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February 2009

The Honourable Leona Aglukkaq
Minister of Health
House of Commons
Ottawa, Ontario  K1A 0A6

Dear Minister Aglukkaq,

As Chair of the Canadian Heart Health Strategy and Action Plan Steering Committee, it is my privilege to submit our final Strategy document, Building a Heart Healthy Canada, and its companion Action Plan.

As the leading cause of death and hospitalizations among Canadians, cardiovascular disease is a huge health burden, and, at an annual cost of more than $22 billion, treating those who suffer from it is a major strain on our economy and governments. Fortunately, as this Strategy explains, we have a major opportunity to prevent premature cardiovascular disease, and, for those who do develop heart disease and stroke, there are means to markedly limit personal suffering. Importantly, doing what we know to prevent cardiovascular disease will also impact favourably on other chronic diseases that share common risk factors.

The Government of Canada requested this Strategy in October 2006, and our 29-member Steering Committee worked diligently to propose six key recommendations to make Canada a heart healthy nation. We have involved over 100 expert volunteers and consulted with over 1500 stakeholders to ensure that our Strategy is comprehensive, practical and sensitive to regional differences.

We believe that Building a Heart Healthy Canada, and its companion Action Plan, can serve as a pan-Canadian road map for partners to tackle heart disease and stroke. We encourage the Government of Canada to lead the way by adopting this Strategy as the basis for investment in Canada’s heart health – an investment that will yield significant financial and health benefits year after year.

Respectfully submitted,

Eldon R. Smith, oc, md, frcpc
Chair, Canadian Heart Health Strategy and Action Plan
The Canadian Heart Health Strategy and Action Plan (CHHS-AP) was developed over a two-year period from fall 2006 to fall 2008 as an independent, stakeholder-driven process under the leadership of the CHHS-AP Steering Committee. The work of the Steering Committee could not have been completed without the efforts and support of many individuals and organizations from across the country. The Chair and members of the Steering Committee wish to express their profound appreciation to the more than 1500 individuals who contributed to the development of the CHHS-AP, including:

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- the three lead organizations: the Heart and Stroke Foundation of Canada; the Canadian Cardiovascular Society; and the Canadian Institutes of Health Research – Institute of Circulatory and Respiratory Health, and the members of their staff who provided support to the CHHS-AP Management Group: Louise Marcus, Stephen Samis and Fiona Webster (until September 2007). Valuable input was also provided by the CEOs of the provincial Heart and Stroke Foundations

- the Public Health Agency of Canada, which funded the development of the Strategy, and the Agency staff who acted as resource people during the development of the Strategy

- members of the Integration and Partnership Committee: Catherine Donovan, Kelly McQuillen, Wayne Putnam, Bonnie Hostrawser and Peter Sargin

- other federal government departments and national agencies, including Health Canada, Statistics Canada, the Canadian Institute for Health Information, Canada Health Infoway and the Canadian Institutes of Health Research

- the provincial and territorial Deputy Ministers of Health and their officials

- members of the Federal/Provincial/Territorial Expert Group on Chronic Disease and Injury Prevention and Control, and Population Health Promotion Expert Group

- representatives from many national, provincial/territorial and regional/local non-governmental organizations, professional bodies and industry, as well as individual health professionals and citizens who participated in the CHHS-AP’s consultations

- representatives of other national chronic disease strategies who met with members of the CHHS-AP Management Group to discuss opportunities for synergy and collaboration, including the Canadian Stroke Strategy, the Canadian Diabetes Strategy, the Canadian Partnership Against Cancer, the National Lung Health Framework and the Mental Health Commission

- and a very special thanks to Senator Wilbert Keon for his support throughout the process.
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By 2030, 23.4 million people will die from heart disease and stroke compared with 11.8 million from cancer. (World Health Organization, 2008) Indeed, four chronic diseases – heart disease and stroke, cancer, chronic obstructive lung disease and diabetes – now account for 60% of all deaths worldwide and, by 2020, are expected to account for 73% of deaths and 60% of the global burden of disease. (World Health Organization, 2002)

Canada has a pan-Canadian strategy for cancer prevention and control, a strategy for diabetes prevention and care and a framework for lung health. Canada now needs a pan-Canadian strategy for heart disease, stroke and other vascular diseases.

Time to Act

Heart disease, stroke and other vascular diseases are Canada’s number one public health threat. Cardiovascular and cerebrovascular diseases (CV diseases) kill more Canadians each year than any other illness. (Public Health Agency of Canada, 2009) Even though more Canadians now survive a heart attack, many go on to develop chronic heart failure, which deprives them of years of quality life.

Nine out of 10 Canadians over age 20 have at least one risk factor for CV diseases, one-third have three or more risks – and the risks increase as we age. One in every 20 Canadians reports being diagnosed with a CV disease, but the actual number with undetected heart disease is much higher. (Manuel et al., 2003) CV diseases are a particular problem for Aboriginal/indigenous peoples in Canada, who develop and die from CV diseases at twice the rate of the rest of the population. Over the last few years, Canada has seen a dramatic increase in physical inactivity, obesity, diabetes and hypertension – conditions that lead to CV diseases.

Heart disease and stroke are also a significant threat to Canada’s economic well-being. These CV diseases cost Canada over $22 billion a year in health care and lost productivity. In terms of hospital costs, in 2004/05, three of the top four most expensive health conditions in Canada were CV diseases; given the expected increase in the disease burden, these costs can only grow.

We are faced with a looming epidemic. If we do not act now, the situation will only get worse.
The cardiac care system is not as efficient or effective as it should be. Most patients do not have the skills, information or support from their health care providers to be active partners in their own care, and many find it difficult to move from one level of service or provider to another. Some Canadians are still waiting too long for some cardiac procedures. Too many people with heart failure are being readmitted to hospital, which means they are not receiving the best follow-up care. There are also inequities in access to cardiac care. The quality and consistency of cardiac services varies considerably across the country. Practice does not always reflect the most recent evidence.

Heart disease and stroke are also Canada’s number one health opportunity because up to 80% of premature CV diseases are preventable. Unlike the situation with some other diseases where the solutions are unclear, the situation with CV diseases is that we already have much of the knowledge required to prevent them but we are not using what we know. Moreover, according to a recent U.S. study, prevention makes economic sense; every $1 invested in effective prevention programs that increase physical activity, improve nutrition and reduce smoking – only three of the key risk factors for CV diseases – can save $5 in health care costs. (Trust for America’s Health, 2008)

Investing in CV health now will not only lead to better health and longer lives for Canadians, it will also improve our productivity and decrease health care costs. The cost of not investing now means more Canadians living with a debilitating disease, more hospitalizations, more deaths and spiralling health care costs: a future that is unnecessary and unacceptable. By preventing CV diseases and providing more timely, integrated and patient-centred care for those with CV disease, we can give Canadians back years of quality life while making our health system more sustainable.

