

# A Chronic Disease Prevention and Management Framework for New Brunswick

Primary Health Care Branch  
Addiction, Mental Health  
and Primary Health Care Division  
Department of Health

*Be Engaged*

*Our Health, Our Future*



# Table of contents

**EXECUTIVE SUMMARY**..... 2

**SECTION 1: BACKGROUND** ..... 3  
What are chronic diseases?..... 3

**SECTION 2: WHERE ARE WE NOW?**..... 4  
Primary risk factors ..... 4  
Learning from statistics..... 5  
How significant is the challenge of chronic disease? ..... 8  
Learning from Canadians who have chronic diseases..... 10

**SECTION 3: WHERE DO WE WANT TO GO?**..... 11  
A provincial mandate..... 11  
Dealing with chronic conditions..... 11

**SECTION 4: HOW ARE WE GOING TO GET THERE?**..... 13  
Chronic Care Model..... 13

**CONCLUSION** ..... 20

## FIGURES

Figure 1: Risk behaviours among New Brunswickers and Canadians.....4  
Figure 2: Percent distribution for leading causes of death.....5  
Figure 3: Leading Causes of Death (ASMR per 100,000) in New Brunswick..... 6  
Figure 4: Potential years of life lost: leading causes in New Brunswick, 2006..... 6  
Figure 5: Causes of premature death..... 7  
Figure 6: Mortality counts and ASMR per 100,000 by gender.....7  
Figure 7: Prevalence of chronic disease among New Brunswickers.....9  
Figure 8: Health-care costs associated with chronic disease..... 9  
Figure 9: Expanded Chronic Care Model..... 14

# Executive Summary

This paper provides a succinct background and context to the need for a comprehensive New Brunswick chronic disease strategy. Chronic diseases are the most significant cost-driver in our health-care system. Chronic diseases include diseases that persist. Generally they cannot be prevented by vaccines or cured by medication, nor do they just disappear. Many chronic diseases develop slowly due to behaviour that damages health. The management of chronic diseases and conditions presents a significant challenge to the health-care system, and changes are needed to manage these complex health problems better.

In 2007, the Health Quality Council released a report on patterns and prevalence of health and health-care use by Canadians with selected chronic illnesses<sup>1</sup>. One-third of Canadians had reported at least one of seven selected chronic physical- and/or mental-health conditions. Our efforts to build sustainable health-care systems must target the challenges created by this growing prevalence. There is strong evidence that, while chronic diseases are creating serious economic and social burden, there is significant opportunity to reduce and manage this strain. The Provincial Health Plan 2008-2012 echoed this need and commitment to help better manage long-term health problems:

***[the health-care system] must undergo a transformation that will allow for greater focus on results, operational efficiency, clinical excellence and long term sustainability.<sup>2</sup>***

The Robert Wood Johnson Foundation sponsored the work of Dr. E. Wagner in the United States to explore the development of an effective clinically oriented service framework to support the care of persons with chronic illnesses. This led to the development of the Chronic Care Model, which integrates multiple components to improve the management of patients with chronic illnesses. This model has been widely studied since 2000. The Cochrane database has completed a meta-analysis of these studies. As well, the RAND Group was contracted to study the effectiveness of the model. From 1999 to 2000, more than 15 studies involving four sites and more than 4,000 patients were conducted and analyzed. Findings include:

- organizations were able to improve, making an average of 48 changes in 5.8 out of the six CCM areas;
- patients with diabetes had significant decreases to their risk of cardiovascular disease;
- congestive heart failure pilot patients were more knowledgeable and more often on recommended therapy; they had 35 per cent fewer hospital days; and
- asthma and diabetes pilot patients were more likely to receive appropriate therapy.

The Expanded Chronic Care Model provides a framework for chronic disease prevention and management as a guide to health-care system transformation. This model identifies the key elements that, working together, create the social environment for how health care is delivered. The health-care system is described within the context of how the community plays a defining role in how health services are delivered. The community influence is constructed by public policy, the supportive environment and public engagement. The key components of the health-care system include the delivery system design, the information system, patient self-management and decision support. This model provides a blueprint to guide ongoing efforts, activities and enhancements in the provision of primary care to all New Brunswickers with chronic illnesses.

# Section 1: Background

## **What are chronic diseases?**

Chronic diseases include diseases that persist. Generally they cannot be prevented by vaccines or cured by medication, nor do they just disappear. Many chronic diseases develop slowly due to behaviours that damage health.

Chronic diseases are typically characterized by pre-existing risk factors, vague beginnings, long latency and prolonged affliction; they are later associated with impairments or functional disability. Chronic diseases include physical and mental disorders and are among the most common and costly health problems facing Canadians. Many chronic diseases are controllable. Some chronic diseases have infectious origins and pose an additional, serious public health risk due to their communicability; HIV/AIDS are examples.<sup>3</sup>

Chronic conditions share fundamental themes: they carry on and require some level of health-care management. In addition, chronic conditions:

- are increasing throughout the world, accounting for 45.9 per cent of the global burden of disease;<sup>4</sup> no country is immune to their effects; .
- are seriously challenging the efficiency and effectiveness of health-care systems and test our abilities to organize systems to meet increasing demands; and
- are engendering serious economic and social consequences and threaten health-care resources in every country.

Because of the volume of the population that either is at risk for a chronic disease or that has a chronic disease, there is growing recognition that population-based as well as patient-focused strategies must be developed. Chronic diseases are best managed through a continuum of health services, ranging from primary prevention to tertiary treatment of sickness. Population-based strategies address the social determinants of health and behavioural choices that lead to chronic disease. Patient treatment approaches include the development of health education, access to health-care teams, alternative care delivery systems, case management and best-practice guidelines. There is strong evidence that a common set of risk factors play a key role as precursors to chronic disease.

## Section 2: Where are we now?

### Primary risk factors

According to the World Health Organization (WHO) Report 2002<sup>5</sup> Global Strategy on Diet, Physical Activity and Health, risk factors play a key role in the development of chronic diseases. Addressing these factors at population and patient levels can have a major effect in the prevalence and incidence of chronic diseases, such as diabetes and cardiovascular disease, in a relatively short time. The major risk factors, identified by WHO include:

- tobacco;
- alcohol;
- high blood pressure;
- physical inactivity;
- high cholesterol;
- obesity; and
- insufficient consumption of fruits and vegetables.

The following table profiles the relative prevalence of common risk behaviours in New Brunswickers and Canadian counterparts.

<b>Figure 1: Risk behaviours among New Brunswickers and Canadians</b>		
<b>Lifestyle/health risk</b>	<b>NB</b>	<b>Canada</b>
Current smokers <sup>6</sup>	21.2%	19.2%
Obese (BMI >30) % <sup>7</sup>	20%	14.9%
Physically inactive % <sup>8</sup>	52.1%	46.9%
Alcohol use % <sup>9</sup>	73.8%	79.3%
Insufficient consumption fruits and vegetables% <sup>10</sup>	33%	38.3%
High blood pressure % <sup>11</sup>	19.8%	15.9%
High cholesterol <sup>12</sup>	n/a	17%

These are preventable. Increased blood pressure, increased cholesterol, obesity and physical inactivity are strongly related to diet and activity. Simple strategies such as reducing salt, eliminating saturated fats, increased consumption of fruits and vegetables, and cutting out smoking have been shown to prevent significantly chronic disease or limit the progression of associated morbidity.

