Population Patterns of Chronic Health Conditions, Co-morbidity and Healthcare Use in Canada: Implications for Policy and Practice

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Abstract

Managing chronic health conditions is a daily reality for approximately nine million Canadians, and the numbers of people affected are expected to increase as our population ages, particularly if risk factors that contribute to poor health continue to rise. These conditions impact health and well-being and represent a significant, and growing, healthcare and economic burden. The Health Council of Canada has focused its attention on the prevention and management of chronic conditions to encourage discussion of the changes to public policy, healthcare management and health services delivery required to improve health outcomes for Canadians.

In December 2007, the Health Council released a report that described the health and healthcare use among Canadians who have chronic conditions as well as their self-reported experiences with chronic illness care. It highlighted initiatives under way in all jurisdictions to improve the situation. In order to inform that report, we analyzed population-based survey data from the Canadian Community Health

Survey to report on patterns of health and healthcare use by community-dwelling youth and adults who have one or more of seven high-prevalence, high-impact chronic conditions.

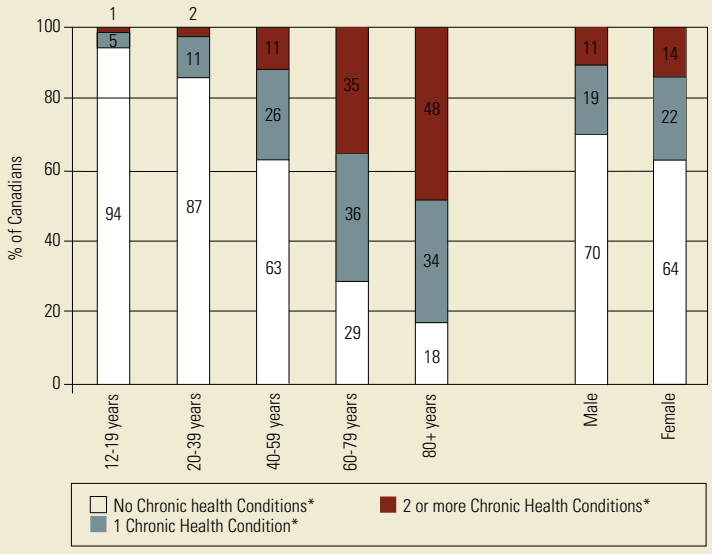
We demonstrated that the vast majority of people with chronic conditions have a regular medical doctor and visit community-based doctors and nurses frequently. Not surprisingly, people with chronic conditions use healthcare services more often and more intensively than do those without, and the intensity of service use increases as the numbers of conditions go up. The 33% of Canadians with one or more of seven chronic conditions account for approximately 51% of family physician/general practitioner consultations, 55% of specialist consultations, 66% of nursing consultations and 72% of nights spent in a hospital. This information highlights the imperative of immediate, comprehensive and sustained attention to undertake proven strategies to delay or prevent the onset of chronic conditions and to improve the quality of primary healthcare to prevent complications, reduce the need for more expensive health services and secure a better quality of life for Canadians.

Canada and abroad, there is growing awareness of the increase in prevalence of chronic health conditions and the impact of these conditions on health status and healthcare utilization. There is also increasing evidence that growth in population prevalence is preventable and that chronic illness care can be improved to reduce the health and economic impacts of these conditions. Chronic conditions will detract from the quality of life for many Canadians and will cost the healthcare system dearly in the coming years unless we act now to prevent the onset of these conditions and better manage the needs of these people to minimize avoidable exacerbations or complications.

Guided by these concerns, the Health Council of Canada has focused its attention on prevention and management of chronic conditions to encourage discussion of the changes to public policy, healthcare management and health services delivery required to improve health outcomes for Canadians. This work began with the release of the report *Why Health Care Renewal Matters: Lessons from Diabetes* (Health Council of Canada 2007b), which showed the impact of diabetes and that too few people with this chronic condition receive timely, recommended care to maintain their health and prevent complications. The report highlights examples of better approaches to health promotion and chronic illness care.

In December 2007, the Health Council (2007a) released a report that describes the experiences that Canadians with chronic conditions have with healthcare and highlights initiatives under way to ensure that public policy and healthcare delivery improve the situation. To support the case for focused attention and concerted action, this project was undertaken to determine the prevalence and impacts of chronic conditions on health and healthcare in Canada. Our results are presented here, and readers are encouraged to review the Health Council's full report (www.healthcouncilcanada.ca).