It is possible to “fix” the problem of CV diseases in Canada, but to do so we need to start now down the right path. CV diseases do not need to be the number one problem! We already know how to prevent and treat most CV diseases, and we’re learning more all the time. But the solutions to CV disease lie both within and outside the health care system. They involve changes in our society – in the way we live and view health – as well as changes in the way we provide care. They require the action and commitment of all levels of government, society, the health system and Canadians – and they require a long-term commitment similar to the more than 20 years that our country has devoted to reducing smoking.

Developing the Strategy
The Canadian Heart Health Strategy and Action Plan (CHHS-AP) was developed over a period of two years by a Steering Committee of 29 experts, led by Dr. Eldon Smith and supported by a small secretariat based at the offices of the Heart and Stroke Foundation of Canada and the Canadian Cardiovascular Society. In the process of developing the plan, the Chair and Steering Committee consulted with over 1500 people, including Deputy Ministers of Health and other representatives of federal, provincial and territorial governments, health care organizations and providers, the public, other chronic disease strategies, and the food, pharmaceutical, medical devices and insurance industries. The development of the CHHS-AP was funded by the federal government, but its recommendations are directed to all levels of government, all parts of Canadian society and all Canadians.

The strategy looks beyond “heart health.” Although this plan is called the Canadian Heart Health Strategy and Action Plan, it goes well beyond what Canadians think of as “heart health.” Heart disease belongs to a family of diseases known as cardiovascular diseases that – along with cerebrovascular disease (stroke) – belong to an even broader group called “vascular diseases.” Vascular diseases affect blood vessels throughout the body, restricting blood flow and damaging organs such
as the heart through heart attacks or heart failure, or the brain through a stroke. Vascular diseases can also affect the kidneys and legs, and can cause dementia and blindness.

The Strategy recognizes the importance of preventing all vascular diseases – regardless of the organ affected. For purposes of this document, the term “CV diseases” is used to describe the full range of cardiac and vascular diseases. Preventing CV diseases not only will reduce heart disease and stroke but also will have a positive impact on other common chronic illnesses.

Vision

The CHHS-AP Steering Committee believes that we have within our grasp the knowledge and skills to create a much brighter, heart healthy future for Canadians – one in which:

Citizens have the knowledge, resources and support they need to reduce their risk of CV diseases and other chronic illnesses, and lead longer, healthier lives.

Governments, the health care system, the private sector, voluntary and community organizations, and individuals work together to create environments and services that promote and enhance CV health.

Patients are active, informed partners in their own health and care. Interprofessional teams of health care providers have the information, skills and tools to promote health, prevent CV diseases, and provide timely, comprehensive, integrated, patient-centred care for Canadians with heart and vascular disease.

Canada is recognized around the world as a productive, economically competitive and heart healthy nation.

Targets

The CHHS-AP sets a number of ambitious but achievable targets for prevention and care of CV diseases.

BY 2020:

1/ Decrease the annual mortality rate from CV diseases by 25% (from 227/100,000 population in 2004 to 171/100,000).

2/ Decrease the burden of CV diseases in the Aboriginal/indigenous population to the same level as in other Canadians.

3/ a Decrease the prevalence of hypertension in adult Canadians aged 18-74 years by 32% (from 22% in 1992 to 15%).

b Increase the proportion of adult Canadians with hypertension who are aware of their condition by 64% (from 58% in 1992 to 95%).

c Increase by six-fold the proportion of adult Canadians with hypertension treated to recommended targets (from 12.1% in 1992 to 75%).

4/ Decrease the risk-adjusted 30-day in-hospital mortality rate from heart attacks by 32% (from 10.3% to 7%).

5/ Decrease the risk-adjusted 30-day in-hospital mortality rate from stroke by 25% (from 18.2% to 13.6%).

6/ Decrease the age-standardized number of hospitalizations per year for treatment of heart failure by 25% (from 132/100,000 population in 2005/06 to 98/100,000).

7/ Decrease the age-standardized number of hospitalizations per year for treatment of acute stroke by 25% (from 95/100,000 population in 2005/06 to 71/100,000).

8/ Have CV risk assessments performed on 90% of Canadians aged 45 years and older within the previous five years.

9/ Work with others to reduce the overall smoking rate by 25%.
Abnormal levels of blood cholesterol and other lipids remain a major risk factor for CV diseases. Unfortunately, no population-based measures of lipids are yet available in Canada, so a target cannot be set at this time. However, they are expected soon, and once available a target can be set. In the meantime, aggressive measures to improve this risk factor are encouraged as part of the Strategy.

By 2015, achieve the following targets by working with others who have set these targets:

- Increase the proportion of Canadian children and adults eating at least five servings of vegetables and fruit per day by 20%.
- Increase the proportion of Canadian children and adults who are physically active by 20%.
- Decrease the rate of Canadian adults who are overweight/obese by 20% and the rate of childhood obesity from 8% to 5%.

**Recommendations**

To build a heart healthy Canada, we need a comprehensive approach that addresses not only the clinical risks, such as high blood pressure, high cholesterol, obesity and diabetes, but also the environments where people live, learn, work and play. Supportive environments can make the healthy choice the easy choice – for all Canadians. To create healthy environments, Canada can and should use a combination of education, legislation, regulation and policy to promote healthy eating and physical activity, to reduce smoking and to address the underlying “upstream” social inequities that affect health.

To achieve its vision, the CHHS-AP makes six key recommendations:

1/ Create Heart Healthy Environments.
3/ End the CV Health Crisis Among Aboriginal/Indigenous Peoples.
4/ Continue the Reform of Health Services – Provide Integrated, Patient-Centred Cardiovascular Care.
5/ Build the Knowledge Infrastructure to Enhance Prevention and Care.
6/ Develop the Right Service Providers With the Right Education and Skills.

Although the same strategies can be used to collect data on and prevent all vascular diseases, different skills and services are required to treat each vascular disease depending on the organ of the body affected. Because the causes of many CV diseases are the same but the treatments are different, the CHHS-AP recommendations for prevention and knowledge infrastructure are designed to help reduce all CV diseases. The care recommendations, on the other hand, focus primarily on the diagnosis and treatment of cardiac diseases, including congenital, heart muscle and heart valve diseases. For cerebrovascular diseases, the Heart and Stroke Foundation of Canada and the Canadian Stroke Network have developed the Canadian Stroke Strategy to guide stroke care and rehabilitation, which is now being implemented in many parts of the country.
Supportive environments can make the healthy choice the easy choice – for all Canadians. To create healthy environments, Canada can and should use a combination of education, legislation, regulation and policy to promote healthy eating and physical activity, to reduce smoking, and to address the underlying “upstream” social inequities that affect health. Many of the “upstream” determinants of health require action beyond the health care system and the Canadian Heart Health Strategy and Action Plan. Several provincial governments are implementing whole-of-government approaches to policy development, but solving problems like poverty and food insecurity will require significantly more intersectoral leadership and action.