## Learning from statistics

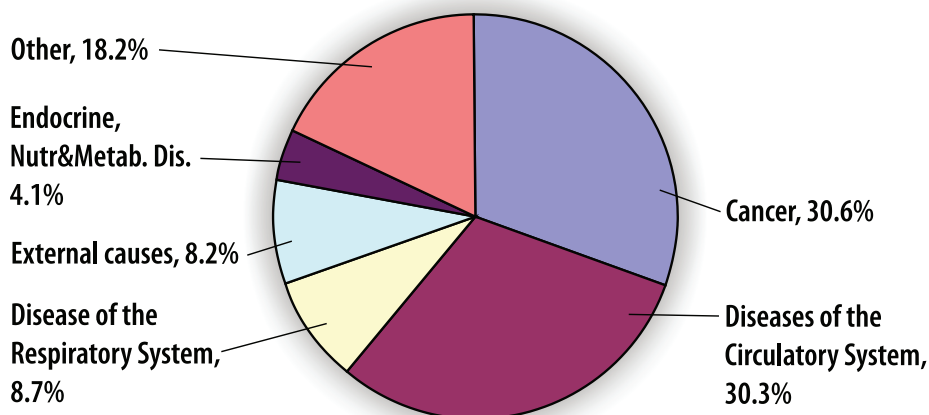
Common mortality indicators as well as data from the Canadian Community Health Survey (CCHS) provide useful information on the effects of chronic disease. The following tables review causes of mortality in New Brunswick, underlining the burden that chronic disease has inflicted.

The tables below profile percent leading causes of death in New Brunswick, age standardized mortality rates,<sup>13</sup> potential years of life lost,<sup>14</sup> and premature death. Cancer and diseases of the circulatory system are the top two leading causes, accounting for more than half of attributable mortality. These are both considered chronic conditions. These statistics and the research suggest that, while New Brunswickers and the health-care system are struggling with a burden of chronic disease, there is significant opportunity for improvement

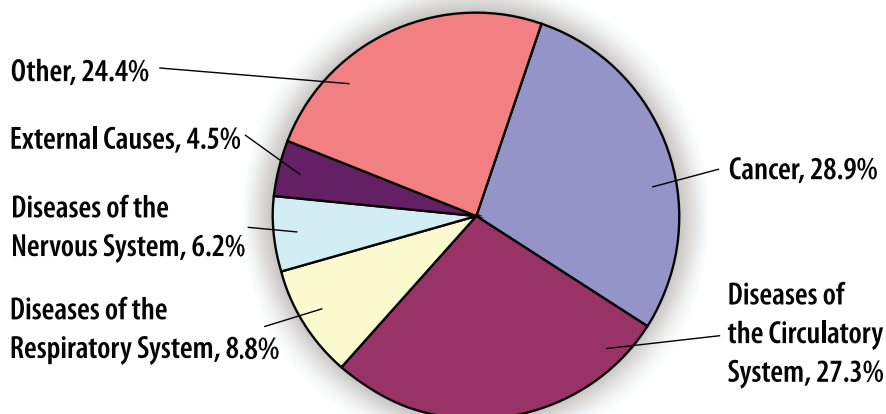
Cancer is the leading cause of death, potential years of life lost and premature death. More New Brunswickers die of cancer compared to Canadian population at large.

**Figure 2: Percent distribution for leading causes of death**

**MALES-Percent distribution for leading causes of death in New Brunswick: 2006**  
(Preliminary data: OCMOH, 2009)



**FEMALES-Percent distribution for the leading causes of death in New Brunswick: 2006**  
(Preliminary data: OCMOH, 2009)



Source: Office of the Chief Medical Officer of Health, Epidemiology Service, Department of Health, 2006 (preliminary data) (01/13/09)

**Figure 3: Leading Causes of Death (ASMR per 100,000) in New Brunswick**

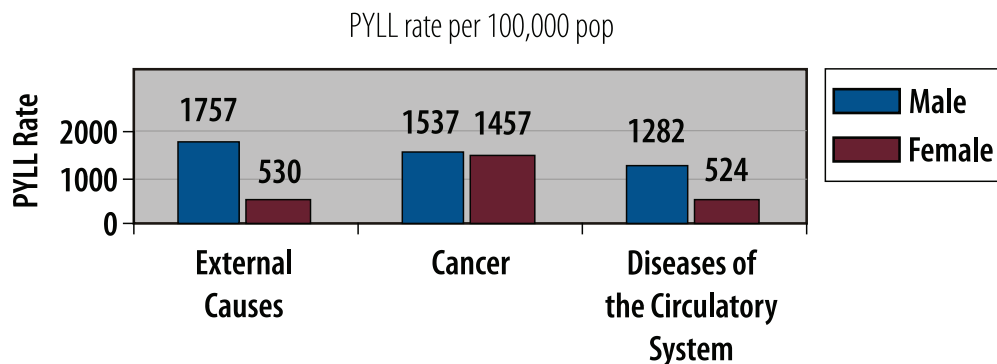
Leading Causes of Death (ASMR per 100,000 population) for New Brunswick 2006 and Canada 2004.

<b>Males</b>	<b>NB</b>	<b>Canada</b>
Cancer	206.0	212.0
Diseases of the Circulatory System	203.2	
External Causes	60.0	
Diseases of the Respiratory System	59.7	
Endocrine, Nut-Met	27.3	
All Causes	679.3	710.0

<b>Females</b>	<b>NB 2006</b>	<b>Canada 2004</b>
Cancer	146.0	147.0
Diseases of the Circulatory System	129.2	
Diseases of the Respiratory System	39.9	
Diseases of the Nervous System	29.4	
External Causes	27.3	
All Causes	485.1	465.6

Source: Office of the Chief Medical Officer of Health (preliminary data) 01/13/2009

**Figure 4: Potential years of life lost: leading causes in New Brunswick, 2006**



Source: Office of the Chief Medical Officer of Health, Epidemiology Service, Department of Health (preliminary data) (01/13/09)



**Figure 5: Causes of premature death, Premature deaths (younger than 65 years) - causes for New Brunswick, 2006**

Cause	Male n = 771		Female n = 441	
	Rank	%	Rank	%
Cancer	1	29.1	1	45.7
Diseases of the circulatory system	2	24.3	2	14.8
External causes	3	22.7	3	11.9
Diseases of the nervous system	7	3.1	4	5.0
Endocrine	5	3.9	5	4.6
Diseases of the respiratory system	6	3.2	6	4.4

Source: Office of the Chief Medical Officer of Health, Department of Health (preliminary data) (01/13/09)

**Figure 6: Mortality counts and ASMR per 100,000 by gender**

MALES	Deaths/Year	Percentage (%)	NB	ASMR	
					Can 2004
Lung	316	33.3	76.5		60.6
Prostrate	100	10.5	24.7		23.3
Colorectal	105	11.1	25.5		26.8
All Cancers	950	100.0	229.2		211.7

FEMALES	Deaths/Year	Percentage (%)	NB	ASMR	
					Can 2004
Lung	206	25.2	39.7		36.1
Breast	123	15.1	22.2		23.1
Colorectal	92	11.3	15.5		17.3
All cancers	817	100	148.4		147.1

Source: Cancer Registry, New Brunswick Cancer Network, 2006 Department of Health

Cancer has exacted a heavy toll on New Brunswickers, and it is linked to the basic risk factors. While lung cancer is the most common site of cancer and cause of death, 80 per cent to 90 per cent of cases are attributable to cigarette smoking. These deaths were almost entirely preventable. In a landmark study released by the World Cancer Research Fund (WCRF)<sup>15</sup> and the American Institute for Cancer Research (AICR), scientists estimate that about one-third of cancer cases would be eliminated if eight simple recommendations for diet and exercise were followed:

1. Be as lean as possible within the normal range of body weight.
2. Be physically active as part of everyday life.
3. Limit consumption of energy-dense foods and sugary drinks.
4. Eat mostly foods of plant origin.
5. Limit consumption of red meat and avoid processed meats.
6. Limit alcohol.
7. Limit salt.
8. Aim to meet nutritional needs through diet alone.