Figure 1. Chronic health conditions* among youth and adults in Canada, 2005



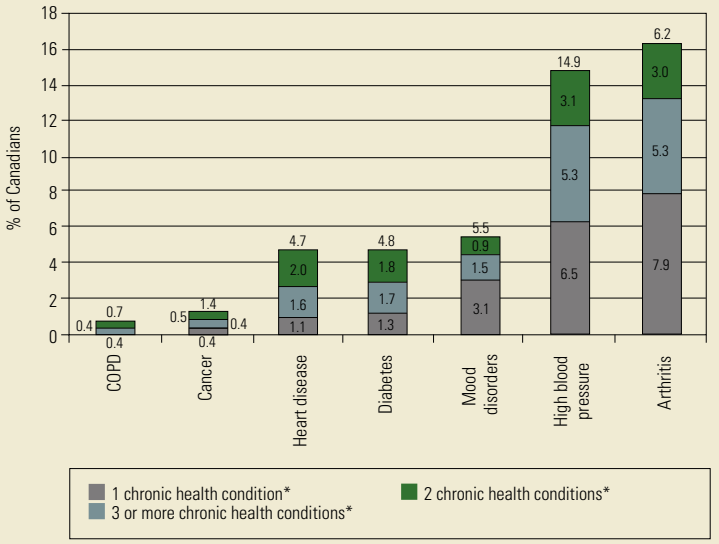
*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease, diabetes, heart disease, high blood pressure and mood disorders

Source: Statistics Canada (2005).

Methods

Data were drawn from the 2005 Canadian Community Health Survey (CCHS Cycle 3.1), a comprehensive survey of health, health behaviours and health services utilization conducted by Statistics Canada (2005). The CCHS is a cross-sectional survey of a representative sample of community-dwelling youth and adults 12 years of age or older. The survey does not include people who live in nursing homes or long-term care facilities;

Figure 2. Prevalence of select chronic health conditions* among youth and adults in Canada, 2005



*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure and mood disorders.
Source: Statistics Canada (2005).

nor does it include residents of Native reserves, Crown lands or some remote areas, full-time members of the Canadian Armed Forces or civilian residents of military bases. The CCHS offers the only pan-Canadian population-based estimate of multiple chronic conditions (co-morbidity).

Our analyses focused on individuals who report that they were diagnosed by a health professional as having one or more of seven high-prevalence or high-impact chronic health conditions: arthritis, cancer, chronic obstructive pulmonary disease, diabetes, heart disease, high blood pressure and mood disorders (Broemeling et al. 2005). We report on prevalence rates for specific chronic conditions as well as the prevalence of co-morbidity.

CCHS data were also used to describe healthcare service use, including the proportion of people who reported having a regular family doctor, having at least one overnight stay in a hospital or nursing home or using publicly funded home care services during the prior year. We also report on the use of nursing services, family physician/general practitioner (GP) consultations and consultations with specialists (other doctors such as surgeons, allergists, orthopedists, gynecologists and psychiatrists). We report crude rates, so rates of different groups are not adjusted to account for age or gender differences.

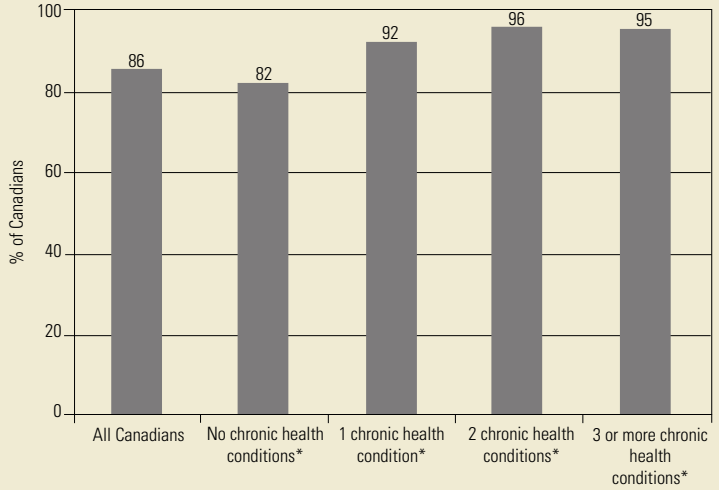
Healthcare use is the result of the combined morbidity experienced by individuals. We recognize that respondents to this survey may have other chronic conditions not captured in our data and that undiagnosed or unreported conditions could have a substantial impact on health status and the use of health services (Broemeling et al. 2005). In addition, the survey relies on the respondents' ability to recollect a diagnosis. These estimates do not include people who were in hospital, long-term care or other institutions at the time of the survey. We did not disaggregate service use to identify the impact of specific select chronic health conditions or whether service use was associated with other conditions experienced by individuals. For these reasons, the actual prevalence of specific conditions is likely higher than we report and we may underestimate the overall impact of chronic conditions.

