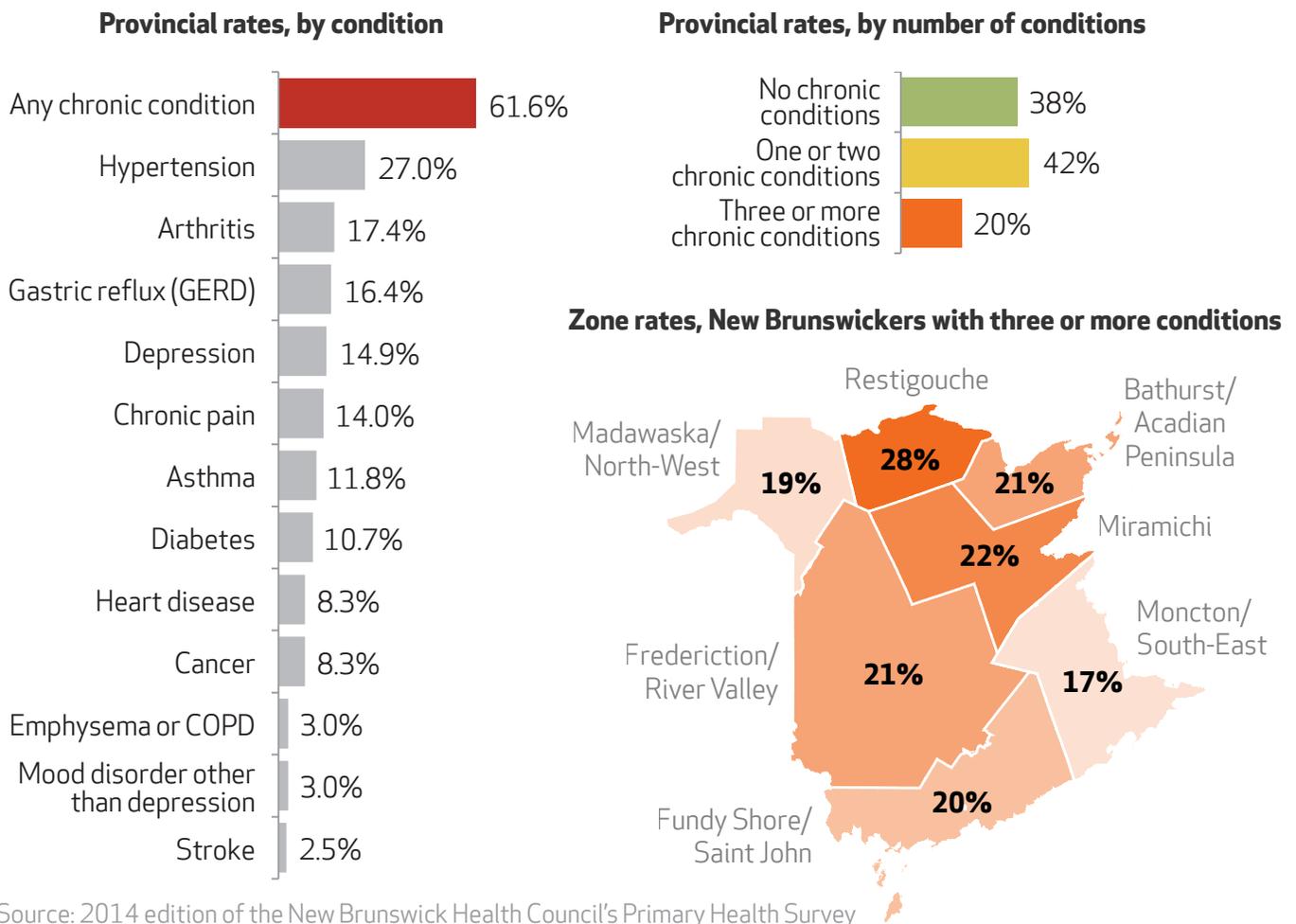
Source: Government of New Brunswick, Consolidated Financial Statements, Volume 1, Public Accounts for the fiscal years 2004-2005 to 2014-2015

New Brunswick: A chronically ill province

Chronic health conditions are common: 62% of New Brunswickers have one, and 20% have three or more.