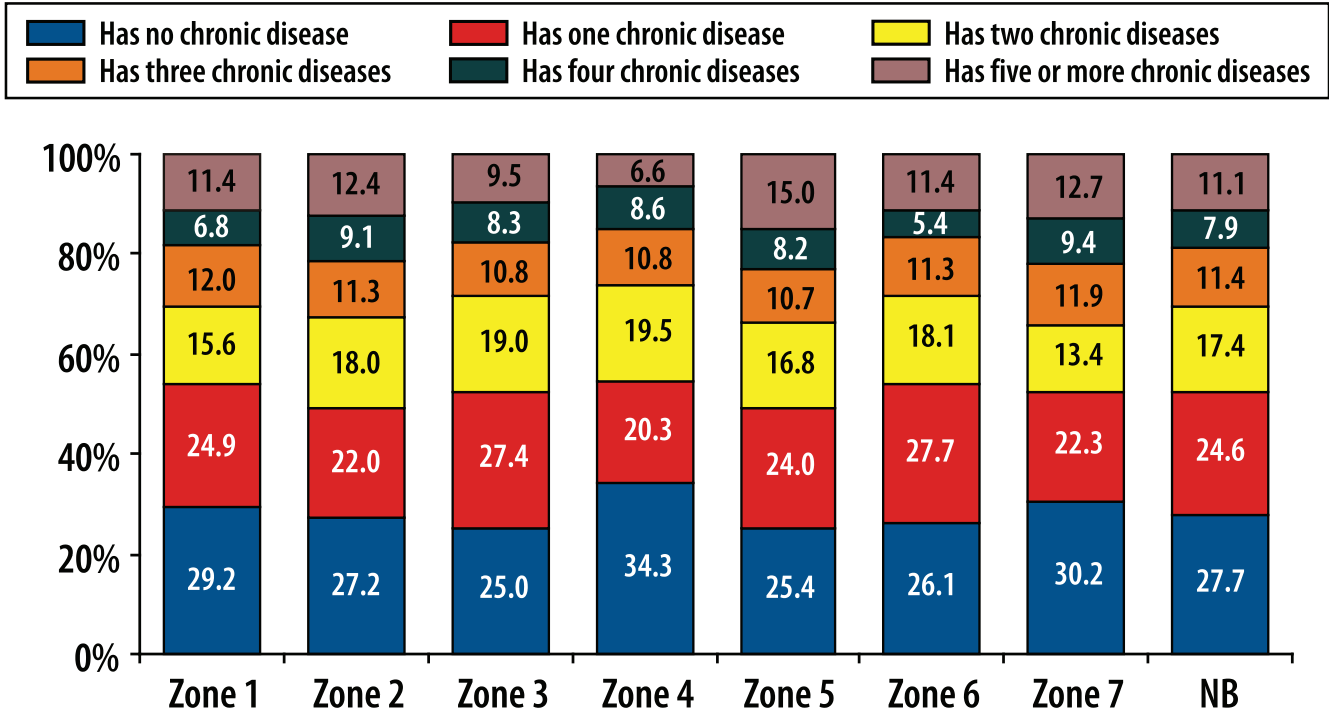
Cardiovascular disease (CVD = diseases of the circulatory system) is the second leading cause of death. The percent causes of death table show that one-third of New Brunswickers die from cardiovascular disease. The age standardized mortality rates table show that more New Brunswickers die from CVD compared to Canadian averages. Potential years of life lost and premature death table show that too many New Brunswickers are dying too early from CVD. Yet about 75 per cent of CVD can be attributed to the simple risk factors: high cholesterol, high blood pressure, low fruit and vegetable intake, inactive lifestyle and tobacco. The mortality associated with chronic disease demonstrates the significant cost for the individual, the family and society.

### ***How significant is the challenge of chronic disease?***

While the basic mortality reflects the final burden of chronic disease, the CCHS data are useful in understanding the breadth of the problem. CCHS is an ongoing national, surveillance survey designed to profile health status and concerns, through self-report in telephone and in-person interviews. In New Brunswick, 58 per cent of youth 12 to 17 reported having a chronic condition, with allergies, asthma and back problems being the most common. This increased to 74 per cent of adults 18 and older reporting a chronic condition, with arthritis, high blood pressure and asthma being the most common.

The chart below shows the breakdown of prevalence of chronic disease in individuals by health zone.

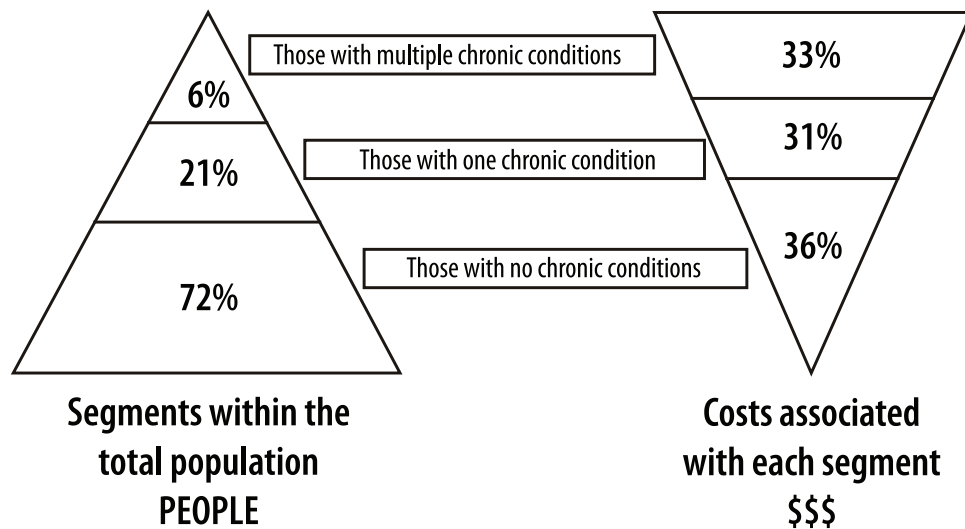
**Figure 7: Prevalence of chronic disease among New Brunswickers**



Source: Statistics Canada, CCHS Cycle 3.1, 2005

Kaiser Permanente is a large managed-care organization in the United States. This organization undertook a study of cost drivers in health-care services by examining the utilization patterns of its 8.4 million rostered patient population. Two-thirds of overall health resources were consumed by persons with chronic disease. The consensus was that this profile reflected a common trend in health-care resource use.

**Figure 8: Health-care costs associated with chronic disease**



Source: Kaiser Permanente Northern California commercial membership, DxCG methodology, 2001.