Results

Prevalence of Select Chronic Health Conditions

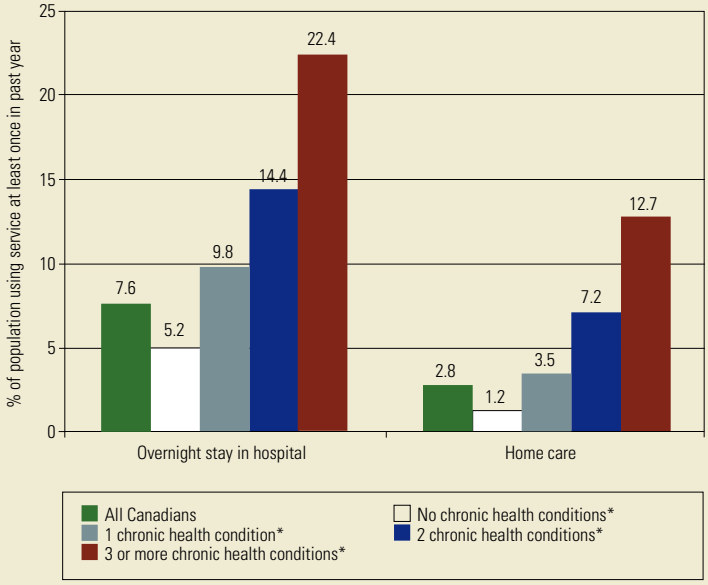
Chronic conditions affect at least one third of Canadians. In 2005, 33% of youth and adults reported having at least one select chronic condition (N = 8.894 million). The proportion of people with chronic conditions increases steadily

Figure 3. Canadians reporting having a regular medical doctor, 2005



*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure and mood disorders.
Source: Statistics Canada (2005).

Figure 4. Use of hospital or home care services† by Canadians, 2005



*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease, diabetes, heart disease, high blood pressure and mood disorders.

†Hospital overnight stays are reported for people 12+ years of age; home care use is reported for people 18+ years of age. Home care services include publicly funded home care such home health, homemaker or other home support services. Healthcare use is for any reason or diagnosis.

Source: Statistics Canada (2005).

with advancing age. Only 13% of adults 20 to 39 years of age report having one or more select chronic conditions, but this figure increases to 71% of adults 60 to 79 years of age and 82% of adults 80 years and older (Figure 1). Prevalence rates for specific chronic conditions vary, with some conditions being very common among adults. For example, arthritis and high blood pressure are high-prevalence conditions reported by 15–16% of youth and adults (Figure 2).

Prevalence of Multiple Chronic Health Conditions

Co-morbidity is a common experience. Among those with select chronic conditions, more than one third of adults and more than one half of seniors report co-morbidity. The proportion of people with co-morbidity increases consistently with advancing age. Among people with chronic conditions, 49% of adults 65–79 years of age and 59% of adults 80 years and older report having at least two select conditions. Women are more likely than men to report having at least two select conditions (see Figure 1).

The prevalence of co-morbidity also varies across specific chronic conditions. More than one half of people with high blood pressure or arthritis had other select conditions, and approximately three quarters of people with diabetes or heart disease had two or more select conditions (see Figure 2). Common co-occurring conditions are evident. A number of people with heart disease or diabetes also report having high blood pressure or arthritis, reflecting the high prevalence overall of high blood pressure and arthritis in Canada (Health Council of Canada 2007a).

Use of Healthcare Services

People with one or more select chronic conditions are more likely to report having a regular medical doctor (92–96%, depending on the number of conditions they have) than are people with none of these conditions (82%). Among youth and adults who have a single select chronic condition, 89–95% have a regular medical doctor, higher than the national average of 86% (Figure 3).