A/ Socio-economic Determinants of Health

Although the focus in the health system tends to be on behavioural risk factors for CV disease – such as poor diet, lack of exercise and smoking – the CHHS-AP recognizes that these determinants are in fact greatly influenced by the “upstream” socio-economic determinants of health. We also acknowledge the huge opportunity to prevent CV and other chronic diseases by addressing these broader societal issues. To achieve success in this area requires broad intersectoral action, leadership and the involvement of all levels of governments, using whole-of-government approaches within each level of government, working collectively with the volunteer sector, industry and society in general.

The CHHS-AP Steering Committee anticipates the final report of the Standing Senate Committee on Social Affairs, Science and Technology Subcommittee on Population Health and supports actions to overcome health and societal inequalities, including the actions outlined in the Chief Public Health Officer’s Report on the State of Public Health in Canada, 2008 to:

- reduce poverty
- improve employment and working conditions
- reduce food insecurity
- improve the built environment both to encourage physical activity and to increase access to affordable housing
- improve access to early childhood education and care
- improve access to education and literacy training
- improve social supports.

B/ Environmental Factors

1.1 Improve the nutritional quality of Canada’s food supply and access to healthy foods:

- Eliminate processed trans fats in Canada’s food supply through regulation as recommended by the Trans Fat Task Force, including replacing trans fats with healthier alternatives to saturated fats.
- Accelerate the work of Health Canada’s Working Group on Dietary Sodium Reduction to drive daily levels of salt intake down to recommended levels and ensure timely implementation of the Working Group’s recommendations.
- Improve food labelling regulations and other processes to make the portion sizes on the mandatory nutrition facts panel consistent across similar products and provide clear, accurate information about nutritional values, including calories, saturated and trans fats, sodium (salt), simple sugars, fibre and minerals.
- Develop guidelines, with regular monitoring, for fast food restaurants and food service outlets to post the calorie count per portion for each item at point of purchase.
• Ban the advertising and marketing of “unhealthy” foods and beverages to children in all media based on clear definitions of “healthy” foods, and provide incentives to encourage the food industry to voluntarily market “healthy” foods to children.

• Provide sustainable funding to expand the Food Mail Program to more northern and isolated communities.

• Identify best practices for providing healthy foods in schools, and disseminate this information to school boards.

• Encourage employers to implement healthy food policies in workplaces and to make healthy foods available to employees. Government organizations and hospitals should lead the way by serving only healthy foods.

1.2 Create more opportunities for physical activity:

• Increase support for infrastructure development that promotes active, healthy living (e.g., sidewalks, walking paths, recreation centres, parks, bike paths and lanes) by, for example, designating a specific portion of the $33 billion *Building Canada – Modern Infrastructure for a Strong Canada* plan (2007–2014) for this purpose.

• Promote and showcase Canadian and international best practices/examples of community planning and design that enhance healthy, active living.

• Identify best practices for providing daily opportunities for physical activities in schools that will help children meet Health Canada’s physical activity guidelines, and disseminate this information to school boards.

• Provide incentives to employers to implement healthy, active living policies and to offer employees opportunities for regular physical activity.

• Provide tax incentives to ensure opportunities for children to be more physically active, such as offering refundable tax credits to low-income families and exempting the sale of bicycles, helmets and other sports equipment from GST/HST.

1.3 Reduce exposure to and use of tobacco:

• Enhance community programs that keep youth from starting to smoke.

• Develop regulations to control the sale of flavoured “cigarillos” and address other tobacco industry measures that attempt to circumvent current tobacco control legislation.

• Identify best practices for schools to keep children and youth from starting to smoke, and disseminate this information to school boards.

• Support employers to develop tobacco policies and offer smoking cessation programs to employees, such as improving access to programs and aids that help people become smoke-free.

• Support successful smoking cessation programs, such as the one developed by the University of Ottawa Heart Institute, at other clinical settings in Canada.
Canadians’ ability to make healthy choices – to eat healthy foods, be active, not smoke, and manage their blood pressure, cholesterol and weight – is affected by the information they receive about the risk factors that lead to CV diseases, their ability to understand and use that information, their motivation to change, and the supports available to help them, such as screening and follow-up programs in their communities.

To help Canadians lead healthier lives, we should:

2.1 **Bring Canada’s major disease organizations together to:**

- Develop and communicate clear, consistent messages about common risk factors for chronic diseases.
- Create and launch comprehensive, sustained public education/social marketing campaigns targeted at high-risk populations to prevent CV and other chronic diseases, including the signs and symptoms of stroke and heart disease, and the actions to take.
- Support the Canadian Public Health Association’s and the Canadian Council on Learning’s work on health literacy.

2.2 **Develop and maintain interactive Canadian source(s) of authoritative information on CV health and diseases.**

The information source(s) should build on existing initiatives and:

- Provide up-to-date information on key risk factors, including high blood pressure and cholesterol, healthy eating, physical activity, smoking, obesity and diabetes.
- Be supported by interprofessional primary care teams who, in turn, will provide more consistent messages to their patients.
- Include interactive ways for people to identify and assess their own risks and learn practical ways to reduce risk.

- Focus on self-care and make Canadians aware of evidence-based guidelines and strategies to reduce risk, improve self-care, promote health and prevent complications at all stages of CV diseases.
- Link Canadians to community services that can help them lead healthier lives, such as smoking cessation programs, physical activity programs, dietitian services and support groups.
- Have the mandate and resources to develop and maintain information tools and links to related resources.

2.3 **Deliver CV risk screening, education and follow-up programs in a variety of community settings. These programs should:**

- Have strong leadership and accountability, and be part of community/regional care systems.
- Be evidence-based.
- Be delivered by trained providers and/or volunteers.
- Be offered in settings convenient for Canadians, including workplaces, where incentives should be developed to help employers create and maintain these programs.
- Target groups at risk.
- Focus on key CV risk factors, including blood pressure and cholesterol levels, weight and waist measurement, smoking, fasting blood sugar, family history, nutritional status and physical activity.
- Ensure that risk profile measurements taken during screening are shared with individuals and their primary care providers, and that individuals have the information they need to understand their risk profile.
- Refer people who are at risk for appropriate evidence-based treatments, follow-up services and supports.
- Where possible and practical, use knowledge of genetic variation to identify people with inherited risks for CV diseases.
To end the CV health crisis in Aboriginal/indigenous communities, Aboriginal/indigenous peoples and communities must be actively engaged in developing their own CV health solutions and plans. At the same time, Aboriginal/indigenous peoples and communities must be an integral part of the Canadian Heart Health Strategy and Action Plan.

All the CHHS-AP recommendations apply to all Canadians, including Aboriginal/indigenous peoples. In addition, Aboriginal/indigenous leaders should work with their communities, governments and non-governmental organizations to develop a multi-year action plan to engage Aboriginal/indigenous communities and identify culturally appropriate ways to reduce risk, improve care, respond to urgent needs, and address social and health inequities.

Help Aboriginal/indigenous Peoples Lead Healthier Lives:

- Promote promising practices, such as limiting tobacco sales to minors, removing unhealthy food from schools and providing opportunities for regular physical activity.
- Ensure approaches to CV disease prevention and care that respect traditional knowledge, Aboriginal/indigenous values and individual/community readiness.