The increasing prevalence of chronic disease in the population, further complicated by the high percentage with multiple co-morbid chronic conditions, heightens the sense of urgency to develop better approaches to manage chronic diseases. The use of the health-care system is closely associated with the presence of chronic diseases. Patients with more than one chronic health condition use considerably more health care resources than healthier patients. Our efforts to build sustainable care systems must target the challenges created by the growing prevalence of chronic health conditions, with strategies directed to primary, secondary and tertiary levels of intervention.

### ***Learning from Canadians who have chronic diseases***

In 2007, the Health Council of Canada released a series of reports about chronic health conditions.<sup>16</sup> Canadians with chronic illnesses used 51 per cent of general practitioner consultations, 55 per cent of specialist consultations, 67 per cent of nursing consultations and 72 per cent of nights spent in hospital. Canadians reported that, while they generally had access to physicians, often they were unable to have timely appointments. As a result, there was heavy reliance on hospital emergency rooms for primary health-care conditions. They also did not have access to a health-care team, although the importance of a health-care team for optimal comprehensive care has been well documented. The Canadian government spends a great deal on health care, yet almost 10 per cent of patients report that they did not fill a prescription or skipped medications due to cost. While there is heavy investment to help ensure access to doctors, this does not necessarily correlate to the quality of health-care services.

Several initiatives are exploring interdisciplinary primary health-care delivery teams such as the Family Health Teams (FHT) in Ontario, Group Health in Sault Ste. Marie, Ont., and the Chinook Primary Care Network in Alberta. These projects address many of the weaknesses that have been recognized by Canadian patients. Typically the team had extended service hours as well as after-hours access to better meet patients' needs in timely fashions. The team also focused on improved chronic disease management, disease prevention and health promotion in partnership with other community-based organizations.<sup>17</sup> Cited outcomes include improved use of best practices for chronic disease management resulting in decreased hospital admissions, decreased emergency room visits, improved monitoring and control of diabetes and improved screening for breast and colorectal cancer.<sup>18</sup>

## Section 3: Where do we want to go?

### A provincial mandate

The Charter for Change and the Provincial Health Plan 2008-2012 support the development of a provincial chronic care strategy that will address diseases such as mood disorders, diabetes, arthritis and HIV/AIDS. Such a strategy should be comprehensive enough to apply to all chronic diseases while addressing the underlying social determinants of health and health disparities that are common precursors for chronic illnesses.

### Dealing with chronic conditions

A fiscal, moral and resource imperative is driving the need for transforming health services. New Brunswickers have clearly identified the need to improve timely access to health-care services and to a wider team of providers. There is increasing interest in learning more about staying well. There is a growing shortage of skilled providers, further highlighting the need to offer care differently. Research has clearly established that often care does not reflect evidence-based best practices. New Brunswickers want to know that they are receiving the best care possible from their tax dollars. Knowing where we need to go will provide direction for how health services need to be reorganized.

*Changing the mindset in primary health-care services: Shift to “prevent it, find it and manage it” from “find it and fix it.”*

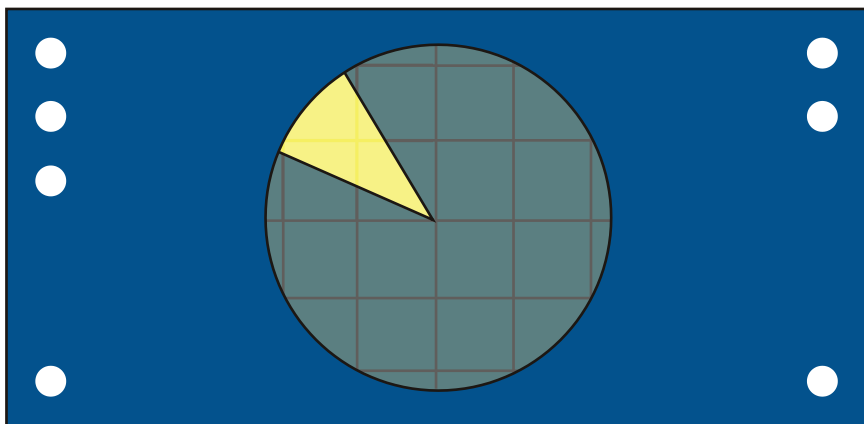
While the global disease burden has been shifting towards chronic conditions, care is still focused on acute and emergent symptoms; which is not the best approach for chronic disease management.

#### The RADAR Syndrome

Patient appears

Patient is treated

Patient is discharged...then disappears from radar screen



*“In most places, the patient appears, the patient is treated by ‘find it and fix it’ medicine, they are then discharged and then they quickly disappear from the radar screen..”<sup>19</sup>*

The system needs to shift to support the care processes of *prevent it, find it and manage it*.

## ***Changing the role of information: Data-use, moves from passive to active, guiding health care at the patient and population level***

Strong information networks must be created to provide critical data at the population level and the patient level to enable effective and efficient resource allocation and service delivery. As an example, health systems do not support planned and comprehensive follow-up for patients with chronic conditions to ensure the best outcomes.<sup>20,21,22,23</sup> Health-care systems were developed to address acute-care needs. Decision-makers need information about the type of health problems, how health-care services are being allocated to address these challenges and how effective these measures have been. Providers need access to electronic information systems to support access to reliable medical information as well as improving communication with patients by follow-up reminders. Patients need access to information about their health to help them care for themselves.

## ***Changing the role of the patient: The patient as chief executive officer of his or her personal health***

New Brunswickers are shifting from a vague responsibility in their personal state of health and wellness to explicit responsibility in managing their personal health and wellness, seeking support from the health-care system when needed. They become the chief executive officer of a personal health team.

This will require a shift in the power balance in the social structure of health-related relationships. Patients will also need to be educated, and the health-care system must provide consistent and comprehensive information to enable self-management. Sometimes even with the appropriate information and support, some patients have a difficult time finding the motivation to make the desired lifestyle changes.<sup>24,25,26</sup>

## ***Changing the role of the community: involving communities as partners in health and wellness***

Health care is often poorly organized to make the best use of community programs. This is especially problematic in low-resource settings, where primary-care services cannot meet health needs. Community linkages to organizations such as consumer groups and non-governmental organizations provide significant benefit to patients and families through mutual support groups, health charities, etc. There is also a need for all levels and branches of government to ensure that our broad environment is supported and protected through a healthy public policy lens.

## ***Changing the focus from illness to wellness: prevention is underused***

Chronic conditions are largely preventable. We need to develop effective public-health strategies that target health and wellness. This includes development of policies when appropriate that discourage unhealthy behaviours and that make healthy choices the easy choice. For example, advertising directed at children, and unhealthy food, nutrition labeling, guidelines about use of saturated fats, added salt, etc. in prepared foods, may all play key roles in changing dietary habits of the population. All provider-patient interactions should be used as opportunities to inform patients about health promotion and disease prevention strategies. A common example is the consistent tobacco intervention, ask and advise, that is encouraged by the medical community. Given information about making appropriate choices, patients and their families have the option to act to improve their health. With the help of health care personnel, patients can engage in behaviours that prevent the onset of chronic conditions or delay complications. However, they need knowledge, motivation, and skills to do so. Change management strategies should include lay and professional facilitators who are trained and skilled in patient empowerment and behaviour change models which include problem-solving. To prevent and reduce complications related to chronic conditions, prevention and health promotion should be part of every health-care encounter.<sup>27</sup>

## Section 4: How are we going to get there?

### Chronic Care Model

The Chronic Care Model was developed by Dr. E. Wagner in the United States. The Robert Wood Johnson Foundation sponsored the development of an effective clinically oriented service framework to support the care of persons with chronic illnesses. The Chronic Care Model integrates multiple components to improve the management of patients with chronic illnesses. This model provides a blueprint to guide renewal of a health-care system. Past efforts to reorganize chronic disease management focused on single interventions or initiatives. In a sense, the series of one-off solutions mirrored the traditional health-care system “find it and fix it” model. These solutions were less likely to be successful or have sustained outcomes. The approaches that were more successful incorporated a number of strategies.