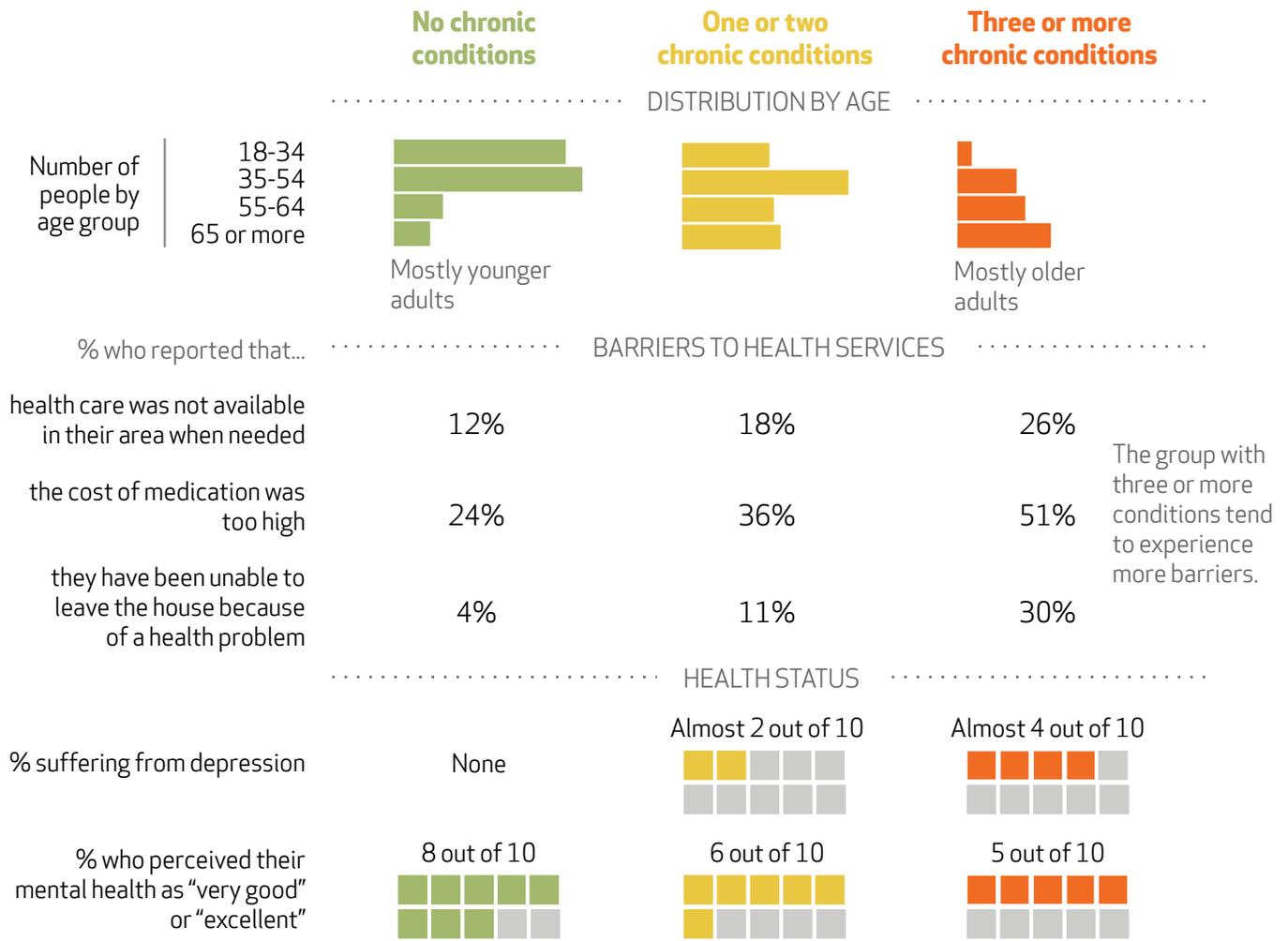
According to a 2014 report by the Health Council of Canada, New Brunswick is the province with the highest prevalence of chronic health conditions in Canada.^[2] Additionally, the 2014 edition of the NBHC's Primary Health Survey shows that a large number of New Brunswickers have multiple chronic conditions (multimorbidity), with 20% of the population experiencing three or more chronic conditions.^[3]

Figure 4. Prevalence of chronic health conditions in New Brunswick



A chronic health condition is a prolonged condition that generally cannot be prevented by vaccines or cured completely. It typically lasts more than 12 months, may require continuous treatment, and is severe enough to result in some limitations on day-to-day activities. For most of the numbers presented in this report, the chronic conditions are the ones listed in Figure 4 above.