3.1 Develop a multi-year action plan to meet the CV needs of Aboriginal/indigenous peoples and communities using a partnership approach involving Aboriginal/indigenous organizations; federal, provincial, territorial and municipal governments; Aboriginal/indigenous communities; and non-governmental organizations.

3.2 Create a national Aboriginal/indigenous centre (or network of centres) for chronic disease prevention and management to coordinate the implementation of the action plan. Together, the centre and the plan will:

Create Heart Healthy Aboriginal/indigenous Communities:

- Engage community institutions and build community capacity in prevention interventions – particularly those related to tobacco reduction, school-based nutrition, fitness/sports and recreation.

Continue the Reform of Health Services – Provide Integrated, Patient-Centred Cardiovascular Care:

- Ensure a continuum of care between community-based and regional health authorities.
- Provide the same standard of CV care available to other Canadians.
- Improve access to care by making effective use of interprofessional teams – which should include nurse practitioners, dietitians, and primary care and specialist physicians all linked together – employing cardiovascular disease management algorithms, community and home care services and telehealth/e-medicine technologies.

Build the Knowledge Infrastructure to Enhance Prevention and Care:

- Oversample Aboriginal/indigenous peoples in periodic versions of the Canadian Health Measures Survey, and include Métis and Inuit in the First Nations Regional Health Survey.
- Advance the development and application of First Nations-, Inuit- and Métis-controlled databases that link with national databases.
Executive Summary

Establish an accurate, current database of evidence-informed chronic disease interventions as a means of tracking and sharing best practices.

Improve screening, surveillance and monitoring systems within Aboriginal/indigenous health service agencies by ensuring that all clinical, research, survey and federally managed data are available locally.

Support intervention and evaluation studies, particularly on food security and multi-component interventions.

Fund research on interventions that address individuals and communities in context and that reflect Canadian Institutes of Health Research guidelines and other recommended research practices for working with Aboriginal/indigenous communities.

Develop the Right Service Providers With the Right Education and Skills:

- Strengthen the Aboriginal/indigenous health workforce by providing chronic disease intervention training, intercommunity mentoring and exchange, more bursaries, and more seats in medical and nursing faculties, and by extending regional Heart and Stroke Foundation outreach and support.

- Improve the cultural competency of non-Aboriginal/indigenous health service providers by providing residency incentives in the North, by rotating visiting specialists to rural, remote and isolated areas, and by incorporating cultural competency education and practical models/approaches for working with Aboriginal/indigenous peoples into professional training curricula.

4. Continue the Reform of Health Services — Provide Integrated, Patient-Centred Cardiovascular Care

To provide more integrated, patient-centred services, health care systems in Canada must make some fundamental changes in the way they organize and provide cardiac care. They must make effective use of people, technology and other resources to address inequities, and adopt models of care — such as the chronic disease prevention and management model and the regional integrated networks of specialized cardiac care — that will make the system more efficient and effective.

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4.1 Accelerate the implementation of chronic disease prevention and management as the preferred model for delivering most cardiovascular care in Canada:

- Accelerate the development and training of interprofessional primary care teams with new roles and working relationships.
- Implement process improvements and change management.

- Document and disseminate best practices in patient partnerships, self-care and patient-centred care, and in organizing and delivering patient-centred care.

4.2 Improve access to high-quality, appropriate, coordinated specialized cardiovascular care, including diagnostics, acute care, cardiac rehabilitation and end-of-life planning and care:

- Provide incentives for the continued development of regional integrated networks of specialized cardiovascular care.
- Establish triage systems that will ensure that those in greatest need are seen first.
- Implement and monitor a system of evidence-based maximum recommended wait times — particularly for consultative services and diagnostic testing.
10 / Building a Heart Healthy Canada

- Expand the use of telemedicine technologies within and between provinces and territories to provide care as well as patient and provider education (e.g., telestroke).
- Incorporate “system navigators” into regional teams to help patients and their health information move easily between services and providers.
- Continue to develop and implement specialty clinics within integrated regional networks staffed by interprofessional teams to manage complex cardiovascular conditions such as heart failure, congenital heart disease, certain abnormal heart rhythms and chest pain.
- Continue to develop rehabilitation programs in underserved regions, and incorporate cardiac rehabilitation services into primary care–based chronic disease prevention and management programs.
- Provide support for end-of-life planning and care information and services, including episodic support and respite services for informal caregivers.

4.3 Establish, maintain, promote and evaluate the use of updated, evidence-based, interprofessional clinical guidelines in preventing and managing cardiovascular risk and disease, treatment, rehabilitation and end-of-life planning and care:

- Support the ongoing development, implementation and regular updating of best practice guidelines in the Canadian Stroke Strategy, the Canadian Hypertension Education Program, and the Canadian Cardiovascular Society’s Heart Failure Knowledge Translation Program and guidelines for lipids/cholesterol.
- Create a pan-Canadian task force to develop clinical practice guidelines for end–of–life planning and care for individuals with advanced CV disease.
- Support the development of user–friendly self–care guidelines for patients and effective ways for patients to access this information.
- Create a pan–Canadian initiative to develop a comprehensive set of quality indicators for CV prevention and care programs – to include recommended monitoring methods.

5 / Build the Knowledge Infrastructure to Enhance Prevention and Care

Accurate, timely information and good ways to share it are absolutely essential to health. Canada needs information for patients, providers, managers and government, and information to guide prevention, improve care and support research. To close the CV information gap and build the information infrastructure to enhance prevention and care, Canada should use the following strategies.

5.1 Gather Canadian data on the prevalence and incidence of CV risk factors, diseases and health inequities in Canada:

- Provide resources to the Public Health Agency of Canada to expand CV disease surveillance in Canada to include conditions such as heart failure, heart attack, stroke, hypertension and congenital heart disease.
- Provide resources to Health Canada and Statistics Canada to co–lead the regular collection of comprehensive, standardized food and nutrient consumption data.
• Facilitate the linkage of death certificates with health services utilization data.

• Provide resources to create a Canadian pre-hospital cardiac arrest registry.

• Enhance capacity in Statistics Canada’s biennial Canadian Health Measures Survey by oversampling key target populations such as certain ethnic groups (e.g., South Asians), Aboriginal/indigenous persons on reserves and in the Far North, and the elderly.

• Work with the Canadian Partnership Against Cancer to develop and support a Canadian cohort study of chronic diseases that includes risk factors for CV diseases.

• Facilitate the development of pan-Canadian data standards for regional CV patient registries to improve data quality and allow data to be linked and pooled.

5.2 Support Canada Health Infoway’s efforts to accelerate the development and implementation of the electronic health record (eHR), the electronic medical record (eMR), chronic disease prevention and management information systems, and consumer health solution capabilities across Canada:

• Review the barriers and facilitators to the use of the eMR in primary care in Canada, and develop an action plan to speed its adoption.

• Develop effective ways for health information systems to support chronic disease prevention and management programs that leverage the eHR and can bridge the gap until the eMR is more widely available.

• Develop effective ways for patients to access their clinical information.