A meta-analysis of successful and non-successful programs led to the development of the Chronic Care Model. This model has been widely studied since 2000. The Cochrane data base has completed a meta-analysis of these studies. As well, the RAND Group was contracted to study the effectiveness of the model. From 1999 to 2000, more than 15 studies involving four sites and more than 4,000 patients were conducted and analyzed. Finding highlights include:

- organizations were able to improve, making an average of 48 changes in 5.8 out of the six CCM areas;
- patients with diabetes had significant decreases to their risk of cardiovascular disease;
- congestive heart failure pilot patients were more knowledgeable and more often on recommended therapy, had 35 per cent fewer hospital days; and
- asthma and diabetes pilot patients were more likely to receive appropriate therapy.

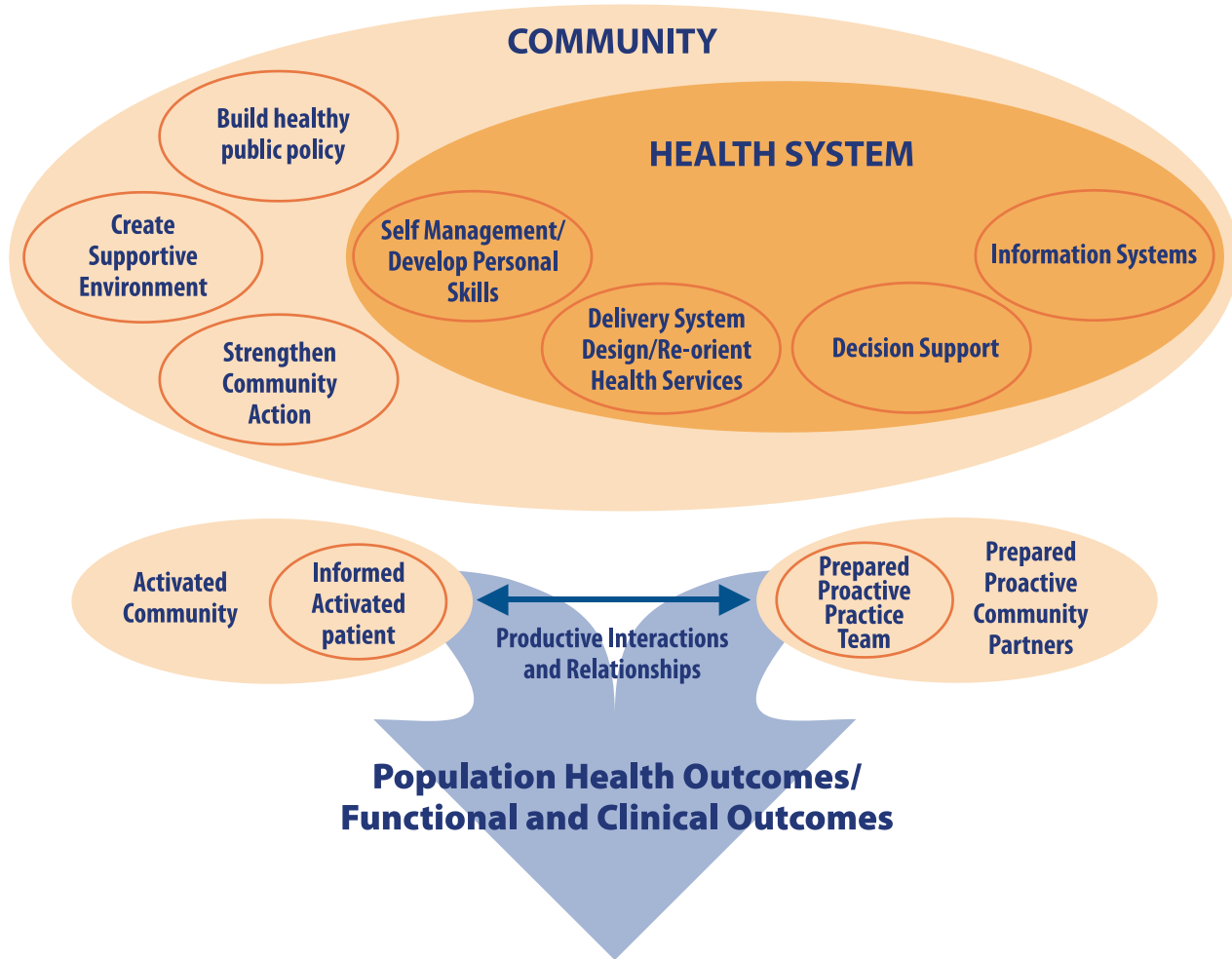
The model is promoted by the Institute for Health Care Improvement, which includes a variety of quality improvement tools.<sup>28</sup> There is also a website supporting the Chronic Care Model.<sup>29</sup> It incorporates the basic components necessary for improving health care from a systems perspective: the community, the health-care organization, the practice and the patient levels. This model can be applied to specific chronic illnesses, and it establishes a common template for care improvement strategies. It recognizes that chronic illnesses share common features. Because of this, it is possible to design effective programs that will support quality improvement across a number of chronic diseases without necessarily being disease-specific. Yet it can also guide the development of disease specific programs, enabling the development of key infrastructure that cuts across chronic illnesses, synergizing investments and eliminating the need for siloed resources. The model maintains a core commitment to the patient.

*If chronic disease management recognizes that its role is to improve the quality of life for numerous individuals, it will have done its task....But if its only purpose is to save the health systems money, then it will fail. But if it combines the knowledge, energies and interests of individual people with the expertise and understanding of health care professionals and the resources and power of health care systems, it will be an unbeatable combination.*

*(H. Cayton, (2004) Conference Presentation From ideas to action: improving chronic disease management, London, 18 May 2004)<sup>30</sup>*

The model was later adapted to enhance a focus on the community and the challenges associated with the social determinants of health. This highlighted the importance of healthy public policy and the broader environment in supporting health and wellness. The following Expanded Chronic Care Model has been widely adopted within the Canadian context. A complete description of the model components follows.<sup>31</sup>

**Figure 9: Expanded Chronic Care Model**



Created by: Victoria Barr, Sylvia Robinson, Brenda Marin-Link, Lisa Underhill, Anita Dotts & Dariana Ravanadale (2002)  
 Adapted from Glasgow, R., Orleans, C., Wagner, E. Curry, S., Solberg, L. (2001). Does the Chronic Care Model also serve as a template for improving prevention? *The Milbank Quarterly*, 79 (4), and World Health Organization, Health and Welfare Canada and Canadian Public Health Association, (1986). Ottawa Charter of Health Promotion.