Figure 5. New Brunswickers with chronic health conditions: A profile



Source: 2014 edition of the New Brunswick Health Council's Primary Health Survey

Chronic health conditions are the most common and costly of all health problems due to the need for care and medication; they also have a high impact on quality of life.^{[4][5]} Aging compounds the problem because chronic conditions often worsen with age, and the possibility of multimorbidity increases.

In some cases, properly managing multiple severe conditions may take several hours a day.^[6] Individuals (or family members that care for them) may need to defer other activities. For those missing out on family time, personal achievements or community activities, this can reduce quality of life.

Having to take time off work or sacrifice career opportunities can mean income reductions at a time when expenses may be at their highest level. Expensive medications, equipment or special care services may also have a harmful financial impact, especially for those with partial or no insurance coverage for these services.

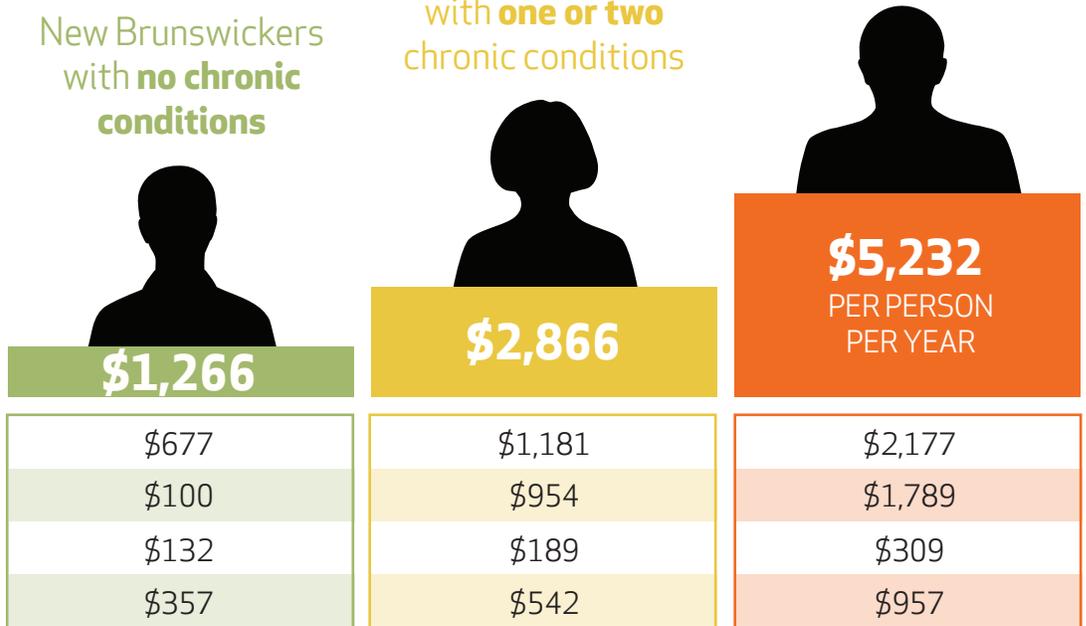
In addition to these risks to individuals and their families, there are general risks to society and the economy. These can include reduced productivity and revenue for both industry and government, as well as increased health-related funding demands that can require reductions to other services.