• Develop mechanisms to facilitate the use of clinical information from the eHR and the eMR (while respecting citizen privacy and confidentiality) to support surveillance, system management, policy research and ongoing assessment of the effectiveness of Canada’s health care system and disease prevention strategies.

5.3 Improve knowledge to inform CV prevention and cardiac care:

• Hold a pan-Canadian CV research summit, involving the Canadian Institutes of Health Research, the Public Health Agency of Canada, the Heart and Stroke Foundation of Canada and the members of the National Alliance of Provincial Health Research Organizations, to develop a strategic, coordinated CV research agenda to address the future needs of our country.

• Establish a network of centres of excellence in vascular health to improve our basic understanding of both large and small vessel diseases, identify promising (bio)markers as well as new targets for prevention and therapy, and pursue knowledge translation (clinical trials) and commercialization.

• Support the Canadian Institutes of Health Research to fund additional research into genetics/proteomics-based diagnostics, markers of prognosis, and tools for personalized prevention and care.

• Provide more support for population health research and community intervention research to evaluate the impact of policies and programs on health.

• Evaluate the impact of economic policies such as tax incentives to increase physical activity (e.g., the children’s fitness tax credit), and advocate to enhance incentives that are found to be effective and do not increase health inequities.

• Support knowledge translation initiatives to help prevention programs and clinical settings to translate research findings rapidly into practice and to market.
To develop the right people to provide CV prevention and care, Canada must take a more systematic approach to workforce planning. In collaboration with the federal, provincial and territorial governments’ efforts to implement the Pan-Canadian Health Human Resource Strategy, Canada must:

6.1 Strengthen and maintain the CV prevention and care workforce:
- Identify the number and mix of health providers and skills required to meet population needs.
- Recruit and/or develop people with key skills, including epidemiologists, experts in public health/population health, primary care providers, specialists, informatics professionals, social scientists, community planners, program evaluators and policy specialists.
- Encourage faculties of health sciences to ensure that health education programs teach an integrated approach to chronic disease prevention, management and care, provide more education on health promotion and disease prevention, and prepare a workforce that can adapt quickly to new knowledge and technologies.
- Provide incentives for education programs to prepare providers to work in interprofessional teams.
- Provide incentives for health care providers to work in interprofessional teams.
- Challenge educational programs to critically review the length of their training programs and the impact on efforts to ensure an adequate supply and mix of health professionals and skills to meet Canada’s health needs.

Partnerships to Move From Plan to Action

Stopping CV diseases requires leadership from all levels of government, using whole-of-government approaches. But governments cannot do it alone. Partnerships are needed, within and outside the health sector, to engage health professionals and their organizations, non-governmental organizations, industry, the media and citizens in creating a whole-of-society, whole-of-the-country approach.

To be successful, we must invest resources and efforts “upstream” on activities that will prevent CV diseases as well as “downstream” in high-quality efficient treatment services for people with heart and other vascular diseases. We must work together – within government, across governments, across sectors, in communities, and in schools, workplaces and our homes – to reduce all the risks that threaten our hearts and our blood vessels. We must change our environments and social norms. At the same time, our health care systems and health care providers must work closely with Canadians to provide timely, high-quality, integrated, patient-centred prevention services and care.

We have an enormous opportunity to improve the health of Canadians by implementing the Canadian Heart Health Strategy and Action Plan. We must take responsibility for our health and the future health of our country, and we must act now. There is no time for complacency. CV disease should no longer be number one!
Developing the Canadian Heart Health Strategy and Action Plan

In May 2005, a private member’s motion, championed by MP Steven Fletcher, called for Canada to develop national strategies for cancer, mental health and heart disease. The motion received all-party support in the House of Commons. On October 23, 2006, the federal Minister of Health announced funding, through the Public Health Agency of Canada, to develop a pan-Canadian strategy for heart health.

The goal: To reduce the growing burden and loss from cardiovascular disease in Canada.

The task of developing a comprehensive, evidence-informed, stakeholder-driven Canadian Heart Health Strategy and Action Plan (CHHS-AP) was given to an expert steering committee, chaired by Dr. Eldon Smith. The 29-member Steering Committee consisted of leaders in cardiovascular and cerebrovascular health and disease, population health, health policy, research, information technology and other relevant fields, as well as survivors of cardiovascular and cerebrovascular (CV) disease.

Throughout the two-year process of developing the Strategy, three national organizations – the Heart and Stroke Foundation of Canada, the Canadian Cardiovascular Society and the Canadian Institutes of Health Research’s Institute of Circulatory and Respiratory Health – played a lead role, providing guidance to the Chair. A three-person secretariat led by a director and housed within the Heart and Stroke Foundation of Canada and the Canadian Cardiovascular Society offices provided operational support.

Establishing a Framework

The Steering Committee developed a framework to define its vision and guide its work (Figure 1).

The framework reflects the total spectrum of the “health” system covered by the Strategy – from policy to end-of-life planning and care, and from birth to death. It captures the dynamic relationship between “upstream” health promotion and disease prevention activities and “downstream” diagnostic and care services throughout people’s lives and across all health services. It illustrates that health promotion and disease prevention play an important role at all stages of life and care. It highlights the important role of information, access to services, research and health human resources in a comprehensive strategy.
In the vision of the Steering Committee, health is not solely the responsibility of the health care system:

**Favourable environments encourage healthy behaviours that, in turn, reduce risk and acute events, and – when combined with timely access to quality health care – lead to more people living longer in good health, a lower burden of disease and a more sustainable health care system.**
Understanding the Issues

The Steering Committee established Theme Working Groups, each to focus on one of six key issues:

1/ Strengthening information systems for monitoring, management, evaluation and policy development
2/ Creating environments conducive to cardiovascular health
3/ Preventing, detecting and managing risk factors
4/ Addressing and enhancing Aboriginal/indigenous cardiovascular health
5/ Timely access to quality (acute) care and diagnostics
6/ Timely access to quality chronic disease management, rehabilitation services and end-of-life planning and care.

Each working group, comprising approximately 12 experts, also considered five cross-cutting issues in their deliberations: reducing inequities, addressing Aboriginal/indigenous cardiovascular health, evaluating interventions, expanding the knowledge base and translating knowledge into action. The Theme Working Groups reviewed the literature and commissioned background papers, so as to fully understand the issues, and then prepared detailed reports for the Steering Committee. These extremely valuable reports are available on the CHHS-AP website at www.chhs-scsc.ca.

Considering Diverse Points of View

The Steering Committee also established an expert group on consultations and partnerships. Because the provinces, territories and regions play a key role in public health and health care delivery, the Chair and the Director of the CHHS-AP met collectively and individually with provincial and territorial Deputy Ministers of Health and other senior officials, and provided periodic updates on the Strategy’s development to the Federal/Provincial/Territorial Chronic Disease and Injury Prevention and Control Expert Group, and the Population Health Promotion Expert Group. The Steering Committee and the Theme Working Groups also had members who could represent provincial/territorial perspectives.