These core descriptions are modified from the IHI website to the New Brunswick context  
<http://www.ihl.org/IHI/Topics/ChronicConditions/AllConditions/Changes/>

Description of core elements	Structural component/criteria	Example
<p><b>Health system: organization of health care.</b></p> <p><b>Chronic illness management programs can be more effective if the overall system (organization) is led in a manner that allows for a focus on chronic illness care.</b></p> <p>Health-care systems can create an environment in which organized efforts to improve the care of persons with chronic illness take hold and flourish. All levels of the organization support high-quality care. There is effective improvement strategies aimed at comprehensive system change. This includes the open and systematic handling of errors and quality problems. There are agreements to facilitate care co-ordination within and across organizations.</p> <p>In the ECCM, the core elements of the health care system are understood as existing within a free flowing system where in there is a flow of ideas, resources and persons between the community and the health system.</p>	<ul style="list-style-type: none"> <li>• Overall organizational leadership in chronic illness care</li> <li>• Organizational goals for chronic care</li> <li>• Improvement strategy for chronic illness care</li> <li>• Incentives and regulations for chronic illness care</li> <li>• Senior leaders are involved</li> </ul>	<p>Chronic care is addressed in the regional long-term planning strategy with dedicated resources and established accountability. There is an ongoing process of goal setting, measurement and evaluation. There are established incentives and regulations to motivate and empower providers to support goal attainment. Senior leaders visibly participate.</p>

Description of core elements	Structural component/criteria	Example
<p><b>1. Self-management/ Develop personal skills</b></p> <p><b>Effective self-management support can help patients and families cope with the challenges of living with and treating of chronic illness and reduce complications and symptoms.</b></p> <p>Effective self-management is very different from telling patients what to do. Patients have a central role in determining their care – one that fosters a sense of responsibility for their health. Use effective self-management support strategies that include assessment, goal setting, and action planning, problem-solving and follow-up. Organize internal and community resources to provide ongoing self-management support to patients. Patients develop personal skills to maintain their health and wellness.</p>	<ul style="list-style-type: none"> <li>• Assessment and documentation of self-management needs and activities</li> <li>• Self-management support activity (information, classes)</li> <li>• Addressing concerns of patients and families (peer support, groups)</li> <li>• Effective behaviour change interventions and peer support</li> </ul>	<p>Self-care is regularly assessed and recorded using a form linked to a treatment plan. Patient educators are trained in patient empowerment and behaviour change strategies, and they see most patients with chronic illness. Peer support and groups are strategies that are used.</p> <p>This would also include how information is provided to patients, their comfort and ease with navigating the health-care system, etc. Critical telephone numbers such as for the Telecare, should be conveniently available in multiple locations so patients do not have to search for the number. Using customer experiences to help map services are useful tools for better understanding the patient as consumer.</p> <p><b>New Brunswick initiatives:</b></p> <p><b>My Choices My Health: a six-session module on goal setting, action planning, managing common challenges in chronic disease</b></p> <p><b>My Care Anywhere, patient portal for chronic disease being piloted.</b></p> <p><b>Expanded Telecare activities</b></p> <p><b>Improved access to self and family resources to cope with children affected by Fetal Alcohol Spectrum Disorders (FASD)</b></p>
<p><b>2. Delivery system design /re-orient health services</b></p> <p><b>Evidence suggests that effective chronic illness management involves more than simply adding additional interventions to a system focused on acute care. It may necessitate changes to the organization of practice that affects care.</b></p> <p>The delivery of patient care requires determining what care is needed and clarifying roles and tasks to ensure the patient gets the care; making sure that all the clinicians who take care of a patient have centralized, up-to-date information about the patient’s status; and making follow-up a part of standard procedure. Clinical case management is available for complex patients. Care is culturally appropriate and offers a provision of clinical and curative services in an expanded, holistic mandate, where health, not illness underpins health-care services.</p>	<ul style="list-style-type: none"> <li>• Practise team functioning (team meetings, roles and accountability defined)</li> <li>• Practise team leadership (leader appointed)</li> <li>• Appointment system for scheduling and follow-ups</li> <li>• Follow-up</li> <li>• Planned visits for chronic illness care</li> <li>• Continuity of care (co-ordination between primary-care providers and specialists)</li> </ul>	<p>Teams are established, with regular team meetings and clearly defined roles that support patient self-management education, follow-up, resource allocation and co-ordination, etc. There is a team leader who is accountable. When possible care by multiple providers are coordinated in a single visit. Follow-up strategies are customized to best match with the patient. There is ongoing assessment, monitoring and preventive interventions. Care is actively co-ordinated among primary care, specialists and community partners.</p> <p><b>NB initiatives:</b></p> <p><b>Family practice teams in primary care settings.</b></p> <p><b>Expanded, additional CHC sites</b></p> <p><b>Methadone support for those with opioid addictions</b></p>

Description of core elements	Structural component/criteria	Example
		<p><b>Development of Restigouche Hospital Centre design to improve care of patient with mental disorders</b></p> <p><b>Improved mobile crisis intervention</b></p> <p><b>Evaluation and planning regarding provincial services for youth (CAPU, Pierre Caissie Centre)</b></p> <p><b>Integrated Service Delivery (Connecting the Dots)</b></p>

### 3. Decision support

**Effective chronic illness management programs assure that providers have access to evidence-based information necessary to care for patients. This includes evidence-based practice guidelines or protocols, specialty consultation, provider education and activating patients to make provider teams aware of effective therapies.**

Treatment decisions need to be based on explicit, proven guidelines supported by research evidence. Health-care organizations creatively integrate explicit, proven guidelines into the day-to-day practice of the primary care providers in an accessible and easy-to-use manner. Guidelines and information are shared with patients to encourage their participation. Providers are updated using proven educational approaches. Specialists are integrated to provide support and expertise as required. This includes health promotion professionals who assist the general practitioner with community-based best practices.

- Evidence-based guidelines
- Involvement of specialists in improving primary care
- Provider education for chronic illness care
- Informing patients about guidelines

The evidence-based guidelines are available and reinforced with provider education and behaviour change strategies. Specialist provides support to primary care delivery. Patients are also provided with specific material related to meeting guideline objectives.

**NB initiatives:**

**DM2 : research project exploring use of decision support tool and rapid access to specialist clinic**

**Purkinje electronic medical record (EMR) in CHC settings: expanded use to include clinical templates for best practices**