In 2005, almost 8% of community-dwelling youth and adults reported having an overnight hospital, nursing home or convalescent stay. As mentioned, these results reflect the use of services for any reason or diagnosis. People with one chronic condition are twice as likely to have a hospital stay (10%) as people with no conditions (5%). The likelihood of an overnight stay increases with the number of conditions; people with three or more conditions are more than four times as likely to be admitted to hospital (22%) as those with none (Figure 4).

Although fewer people report receiving publicly funded home care services than hospital stays, the likelihood of receiving home care also increases with the number of conditions. People with three or more select chronic conditions (13%) are 10 times as likely to use publicly funded home care as people with no conditions (1.2%) (see Figure 4).

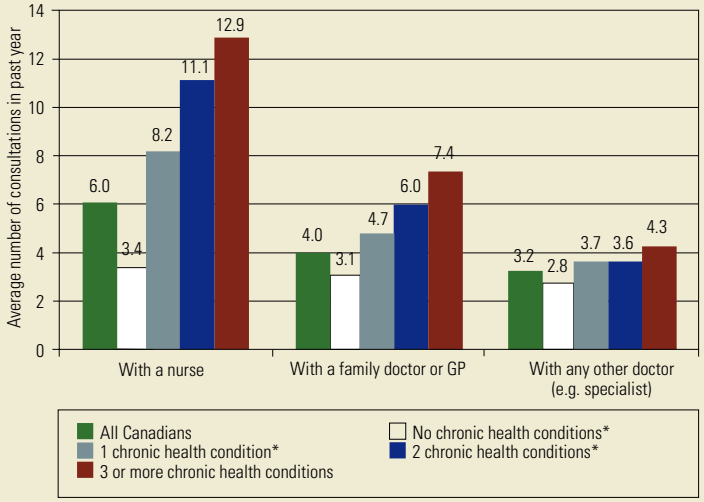
Not only are people with chronic conditions and co-morbidity more likely to use hospital and home care services, but when they use services they typically use more services than patients without these conditions. People with select chronic conditions who used services were asked how many times – not including when they spent the night in a hospital, nursing home, or convalescent home – they spoke with a nurse, family physician or GP or any other doctor (such as a specialist) in the past year, regardless of the reason or diagnosis (Figure 5).

The gradient effect in health service use was most apparent for nurse consultations, followed by GP consultations; notably less difference was reported for consultations with other doctors. For example, patients with a single chronic condition used approximately 2.5 times as many nursing consultations, 1.5 times as many GP consultations and 1.3 times as many other doctor consultations as did people with no conditions. By comparison, patients with three or more conditions used almost four times as

many nursing visits, more than twice as many GP consultations and about 1.5 times as many other doctor consultations as did people with no conditions.

This gradient effect was also apparent for patients with a hospital overnight stay. Patients with a single condition stayed in hospital almost twice as many nights as did those with no conditions, and patients with three or more conditions used three times as many nights (Figure 6).

Figure 5. Patient consultations† with nurses, family physicians or general practitioners (GPs) and specialists, 2005

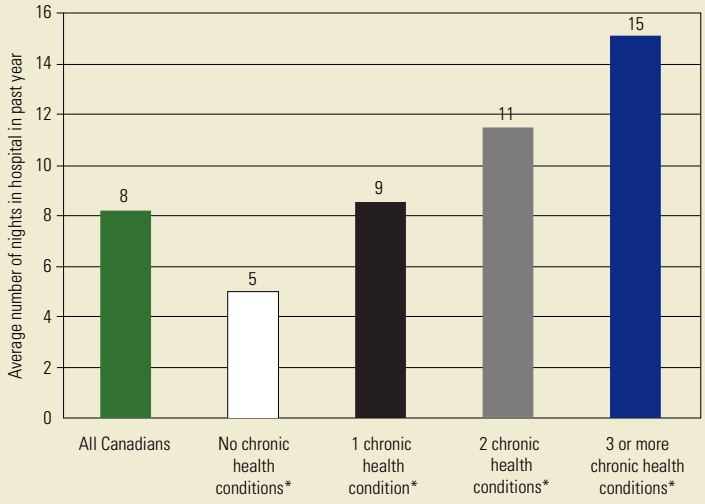


*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure and mood disorders.

†Consultations for any reason or diagnosis. Excludes consultations during hospital overnights.

Source: Statistics Canada (2005).