At the federal level, the Public Health Agency of Canada, Health Canada, Statistics Canada, the Canadian Institute for Health Information, the Canadian Institutes of Health Research and Canada Health Infoway provided advice and guidance, and the last three organizations had representatives on the Steering Committee.

When developing the CHHS-AP, the Chair and the Steering Committee consulted with over 1500 stakeholders, including: professional organizations, non-governmental organizations, the food and pharmaceutical industries, the insurance and banking industries, companies that manufacture medical devices and the general public. Seven focus groups were held across the country with Canadians who offered their views on heart health and heart disease, existing services, and the barriers to and supports for prevention and treatment. The Chair also attended annual conferences, such as the Canadian Public Health Association Annual Conference and the Canadian Cardiovascular Congress, to discuss the key issues.

To identify opportunities to integrate with and capitalize on other related national disease strategies, the Chair and the Management Group consulted and worked with the leaders of the Canadian Stroke Strategy, the Canadian Diabetes Strategy, the Canadian Partnership Against Cancer, the Mental Health Commission of Canada and the National Lung Health Framework.
Looking Beyond “Heart Health”

Although this plan is called the Canadian Heart Health Strategy and Action Plan, it goes well beyond what Canadians think of as “heart health.” Heart disease belongs to a family of diseases known as cardiovascular diseases that – along with cerebrovascular disease (stroke) – belong to an even broader group called “vascular diseases.” Vascular diseases affect blood vessels throughout the body, restricting blood flow and damaging organs such as the heart through heart attacks or heart failure, or the brain through a stroke. Vascular diseases can also affect the kidneys (causing chronic renal failure) and the blood supply to the legs (causing pain when walking, leading to gangrene and amputation). They are also important causes of dementia and blindness.

In the Canadian Heart Health Strategy and Action Plan, the term “CV diseases” includes:

- cardiovascular (blood vessels of the heart) health and diseases as well as other cardiac conditions (congenital, valvular and heart muscle)
- cerebrovascular (blood vessels to the brain) health and diseases
- peripheral vascular (aorta and blood vessels to the legs) health and diseases.

Building a Heart Healthy Canada describes a comprehensive, integrated approach to health. It recognizes the importance of preventing all vascular diseases – regardless of the organ affected. Preventing vascular diseases not only will reduce heart disease and stroke but also will have a positive impact on other common chronic illnesses. For purposes of this document, the term “CV diseases” is used to describe the full range of cardiac and vascular diseases (see box).

Although the same strategies can be used to collect data on and prevent all vascular diseases, different skills and services are required to treat each vascular disease depending on the organ of the body affected. Because the causes of many CV diseases are the same but the treatments are different, the CHHS-AP recommendations for prevention and knowledge infrastructure are designed to help reduce all CV diseases. The care recommendations, on the other hand, focus primarily on the diagnosis and treatment of cardiac diseases, including congenital, heart muscle and heart valve diseases. For cerebrovascular diseases, the Heart and Stroke Foundation of Canada and the Canadian Stroke Network have developed the Canadian Stroke Strategy to guide stroke care and rehabilitation, which is being implemented in many parts of the country.
Implementing the CHHS-AP: From Plan to Action

The CHHS-AP consists of three parts:

**Part 1** The Canadian Heart Health Strategy is the “what”: it identifies the gaps in CV health now, describes promising practices that are improving health and care, and recommends solutions.

**Part 2** The Action Plan is the “who, when, how and where”: it describes the concrete steps that must be taken to implement the Strategy.

**Part 3** The Business Plan is the “how much”: it sets out the costs to implement each component of the Strategy.

The CHHS-AP is more than a written plan. It is a process and a partnership. The Strategy makes the case for leadership and collaboration – both within and outside the health care system – to reduce the burden of CV disease. The success of this strategy depends on the commitment of many partners, including the federal, provincial and territorial governments, municipal governments, regional health bodies, health care providers and organizations, non-governmental organizations, the private sector and individuals (Figure 2).

The CHHS-AP describes how these partners can work together to create a heart healthy future for Canadians.
CV Diseases: Canada’s Number One Public Health Threat

Each year, CV diseases kill 17 million people worldwide (World Health Organization, 2004) and more Canadians than any other illness. In 2004, they were responsible for one out of every three – or 72,743 – deaths in Canada (Figure 3). (Public Health Agency of Canada, 2009)

Despite recent progress in reducing the number of deaths each year from heart disease and stroke, CV diseases remain Canada's number one public health threat.

The Public Health Agency of Canada estimates that at least 1.6 million Canadians have heart disease or are living with the effects of a stroke. (Public Health Agency of Canada, 2009) Cardiovascular diseases account for 17% of all hospitalizations in Canada (Public Health Agency of Canada, 2009) compared with 7.6% for cancer. (Foote et al., 2005)

More Canadians now survive a heart attack, but many go on to develop chronic heart failure, which is now the most common reason for people over age 65 to be admitted to hospital. (Canadian Cardiovascular Society, 2006) The incidence of heart failure also increases with age, and the Canadian population is aging.

Heart disease steals about 4.5 years from Canadians’ lives. (Manuel et al., 2003) Because of CV diseases, Canada is falling behind other developed countries in life expectancy. (Fang and Millar, 2008) Indeed, it is now predicted that our children will be the first generation of Canadians ever to have a shorter life expectancy than their parents. But Canada is not alone in its struggle with CV diseases: in 2004, coronary disease and stroke were the first and second leading causes of death worldwide, respectively (21.9% of total deaths), and both will increase by 2030 (to 26.3% of the total). (World Health Organization, 2008)

Figure 3
The Leading Causes of Death
Number and Percentage of Deaths, Canada, 2004

At least 1.6 million Canadians are living with heart disease or the effects of a stroke. They may not die as quickly as they would have 10 years ago, but they are not able to participate as fully in life, and many are extremely ill.

As the World Health Organization said, “Longer life is an empty prize if those added years are lived in poor health.” (World Health Organization, 1998)

Four chronic diseases – heart disease and stroke, cancer, chronic obstructive pulmonary disease and diabetes – now account for 60% of all deaths worldwide and, by 2020, are expected to account for 73% of deaths and 60% of the global burden of disease. (World Health Organization, 2002)

Alarmingly, a number of risk factors that put people on the path to CV disease – such as high blood pressure (hypertension), high cholesterol (dyslipidemia), obesity and diabetes – are projected to rise in Canada. Figures 4a and 4b illustrate the trends and projected increases in diabetes and obesity.

The increase in CV risks and diseases is a threat for all Canadians, but it is a full-blown crisis for Aboriginal/indigenous peoples. (First Nations Regional Longitudinal Health Survey, 2007)

These trends, combined with the growth and aging of our population (CV diseases increase with age) (Public Health Agency of Canada, 2009), could overwhelm the health care system.