Description of core elements	Structural component/criteria	Example
<p><b>4. Clinical Information System</b></p> <p><b>Timely useful information about individual patients and populations of patients with chronic conditions is a critical feature of effective programs, especially those that employ population based approaches.</b></p> <p>A registry — an information system that can track individual patients as well as populations of patients — is a necessity when managing chronic illness or preventive care. This enables the provision of timely reminders, identifies specific target populations and facilitates individual care-planning. Ongoing surveillance of both disease and treatment as well as on population health behaviours related to being well and staying healthy is in place to inform ongoing quality improvement. This surveillance is able to take advantage of information systems within traditional health-care systems as well as in the community.</p>	<ul style="list-style-type: none"> <li>Registry (list of patients with specific conditions)</li> <li>Reminders to providers</li> <li>Feedback for the team</li> <li>Information about relevant subgroups of patients needing services</li> <li>Patient treatment plans (collaborative care plans)</li> </ul>	<p>There are registries, tied to guidelines which provide prompts and reminders about needed services. This includes specific reminders for the team on guideline adherence during the patient visit. The team receives ongoing feedback through a team leader on their performance and patient population profiles. Patient treatment plans are established including self management goals and are actively used in treatment.</p> <p><b>NB initiatives:</b></p> <p><b>OPOR implementation. Ongoing discussions regarding electronic medical record (EMR's)</b></p> <p><b>Patient portal roll out (My Care Anywhere).</b></p>
<p><b>Community</b></p> <p><b>Linkages between the health delivery system (or provider practice) and community resources play important roles in the management of chronic illness.</b></p> <p>To improve the health of the population, health-care organizations reach out to form powerful alliances and partnerships with provincial programs, local agencies, schools, faith organizations, businesses, and clubs. Partnerships are formed with community organizations to support and develop interventions that fill gaps in services. Patients are encouraged to participate in community programs. There is advocacy for policy changes to improve patient care.</p>		<p>There is active co-ordination among the health system, community service agencies and patients. This includes formal policies and support structures. The regional health authority health plan should recognize, assign resources and monitor activity directed at the major chronic illnesses</p> <p><b>NB initiatives</b></p> <p><b>Establishment of periodic meetings with non-governmental organizations and stakeholders</b></p> <p><b>Establishment of community advisory committees in community health centers (CHC's)</b></p> <p><b>Integration of non-governmental organizations in developing and extending My Choices My Health leadership training and recruitment</b></p>
<p><b>1. Build healthy public policy</b></p> <p>To support the development of government policy and legislation that reduces social inequities and health disparities. Ultimately policy development should enable healthy choices being the easy choices on individual, business, organizational and governmental levels.</p>	<ul style="list-style-type: none"> <li>Partnerships with community organizations</li> </ul>	<p>Development and implementation of policies designed to improve health such as:</p> <ul style="list-style-type: none"> <li>smoking bylaws;</li> <li>walking trails; and</li> <li>restricted alcohol access such as through limited happy hours costing.</li> </ul> <p><b>NB initiatives:</b></p> <p><b>Continued development of legislation directed at tobacco.</b></p> <p><b>Changes to young drivers legislation including increased time to qualify for unrestricted licence</b></p>

Description of core elements	Structural component/criteria	Example
<p><b>2. Create supportive environments</b></p> <p>This actively addresses health disparities related to housing, employment etc, as well as developing safe social environment through appropriate highways, public transportation, etc.</p>	<ul style="list-style-type: none"> <li>National, provincial, municipal planning actively targets community life that is stimulating, satisfying and enjoyable.</li> <li>Linking patients to outside resources</li> </ul>	<p>Maintaining disabled or seniors in their homes as long as possible, development of affordable, available public transportation systems, innovative employment companies</p> <p>Supporting peer support groups such as mental health activity centres.</p> <p><b>NB initiatives:</b></p> <p><b>Adoption of healthy menus in school cafeterias</b></p> <p><b>Modifications to long-term care</b></p> <p><b>Awareness campaigns (gambling, addiction social marketing campaign, suicide prevention)</b></p>
<p><b>3. Strengthen community action</b></p> <p>This actively engages community members in setting priorities and achieving goals that meet the needs of the population. Health-care providers can play an active role as advocates, particularly for disadvantaged populations.</p>	<ul style="list-style-type: none"> <li>Regional health plans that reflect co-ordination of chronic illness care</li> </ul>	<p>Safe affordable housing Development and support for community support groups that assist individuals living with chronic illnesses</p> <p><b>NB initiatives</b></p> <p><b>Development of a provincial diabetes task group to provide advice on a diabetes strategy</b></p> <p><b>Youth Engagement</b></p> <p><b>Consumer and family initiatives – (activity centres, Strengthening Families)</b></p>
<p><b>Overall integration of Chronic Care Model elements</b></p> <p>Effective systems of care integrate and combine all elements of the Chronic Care Model, ie., linking patients’ self management goals to information systems/registries.</p>	<ul style="list-style-type: none"> <li>Informing patients about guidelines</li> <li>Information system/registries</li> <li>Community programs (provide feedback to the system about patient’s progress)</li> <li>Organizational planning for chronic illness care (utilization data for planning)</li> <li>Routine follow-up for appointments, patient assessment and goal planning (case manager)</li> <li>Guidelines for chronic illness care shared with patients</li> </ul>	<p>Specific material is developed for patients, describing their role in achieving guideline adherence. The Information system monitors results with the goals of the comprehensive care plan. Reminders are generated for providers and patient regarding follow-up, etc. Community partners regularly update the team about ongoing improvements to best meet patient needs and further opportunities. There are resources and processes assigned to ensure change management, follow-up and co-ordination.</p>

The Expanded Chronic Care Model provides a simple yet robust framework to guide a chronic disease strategy for New Brunswickers. It creates a focus on optimal care that is achievable and sustainable, based on evidence and in the context of everyday life and primary health care. This system approach engages health services within the context of community and enables stakeholders to define how they will contribute to improved services and better outcomes. It empowers regional health authorities, primary-care providers, patients, non-government agencies and the government to work together, developing resources and building on existing infrastructure. It targets where infrastructure investments may be best positioned to achieve the long-term vision for a sustainable, first-class health-care system for a self-sufficient New Brunswick.

This speaks to the flexibility and responsiveness of the model to respond to the physical, social and political environment and successfully bridge the changing landscape of health services with patient/community health.

## ***Conclusion***

The development of a chronic disease management strategy that succeeds in renewing, revitalizing and sustaining excellence in health services for New Brunswickers can be attained through the adoption and implementation of the Expanded Chronic Care Model. We need to take advantage of lessons learned and acknowledge the overlapping nature of risk factors and the commonality of interventions. The Expanded Chronic Care Model and the supporting change management process have provided significant strategic benefit in jurisdictions across Canada. This model is consistent with the guiding principles that have been suggested by stakeholders and is supported by abundant research. This model provides an organizing framework within which we can improve chronic care in New Brunswick.

This framework is a starting point for a common vision. From that, additional work will be needed in collaboration with stakeholders to recommend a course of action based on what is already in place, best practices, and the model outlined in this document. Within the action plan, some components can be implemented within existing resources; others, however, will require improvements and investments in the system (eg., clinical information system, decision support tools for providers, training for providers and patients and others). The model helps to provide a blueprint to guide resource allocation, allowing decision-makers to develop action plans that include benchmarks and outcomes to guide ongoing quality improvement.