Figure 6. Average number of hospital overnight stays,† 2005



*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure and mood disorders.

†Hospital stays for any reason or diagnosis. Source: Statistics Canada (2005).

Relative Impact of Chronic Health Conditions

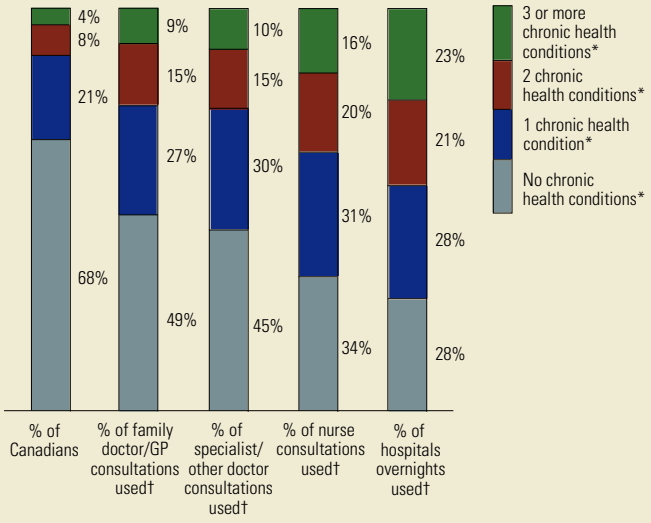
Comparing service use to prevalence rates of chronic health conditions across population groups highlights the high proportion of services used by those with chronic conditions. Interestingly, one third of people with one or more select chronic conditions reported using approximately 51% of GP consultations, 55% of specialist consultations, 67% of nursing consultations and 72% of nights spent in a hospital (Figure 7). People with two or more conditions represented 12% of the population but accounted for almost one half of hospital days (44%), more than one third of nurse consultations (36%) and one quarter of GP (24%) and specialist consultations (25%) (see Figure 7). Clearly, chronic conditions are key drivers of healthcare services use.

Discussion

Managing chronic health conditions is a daily reality for about nine million Canadians – at least one third of youth and adults and more than three quarters of seniors report having one or more conditions. The number of people with chronic conditions is expected to increase as our population ages, particularly if risk factors that contribute to poor health continue to rise. Our findings support other evidence that chronic conditions represent a significant and growing health and healthcare burden in Canada and abroad.

People with chronic conditions are higher users of healthcare services than are those without long-term health problems, and the use of care increases as the number of conditions goes up. More than one third of youth and adults in Canada and more than one half of seniors who have chronic conditions report having more than one long-term health problem. There are also certain conditions such as hypertension and arthritis that commonly co-occur with other conditions. All this suggests that (1) chronic care management strategies need to be designed to address co-morbidity so that Canadians can receive comprehensive services from their regular medical doctor or place of care and (2) strategies that focus on targeting services to patients who have a specific chronic condition may risk not recognizing the constellation of co-morbid

Figure 7. Relative impact of chronic health conditions on service use, 2005



*Select chronic health conditions include arthritis, cancer, chronic obstructive pulmonary disease, diabetes, heart disease, high blood pressure and mood disorders.

†Consultations and hospital overnights are for any reason or diagnosis. Healthcare professional consultations exclude those that occurred during hospital overnights.

Source: Statistics Canada (2005).

conditions and not delivering recommended care to people with co-morbidities. Importantly, the vast majority of people who have chronic conditions report having a regular medical doctor – this suggests that our healthcare system is more likely to offer a regular source of comprehensive and patient-centred primary healthcare to the people who most need it.

People with chronic conditions use a lot of healthcare services. This is encouraging if that care is intended to prevent exacerbations and avoid complications; it is not encouraging if that care is to treat avoidable situations. We found that people with chronic conditions are frequent users of community-based nursing and family physician services. We also found that the use of these services is positively related to co-morbidity – use increases as the number of chronic conditions goes up. The strongest gradient was for nursing consultations, which may suggest greater equity in use of nursing services, on the basis of need for care, than of other healthcare services. High rates of nursing consultations, particularly among those with high co-morbidity, highlights the important role of these providers as part of a primary healthcare team that delivers disease prevention and chronic illness care.