Figure 4a

Figure 4b
Prevalence (%) of Obesity (BMI >29) in Canada, Actual and Projected, by Sex, 1970-2010

The Economic Impact

CV diseases are not just a threat to our health – they are a threat to our economic well-being. In 2000, CV diseases cost Canada at least $22.2 billion in direct and indirect costs – second only to musculoskeletal diseases (Figure 5). (Public Health Agency of Canada, 2009)

In terms of hospital costs, in 2004/05, three of the four most expensive health conditions in Canada were CV diseases. They cost $1.4 billion in hospital in-patient costs alone. (Canadian Institute for Health Information, 2008)

Given the expected increase in CV diseases, these costs will grow. Provinces and territories are predicted to spend 50% of their budgets on health, limiting their ability to invest in other essential public services, such as education, roads, the environment and social services.

If nothing changes and health care spending continues to increase at its current pace, by 2017/18 – in just 10 years’ time – health care and education could consume up to 100% of the provincial/territorial budgets as illustrated by projections in British Columbia (Figure 6). (Taylor, 2006)
Figure 5
Costs Due to Disease* for the Leading 7 Diagnostic Categories, by Direct† and Indirect‡ Costs, Canada 2000

* Based on the total cost of illness of $147.9 billion. Expenditures for care in other institutions and additional direct health expenditures are not included.
† Direct costs include hospital, drugs and physicians
‡ Indirect costs include mortality, long-term disability and short-term disability

Note: Not all diagnostic categories include short-term disability. The five diagnostic categories including short-term disability costs are musculoskeletal diseases, cardiovascular diseases, neuropsychiatric conditions, digestive diseases and respiratory diseases.

Source: Adapted from Public Health Agency of Canada. (2009). Tracking Heart Disease and Stroke in Canada.

Figure 6
Revenue/Spending Projections in British Columbia

Current and projected spending on health and the impact on other areas of program spending in British Columbia.
What Are CV Diseases?

Many Canadians mistakenly think that cardiovascular disease is just heart attacks. But CV diseases are a broad group of debilitating and costly conditions that affect almost all parts of the body (Figure 7).

What Causes CV Diseases?

Genetic conditions account for approximately 5% to 10% of all CV diseases. (Public Health Agency of Canada, 2009) The most common cause of other CV diseases is atherosclerosis or hardening of the arteries.

Everyone is born with healthy arteries, but, over time, the blood vessels can become inflamed, laden with fat (cholesterol) and scarred, restricting blood flow and potentially causing blood clots, which lead to heart attacks, stroke and other complications. Atherosclerosis begins early in life – as early as childhood – but it may not cause symptoms or signs of illness for many years. Despite major advances in understanding the cause of atherosclerosis, much remains to be learned about vascular function and disease.
Who Is Affected?

The traditional image of the typical Canadian with CV disease is an older, overweight, white male. But this view is no longer accurate. CV disease affects Canadians of all ages and backgrounds. And some are at greater risk than others. The face of heart disease in Canada now is younger, increasingly female, ethnically diverse, poor and too often Aboriginal or South Asian (Figure 8).

Figure 8
Who Is Affected by CV Disease?

We are all at risk: nine out of 10 Canadians over age 20 have at least one risk factor for cardiovascular disease. One in three has three or more risk factors. (Public Health Agency of Canada, 2009)
• About one of every 100 babies in Canada is born with congenital heart disease. (Heart and Stroke Foundation of Canada, 2003)

• More young people are overweight or obese and have diabetes, high blood pressure and high cholesterol than in the past. (Shields, 2005)

• Although men are more likely than women to develop heart disease and at a younger age, recently more women than men die each year from heart disease. (Public Health Agency of Canada, 2009) Women with CV disease also have longer stays in hospital and suffer greater disability than men. (Pilote, 2007)

• Heart disease increases with age. One out of every four men over age 75 has heart disease. (Public Health Agency of Canada, 2009)

• Poorer, less educated Canadians are more likely to develop CV diseases than those with more education and higher incomes. (Craig et al., 2005)

• Aboriginal/indigenous peoples in Canada are 1.5 to 2 times more likely to develop heart disease than the general Canadian population. They are also more likely to have diabetes, hypertension, high cholesterol and a family history of heart disease. (Health Canada, 2001)

• South Asian Canadians are more likely to die from a heart attack when they are young than other Canadians. People native to India, Pakistan, Bangladesh, Nepal and Sri Lanka die from heart disease five to 10 years earlier than people in other ethnic groups – even when they appear to be a healthy weight. (Joshi et al., 2007)

• Canadians of Chinese origin are more likely to have high blood pressure than Canadians of European origin. (Anand et al., 2000)

• African Canadians are more likely to have high blood pressure than the general population. (Heart and Stroke Foundation of Ontario, 2008)

What Are the Risk Factors for CV Diseases?

Atherosclerosis is most common in people who have high blood pressure (hypertension), high cholesterol levels or other abnormal blood lipids (dyslipidemia), are overweight or obese and/or have diabetes.

Hypertension, dyslipidemia, obesity, diabetes and atherosclerosis are caused by a complex interaction of genetic risk factors (inborn, inherited characteristics), environmental risk factors (lack of income and/or education, lack of access to healthy foods or physical activity) and behaviour (unhealthy diets, physical inactivity and smoking as well as stress and depression).

GENES

Genes play a role in CV diseases and in diabetes and obesity. Anyone with a family history of high blood pressure, high cholesterol levels, obesity or diabetes is at higher risk of developing CV diseases. People who belong to ethnoracial groups with high rates of CV diseases, such as certain Aboriginal/ indigenous people and South Asians, are also at higher risk.
Canadians’ risk of developing a CV disease and their ability to reduce their risk are profoundly affected by environmental and socio-economic factors, such as education, income, the availability and cost of healthy foods, opportunities for physical activity, and stress.

The environment can interact with people’s genes to make them more vulnerable to CV diseases. For example, in societies where healthy eating and regular physical activity are the norm, such as Japan, atherosclerosis is uncommon; however, when people from these societies move to a country or environment where the norm is to be less active and eat less healthy foods, their rates of CV diseases increase rapidly. (Tremblay et al., 2005)

Social inequities lead to health inequities. For example, children who grow up in poor neighbourhoods have higher body mass index (BMI) and are more likely to be overweight or obese. (Oliver and Hayes, 2008) Poorer, less educated individuals are more likely to eat unhealthy diets, be inactive and smoke than those who are better educated and wealthier. (Marmot et al., 1991) The high rate of CV disease among some Aboriginal/indigenous peoples is the complex result of lack of access to healthy foods and to health services (particularly in remote communities); lack of education and meaningful employment; low incomes; and poor housing. (Kmetic, 2007)

**BEHAVIOUR**

The genetic and environmental risks of CV disease are compounded by behaviours such as eating diets high in calories, fat, sodium (salt) and simple sugars, and low in fruits, vegetables, fibre and minerals (i.e., calcium, magnesium, potassium); being physically inactive; and smoking.