# Endnotes

- 1 <http://www.healthcouncilcanada.ca/docs/rpts/2007/outcomes2/Outcomes2PopulationPatternsFINAL.pdf>. This was collected through self-reported data in the Canadian Community Health Survey (Cycle 3.1). The respondents who reported were diagnosed with one or more of seven chronic health conditions: arthritis, cancer, chronic high blood pressure, mood disorders, cardiovascular disease, diabetes, COPD.
- 2 Province of New Brunswick, (2008.04) The Provincial Health Plan 2008-2012. p4.
- 3 [http://www.phac-aspc.gc.ca/ccdpc-cpcmc/topics/chronic-disease\\_e.html](http://www.phac-aspc.gc.ca/ccdpc-cpcmc/topics/chronic-disease_e.html)
- 4 WHO (2008) Global Strategy on Diet, Physical Activity and Health <http://www.who.int/dietphysicalactivity/publications/facts/riskfactors/en/index.html>
- 5 WHO (2008) Global Strategy on Diet, Physical Activity and Health <http://www.who.int/dietphysicalactivity/publications/facts/riskfactors/en/index.html>
- 6 Canadian Tobacco Use Monitoring Survey (CTUMS) 2007 [http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/research-recherche/stat/\\_ctums-esutc\\_2007/ann-table2-eng.php](http://www.hc-sc.gc.ca/hl-vs/tobac-tabac/research-recherche/stat/_ctums-esutc_2007/ann-table2-eng.php) .
- 7 <http://www.gnb.ca/0391/pdf/HEALTHPerformanceIndicators2004-e.pdf> p.39
- 8 <http://www.gnb.ca/0391/pdf/HEALTHPerformanceIndicators2004-e.pdf> p.36
- 9 Canadian Centre on Substance Abuse (2004) Canadian Addiction Survey <http://www.ccsa.ca/2004%20CCSA%20Documents/ccsa-004804-2004.pdf>
- 10 Personal Communication Marlien McKay DWCS (Statistics Canada, CCHC 3.1 Sub Sample File 2006)
- 11 Statistics Canada, CCHC Cycle 4.1, 2007.
- 12 WHO Chronic Diseases <http://www.who.int/infobase/reportviewer.aspx?rptcode=ALL&uncode=124&dm=24&surveycode=100152a1>
- 13 AGE STANDARDIZED MORTALITY RATE (ASMR) The mortality rates were standardized to the 1991 Canadian population age distribution. Because the incidence or mortality increases with age, the age-standardized rate allows populations with different age demographics to be more accurately compared.
- 14 Potential Years of Life Lost (PYLL) Last Updated: Jan. 24, 2006. Definition: An indicator of premature mortality (death before age 75), which gives greater weight to causes of death occurring at a younger age than to those at later ages. This measure is calculated by subtracting the actual age of death from 75, dividing the total potential years of life lost by the total population under age 75, and then presented as “years lost per thousand people”. NOTE: some “older” methods use age 70 for calculating years of life lost. By emphasizing the loss of life at an early age, PYLL focuses attention on the need to deal with the major causes of such early deaths – cancer, accidents and cardiovascular disease – to improve health status. PYLL has also been found to vary with characteristics such as sex, socio-economic status and place of residence. [http://www.umanitoba.ca/centres/mchp/concept/thesaurus/thesaurus\\_P.html#PYLL](http://www.umanitoba.ca/centres/mchp/concept/thesaurus/thesaurus_P.html#PYLL)
- 15 Cancer Prevention Policy Report (2007) [http://www.wcrf-uk.org/research/cp\\_policy\\_report.php](http://www.wcrf-uk.org/research/cp_policy_report.php)
- 16 Health Council of Canada (2007). Why Health Care Renewal Matters: Learning from Canadians with Chronic Health Conditions and Canadians . Toronto: Health Council. [www.healthcouncil-canada.ca](http://www.healthcouncil-canada.ca)
- 17 [http://www.health.gov.on.ca/transformation/fht/fht\\_mn.html](http://www.health.gov.on.ca/transformation/fht/fht_mn.html)
- 18 Group Health Centre, <http://www.ghc.on.ca/programs/content.html?slD=30> Dr. R. Wedell, (September 2008). Personal Communication
- 19 Conference proceedings From Ideas to Action, Improving Chronic Disease Management, (May 18, 2004) Summary of speech by Dr. Rafael Bengoa, director for management of chronic diseases, World Health Organization. [http://www.natpact.nhs.uk/eventmanager/uploads/cdm\\_event\\_\\_rafael\\_bengoa1.ppt#265,10,Slide 10](http://www.natpact.nhs.uk/eventmanager/uploads/cdm_event__rafael_bengoa1.ppt#265,10,Slide 10)
- 20 Institute of Medicine. (2001) Crossing the Quality Chasm: A new health system for the 21st century. Washington, DC: National Academy Press.
- 21 Schoen C., Osborn R., Huynh P.T., et al. Taking the pulse of health care systems: Experiences of patients with health problems in six countries. Health Affairs. November 2005; [Epub ahead of print]. <http://www.ihl.org/IHI/Topics/ChronicConditions/AllConditions/Literature/TakingthepulseofhealthcaresystemsExperiencesofpatientswithhealthproblemsinsixcountries.htm>



- 22 Leatherman S., Berwick D., Iles D., et al. The business case for quality: Case studies and an analysis. *Health Affairs*. 2003;22(2):17-30 [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list\\_uids=12674405&query\\_hl=3&itool=pubmed\\_docsum](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=12674405&query_hl=3&itool=pubmed_docsum)
- 23 [http://www.natpact.nhs.uk/eventmanager/uploads/cdm\\_event\\_\\_rafael\\_bengoa1.ppt#256,1](http://www.natpact.nhs.uk/eventmanager/uploads/cdm_event__rafael_bengoa1.ppt#256,1), Welcome to the National Event.
- 24 [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list\\_uids=16426280&query\\_hl=6&itool=pubmed\\_docsum](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list_uids=16426280&query_hl=6&itool=pubmed_docsum) Christian A.H., Mills T., Simpson S.L., Mosca L. (2006) Quality of Cardiovascular Disease Preventive Care and Physician/Practice Characteristics *J Gen Intern Med*. Jan. 20; [Epub ahead of print]
- 25 [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list\\_uids=15997043&query\\_hl=20&itool=pubmed\\_DocSum](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list_uids=15997043&query_hl=20&itool=pubmed_DocSum) Ducharme A., Doyon O., White M., Rouleau J.L., Brophy J.M. (2005) Impact of care at a multidisciplinary congestive heart failure clinic: a randomized trial. *CMAJ*. July 5;173(1):53-4.
- 26 [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list\\_uids=14581307&query\\_hl=20&itool=pubmed\\_DocSum](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list_uids=14581307&query_hl=20&itool=pubmed_DocSum) Young, W., Rewa, G., Goodman, S.G., Jaglal, S.B., Cash, L., Lefkowitz, C., Coyte, P.C. (2004) Evaluation of a community-based inner-city disease management program for postmyocardial infarction patients: a randomized controlled trial. *ACP J Club*. July-August;141(1):4.
- 27 [http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list\\_uids=16046654&query\\_hl=4&itool=pubmed\\_DocSum](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=Abstract&list_uids=16046654&query_hl=4&itool=pubmed_DocSum) Pham H.H., Schrag D., Hargraves J.L., Bach P.B. (2005) Delivery of preventive services to older adults by primary care physicians. *JAMA*. July 27;294(4):473-81.
- 28 <http://www.ihl.org/ihl>
- 29 <http://www.improvingchroniccare.org/change/index.html>
- 30 [http://www.dh.gov.uk/NewsHome/ConferenceAndEventReports/ConferenceReportsConferenceReportsArticle/fs/en?CONTENT\\_ID=4082916&chk=M/ukGs](http://www.dh.gov.uk/NewsHome/ConferenceAndEventReports/ConferenceReportsConferenceReportsArticle/fs/en?CONTENT_ID=4082916&chk=M/ukGs)
- 31 The structural component/criteria have been borrowed from the ACIC (Assessment of Chronic Illness Care) tool on Improving Chronic Illness Care website based on the Wagner Chronic Care Model <http://www.improvingchroniccare.org/tools/acic.html>