The annual average cost of health service utilization by number of chronic health conditions

New Brunswickers with **three or more** chronic conditions

New Brunswickers with **no chronic conditions**

New Brunswickers with **one or two** chronic conditions



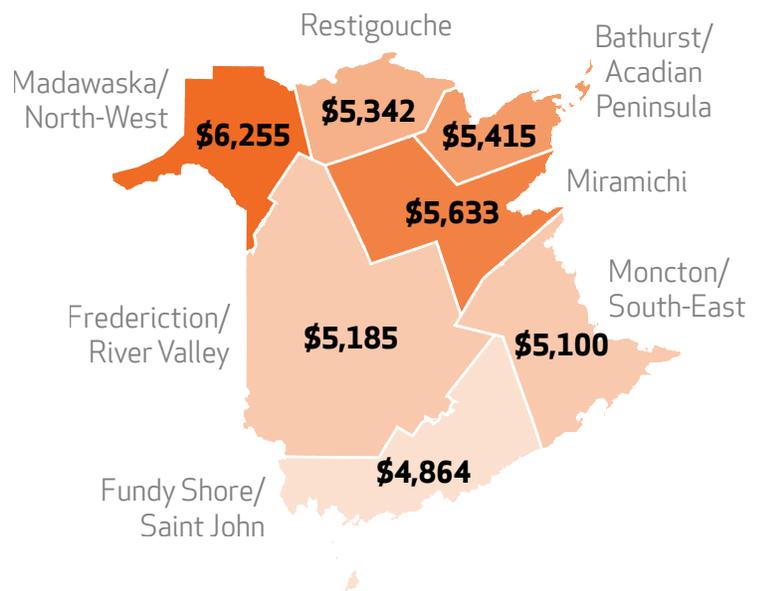
*Other services include family doctors, specialists, after-hours clinics, community health centres, private clinics and professionals, nurse practitioners, alternative health providers, Tele-Care 811 and land ambulances.

According to a cost analysis by the NBHC, the annual average cost of health services used by New Brunswickers with three or more chronic conditions is four times the cost of services used by individuals with none (\$5,232 compared to \$1,266).

The difference in cost is largely due to more hospital stays, a higher rate of use of the Extra-Mural Program, prescription drugs and the emergency room. These items alone make up 82% of the average cost of \$5,232 for the group with three or more conditions.

Because service usage varies by health zone, the costs also vary. Madawaska/North-West has the highest average cost at \$6,255 per person with three or more conditions, while Fundy Shore/Saint John has the lowest at \$4,864.

Cost of New Brunswickers with three or more chronic health conditions, by health zone



NOTE: The costs in this analysis are underestimates as they exclude ambulatory care, Long Term Care, community mental health and Public Health services. This means the cost of chronic health conditions is even higher than demonstrated by this model.

What the future may hold

Trends indicate the percentage of New Brunswickers with three or more chronic health conditions could increase from 20% to 25% within seven years. At least \$100 million more will be needed to serve the same number of people.

Twenty percent of New Brunswickers currently have three or more chronic health conditions. This is projected to increase to 25% of the population within seven years based on previous rates and the younger ages at which the population is developing these conditions.

Using the costing model developed for this study and assuming the same population, the health system will require at least an additional \$100 million to meet the projected increase in demand.

While prevention is important in terms of minimizing chronic health conditions, it is essential that individuals with one or two chronic health conditions receive the care necessary to prevent the development of additional conditions that would move them into the “three or more” group with its additional expenses and impact on quality of life.

Projected increase in multimorbidity and associated costs



Distribution of New Brunswickers, by number of chronic health conditions

	No chronic conditions	One or two	Three or more
New Brunswick	38%	42%	20%
By health zone			
Moncton/South-East	39%	43%	17%
Fundy Shore/Saint John	39%	41%	20%
Fredericton/River Valley	39%	40%	21%
Madawaska/North-West	45%	37%	19%
Restigouche	34%	39%	28%
Bathurst/Acadian Peninsula	35%	44%	21%
Miramichi	35%	43%	22%

New Brunswickers in the **one or two** category are at serious risk of becoming members of the **three or more** category.

Source: 2014 edition of the New Brunswick Health Council’s Primary Health Survey

What must change in the system

Toward a redefinition of health care in New Brunswick

The economic risk to New Brunswick posed by multiple chronic health conditions must be addressed. There are two key components to this challenge:

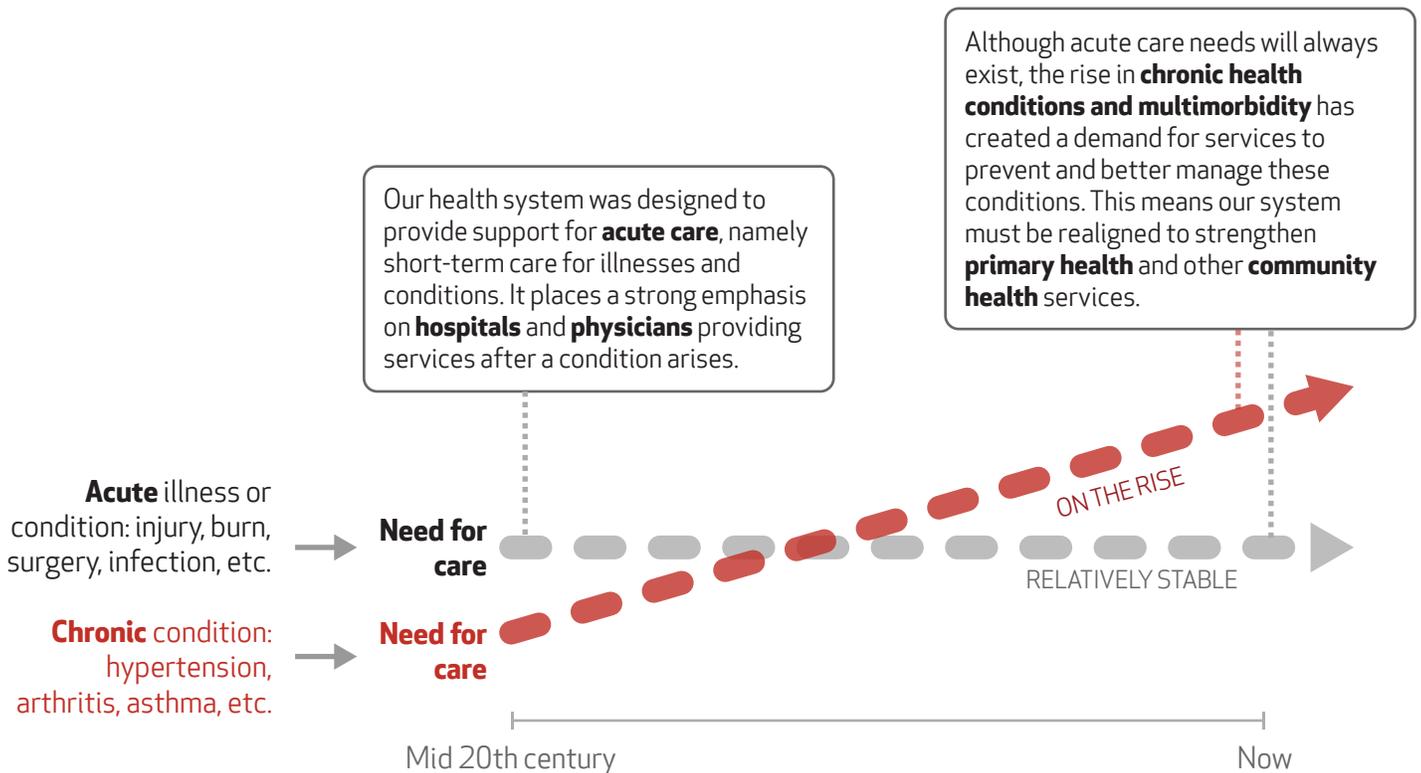
1. Reducing the incidence of new chronic health conditions in the population of New Brunswick through resource reallocation that improves illness prevention and health promotion
2. Managing existing chronic health conditions by aligning health system resources to population needs with an emphasis on comprehensive primary health services and other community health services

Everyone must work together to meet this challenge. Citizens must make personal health decisions that help to prevent or manage chronic health conditions, and support the necessary changes to the health system.

Health service providers and decision-makers must identify and implement care options based on the needs and trends of the populations they serve.

The governance structure must enable better accountability and support a health system with the targeted, sustainable, multi-year funding necessary to implement such changes.

Figure 6. The New Brunswick health system and our changing needs



New Brunswick's health system has shown strength in treating people who require acute care^[7] and in supplying the equipment and infrastructure needed.^[8] Our trend toward more chronic health conditions over the last half century requires a different allocation of resources.

As noted previously, our upcoming brief will provide additional information on health service quality and its relationship to the current needs of New Brunswickers.