This gradient effect is particularly apparent for hospital overnight stays – use increases as the number of chronic conditions goes up. For example, patients with three or more select chronic conditions used three times as many hospital overnight stays as did patients with no conditions and about 1.5 times as many stays as those with single conditions. Our findings parallel those of prior research that have shown that people with multiple chronic conditions are more likely to use hospital services, to use more hospital days including alternate level of care days and to experience preventable hospitalizations or ambulatory care sensitive conditions (Broemeling et al. 2005; Niefeld et al. 2003; Wolff et al. 2002). If hospital care is to treat avoidable exacerbations or complications, then efforts are needed to slow disease progression and prevent the need for this type of expensive care.

One of the primary reasons that people who have chronic diseases tend to have several is that these conditions have common risk factors. The World Health Organization (WHO) estimates that globally 90% of type 2 diabetes, 80% of coronary heart disease and 33% of cancers could be avoided with better nutrition, increased physical activity and the elimination of smoking. It also estimates that at least one third of the combined health and economic burdens of chronic diseases is caused by tobacco, alcohol, high blood pressure, high cholesterol and obesity (WHO 2002).

Unless we act now to better prevent and manage chronic conditions, these conditions will have a substantial impact on use of healthcare services and health status of Canadians in the coming years. In terms of prevention, WHO accumulated evidence from international research and concluded that, for many of the risk factors for chronic disease, negative impacts can be reversed quickly, most benefits will accrue within a decade and even modest changes in risk factor levels can bring about large improvements in people's health (WHO 2002, 2003).

In the Health Council of Canada's report (2007b) *Why Health Care Renewal Matters: Lessons from Diabete*s, the council demonstrated that a large proportion of Canadians have risk factors for chronic disease. For example, nearly 60% of adults and more than one in four children in Canada are either overweight or obese. More and more people are becoming overweight, and obesity has risen in every province over the past 20 years. A sedentary lifestyle is linked to obesity, and close to half of Canadians are not active enough. The percentage of adults who could be considered to have inactive lifestyles ranges from 40 to 55% across provinces and territories. Overall, levels of physical activity in Canada are far too low to maintain good health, but the variation across the country also suggests that less active communities can do better – they should be able to achieve at least what the most active areas have. Rates of obesity and chronic disease also vary across Canada's regions;

communities that have higher rates can achieve lower rates, as others have done.

In terms of services to people who have chronic diseases, it is important to ensure access to patient-centred care that delivers services that experts recommend to monitor and manage physiological processes and to support self-management. This type of care can slow the rate of disease progression and prevent complications among those with chronic conditions. Unfortunately, our healthcare services have been described as having a "find it and fix it" episodic orientation that does not match the ongoing care management needs of those with chronic conditions, who need a "find it, manage it, prevent it approach" (Health Council of Canada 2007a).

In its December 2007 report (2007b), the Health Council of Canada presents a case for immediate, comprehensive and sustained action to promote healthy living, prevent long-term health problems and improve chronic illness care. Changing how the healthcare system works can change health outcomes. In this report, the Health Council turned to Canadians who live with chronic health conditions to learn from them about their experiences with care, and it turned to governments to learn about activities under way to improve care and prevent chronic illness.

To inform that report, we used information from the 2005 CCHS of 130,000 adults to learn about the health of Canadians and how chronic health conditions are associated with the use of healthcare. The Health Council also hosted in-person dialogues and online activities to hear from a diverse group of close to 2,000 Canadians with chronic conditions. It also commissioned a telephone survey of nearly 2,200 Canadians to learn more about their experiences with chronic illness care and worked with several other organizations to ask 3,000 Canadians and 9,000 adults in six other countries about their experiences with chronic illness care.

Results presented in this article reflect Canadians' experiences as reported in 2005 and do not reflect the impact of changes now currently under way in the healthcare system. It will take time before we see the effects of current reforms on the health of Canadians and their subsequent use of healthcare. But, we can use these findings as a benchmark against which to compare how well we do in the future as a nation to realize the first ministers' vision to promote healthy living and healthcare renewal in Canada.

The first ministers have committed to investments in primary healthcare delivery through teams made up of a range of professionals, information technology to streamline the flow of vital information for patients and their care providers, initiatives to prevent chronic conditions and programs to help patients with chronic disease have the best possible quality of life. The national challenge is to make their vision a reality for all Canadians. The lessons we learn from people with chronic conditions show us in human terms why healthcare renewal is important. HQ

Acknowledgements

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For more information and commentary by the Health Council, please see the full report, available at www.healthcouncilcanada.ca.

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