Postscript

As this brief was being finalized, the Council of Atlantic Premiers issued a communiqué that demonstrated the growing awareness of the problem:

Premiers are committed to improving the efficiency, sustainability and quality of health care in the Atlantic region, with a focus on patient-centred care and improved health outcomes. [...] Premiers are committed to a regional approach that focuses on innovation to address the determinants of health, chronic disease management and the unique needs of Atlantic Canada in providing health care services to an aging population.

This recognition by the Council of Atlantic Premiers of the risks posed by chronic health conditions and the threat to the sustainability of the health system highlights a growing awareness of the issues facing provincial health systems.

In New Brunswick, these risks can be addressed through a commitment to targeted, sustainable, multi-year funding and an emphasis on community health services (especially illness prevention, health promotion and primary health services).

If we as a province can do this, the future sustainability of our health system can look very different than the projections in this brief.

References

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- [3] New Brunswick Health Council, 2014 edition of the Primary Health Survey.
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- [5] van Oostrom SH, Picavet HS, de Bruin SR, Stirbu I, Korevaar JC, Schellevis FG, Baan CA. "Multimorbidity of chronic diseases and health care utilization in general practice", *BMC Family Practice*, 2014 Apr 7, 15:61. doi: 10.1186/1471-2296-15-61.
- [6] Jowsey T, McRae IS, Valderas JM, et al. "Time's Up. Descriptive Epidemiology of Multi-Morbidity and Time Spent on Health Related Activity by Older Australians: A Time Use Survey", *PLoS One*, 2013 Apr 1, 8(4):e59379. doi: 10.1371/journal.pone.0059379.
- [7] New Brunswick Health Council, "Recognizing and focusing on population health priorities", 2016. [Online]. http://www.nbhc.ca/sites/default/files/documents/recognizing_and_focusing_on_population_health_priorities.pdf.
- [8] Canadian Institute for Health Information, National Inventory of Selected Medical Imaging Equipment, 2012.

Appendix 1 - Methodology

In order to compare costs associated with the different users of health services, we combined usage data from the 2014 edition of our Primary Health Survey with costing data from other sources. In the survey, citizens provided details on their use of the following health services:

- Family doctors
- Emergency room
- Hospitals or Extra-Mural Program
- Specialists
- After-hours clinics
- Community health centres
- Professionals at private clinics
- Nurse practitioners
- Alternative practitioners
- Tele-Care 811
- Land ambulances
- Prescription drugs

Citizens were divided into three groups (no chronic health conditions, one or two conditions, and three or more conditions) and an average cost per each service was allocated to determine the total per-person cost per group. Costs are underestimates as ambulatory care, Long Term Care, community mental health and Public Health services were not included.

Costing data sources and calculation methods, by service

Acronyms used for sources of costing data:

- ANB = Ambulance New Brunswick
- CIHI = Canadian Institute for Health Information
- DH = Department of Health
- NPDUIS = National Prescription Drug Utilization Information System

Type of service	Source	Average unit cost	Calculation method for average unit cost	Calculation method for total cost per person
Family doctor	• DH	\$46.50 per visit	2014-2015 Medicare data based on average billing per physician (designated as family physician) providing office-based care. This was compared to CIHI's nationally weighted benefit rate for family medicine (\$50.77).	Calculated by multiplying the average unit cost by the average number of visits reported by citizens.
Emergency room (ER)	• DH	\$192.17 per visit	<i>2014-2015 Annual Report of Hospital Services</i> reported "Average Cost Per ER Visit" is \$112. This was combined with Medicare's average billing per physician designated as an ER physician (\$80.17) for a total of \$192.17.	Calculated by multiplying the average unit cost by the average number of visits reported by citizens.

Type of service	Source	Average unit cost	Calculation method for average unit cost	Calculation method for total cost per person
Hospital stays and use of Extra-Mural Program (EMP)	<ul style="list-style-type: none"> DH CIHI 	\$9,155 per combined use of hospitals and EMP	The 2014-2015 Annual Report of Hospital Services reported "Average Cost Per Visit" for EMP as \$116 and "Average Cost Per Discharge" for EMP as \$3,699. We combined the "Average Cost Per Discharge" for EMP with the "Cost of a Standard Hospital Stay" (\$5,456) from CIHI (for New Brunswick) for a total unit cost of \$9,155.	The 2014 edition of the Primary Health Survey asked: "In the past 12 months, have you been a patient overnight in a hospital, health facility, or received services at home through the New Brunswick Extra-Mural Program?" We are therefore unable to separate hospital stays from EMP use. One quarter of hospitalizations are referred for EMP services. Some citizens have multiple hospital admissions (not captured with our survey). This may result in overestimating the costs associated with those in the "no chronic conditions" and "one or two conditions" groups, and underestimating the costs associated with those in the "three or more conditions" group (as this group uses more hospital and home care services).
Specialists	<ul style="list-style-type: none"> CIHI 	\$85.81 per visit	Nationally weighted benefit rate for "Total specialists" (\$85.81) from the National Physician Database. This number was validated with DH to ensure reliability for use.	Those who reported visiting a specialist were allocated one specialist visit per year. This could therefore result in an underestimation of costs.
After-hours clinics	<ul style="list-style-type: none"> DH 	\$29.40 per visit	2014-2015 Medicare billing costs for after-hours clinic service.	Those who reported visiting an after-hours clinic were allocated one visit per year. This could therefore result in an underestimation of costs.
Community health centres (CHC)	<ul style="list-style-type: none"> Management Information System Report 	\$72.91 per visit	2014-2015 average cost for CHC visits. Calculated by dividing total annual expenditures for CHC by total number of visits reported for all CHCs.	Calculated by multiplying the average unit cost by those who reported visiting a CHC, using the average number of visits reported for family doctors.
Health professionals at a private clinic (physiotherapists, occupational therapists, dietitians, social workers and psychologists)	<ul style="list-style-type: none"> Research 	\$350 per treatment	The average professional visit cost in N.B. is reported as \$50 and research indicates that for most treatments, an average of 7 to 10 visits are made per individual. The NBHC chose an average of 7 visits to remain conservative.	Calculated by multiplying the average unit cost by the average number of visits.

Type of service	Source	Average unit cost	Calculation method for average unit cost	Calculation method for total cost per person
Nurse Practitioners (NP)	<ul style="list-style-type: none"> DH 	\$76.32 per visit	Calculation was based on total number of NPs multiplied by the average annual salary and divided by the total number of services reported through shadow billing data for fiscal year 2014-2015.	Calculated by multiplying the average unit cost by those who reported visiting a NP, using the average number of visits reported for family doctors.
Alternative practitioners (AP) (chiropractors, naturopaths, homeopaths, osteopaths, acupuncturists and massage therapists)	<ul style="list-style-type: none"> Research 	\$250 per treatment	The average AP visit cost in N.B. is reported as \$50 and research indicates that for most treatments, an average of 5 to 7 visits are made per individual. The NBHC chose an average of 5 visits to remain conservative.	Calculated by multiplying the average unit cost by the average number of visits.
Tele-Care 811	<ul style="list-style-type: none"> DH 	\$67 per user per year	The average cost of Tele-Care usage was calculated using total expenditure cost of Tele-Care services divided by the percentage of New Brunswickers who use Tele-Care (7.4%).	The per-user rate was allocated to each citizen who reported using Tele-Care services whether they made one call or multiple calls. (The per-call rate is a much lower value.)
Land ambulance	<ul style="list-style-type: none"> ANB 	\$891 per call	The average cost of land ambulance usage was calculated based on the 2014-2015 Annual Report figures (total expenditures for land ambulances divided by the total land call volumes).	Those who reported using an ambulance were allocated only one use per year. This could therefore result in an underestimation of total cost.
Prescription drugs	<ul style="list-style-type: none"> Agency for Healthcare Research and Quality CIHI 	\$100 \$955 \$1790	<p>For the costs of citizens with no chronic conditions, we used the figure (\$100) reported by the Agency for Healthcare Research and Quality in their Multiple Chronic Conditions Chartbook (April 2014).</p> <p>For the costs of citizens with one or two conditions, we used the figure (\$955) reported by CIHI for average drug spending in Canada.</p> <p>For the costs of citizens with three or more chronic conditions, we used the figure (\$1,790) calculated by CIHI (using NPDUIS) for seniors or citizens with three or more conditions.</p>	The prescription drug costs were allocated to each person based on the group they belong to.