“Four of the most prominent chronic diseases – cardiovascular diseases (CVD), cancer, chronic obstructive pulmonary disease and type 2 diabetes – are linked by common and preventable biological risk factors, notably high blood pressure, high blood cholesterol and overweight, and by related major behavioural risk factors: unhealthy diet, physical inactivity and tobacco use. Action to prevent these major chronic diseases should focus on controlling these and other key risk factors in a well-integrated manner.” (World Health Organization, 2002)
A Snapshot of CV Risk in Canada

Although fewer Canadians are having heart attacks, strokes or heart failure (Campbell et al., 2006), the risks for CV disease remain unacceptably high, and some are on the rise:

- One of every four men and women in their 30s and 40s derives more than 35% of their calories from fat. (Garriguet, 2004)

- Approximately six of 10 children aged 13 and younger and five of 10 adults have less than five daily servings of vegetables and fruit. (Garriguet, 2007)

- Among Canadians aged 19-70, over 85% of men and 60% of women have sodium intakes exceeding the recommended upper limit. (Garriguet, 2007)

- Almost one in two Canadians aged 12 and older (48%) is physically inactive. (Gilmour, 2007)

- Nineteen percent of Canadian adults (one of every five) and 15% of youth aged 15-19 years smoke. (Health Canada, 2008)

- Twenty-two percent of Canadians aged 18 and older have high blood pressure (Joffres et al., 1997), and nine of 10 Canadians will develop high blood pressure in their lifetime. (Campbell et al., 2006)

- Four out of 10 (36%) adult Canadians are overweight (BMI 25-29), and one out of four (23%) is obese (BMI ≥30). (Tjepkema, 2007)

- At least one of every four children in Canada (Shields, 2005) – and one of every two Aboriginal children on reserves – is overweight or obese. (National Aboriginal Health Organization, 2005)

- In 2005, almost 1.8 million adult Canadians – 5.5% of the population – had been diagnosed with diabetes – up from 4.8% in 1998. Diagnosed diabetes has grown 70% since the publication of the 1998 Canadian Diabetes Association clinical practice guidelines. (Canadian Diabetes Association, 2008)
CV Diseases: Canada’s Number One Health Opportunity

CV diseases are Canada’s number one health threat, but they are also Canada’s number one opportunity to improve health. Why?

- because up to 80% of some CV diseases are preventable (Public Health Agency of Canada, 2009; Yusuf et al., 2004)
- because when CV diseases are detected early and treated vigorously, they can be controlled and managed
- because – unlike diseases such as cancer where the causes and solutions are unclear – we already know how to prevent and treat CV diseases.

At each step along the pathway to CV disease, it is possible to reduce risk and improve health. We already have examples of how using what we know now can improve health and reduce CV diseases.

In 1992, almost half of Canadians who had high blood pressure were undiagnosed, and only 13% had their hypertension treated according to guidelines and were under control. (Joffres et al., 1997)

Over the past nine years, the Canadian Hypertension Education Program has actively promoted evidence-informed hypertension guidelines and educated health care professionals and the public, and progress is being made. According to a recent study by the Heart and Stroke Foundation of Ontario (Figure 9), 88% of participants with high blood pressure are aware of their diagnosis, and 66% have their hypertension treated and controlled. (Leenen et al., 2008) It remains to be demonstrated that this tremendous progress has also been achieved throughout the rest of Canada.

Prevention makes economic sense. According to a recent analysis done in the United States, every $1 spent on prevention programs that increase physical activity, improve nutrition and prevent smoking provide a return on investment of $5 in lower treatment costs. (Trust for America’s Health, 2008)

Right now, a disease that is largely preventable is costing Canada $22.2 billion a year. (Public Health Agency of Canada, 2009) Although the major risk factors for heart disease and stroke are preventable, we do little to prevent them – and once a person develops these risks, damage can occur and become irreversible.
In 2005, a partnership between the Heart and Stroke Foundation of Canada and the Canadian Stroke Network created the Canadian Stroke Strategy to promote evidenced-informed acute care and rehabilitation for stroke patients. Four provinces – Ontario, British Columbia, Alberta and Nova Scotia – have funded integrated stroke strategies, and all others have made changes to stroke care that are dramatically increasing the number of people who survive and recover from strokes.

However … 
… far too few Canadians know how to reduce their CV risks, 
… far too few Canadians with risks are diagnosed early, and 
… far too few Canadians with CV diseases have access to timely, comprehensive, evidence-based care.

Treatment and control of hypertension as determined in 2006 by the Ontario Survey on the Prevalence and Control of Hypertension and in 1992, for Ontario and Canada as a whole, in the Canadian Heart Health Survey (1992 data supplied by Dr. Michel Joffres, Simon Fraser University, personal communication, July 31, 2007). The data are presented as percentage of the population with diagnosed hypertension. Both sets of Ontario data were weighted to the Ontario population, and the national data were weighted to the Canadian population. For consistency of comparison, “treatment” in the Canadian Heart Health Survey refers to drug therapy only.

By Acting Now – We Can Build a Heart Healthy Canada

We have within our grasp the knowledge and skills to create a much brighter, heart healthy future for Canadians – one in which:

Citizens have the knowledge, resources and support they need to reduce their risk of CV diseases and other chronic illnesses, and lead longer, healthier lives.

Governments, the health care system, the private sector, voluntary and community organizations, and individuals work together to create environments and services that promote and enhance CV health.

Patients are active, informed partners in their own health and care. Interprofessional teams of health care providers have the information, skills and tools to promote health, prevent CV diseases, and provide timely, comprehensive, integrated, patient-centred care for Canadians with heart and vascular disease.

Canada is recognized around the world as a productive, economically competitive and heart healthy nation.

Our Strategy

We already have many of the tools and building blocks – skills, knowledge and people – that we need to build a heart healthy Canada. Across the country, exciting initiatives are under way. Best practices have been developed, and some are being shared and adopted. But too often progress is occurring piecemeal – in some provinces or communities or hospitals or doctors’ offices. Individual champions are leading many creative efforts, but they do not have the support, resources or influence to shift the entire system. Although Canada has strategies to address the other chronic diseases that are the leading causes of death and burden of illness – diabetes, lung disease and cancer – the country does not have a comprehensive, concerted, Canada-wide approach to reducing CV diseases.

The Canadian Heart Health Strategy and Action Plan is designed to fill that gap and provide the blueprint for building a heart healthy nation. It calls on Canada to invest “upstream” in prevention to help people stay healthy and off the pathway to CV disease as well as “downstream” in high-quality, effective cardiac care for Canadians who need it. And it recommends strategies that are practical and have the potential to improve CV health and reduce health inequities.

Our plan is to:

1/ Create Heart Healthy Environments.
3/ End the CV Health Crisis Among Aboriginal/Indigenous Peoples.
4/ Continue the Reform of Health Services – Provide Integrated, Patient-Centred Cardiovascular Care.
5/ Build the Knowledge Infrastructure to Enhance Prevention and Care.
6/ Develop the Right Service Providers With the Right Education and Skills.

The end result of investing now in better prevention and care will be:

• a healthier population
• fewer health inequities
• more quality life years
• a lower burden of CV diseases
• a more sustainable health system.
Guiding Principles for the Canadian Heart Health Strategy and Action Plan

- Reflects the best available evidence.
- Builds on existing strengths and successes.
- Recognizes the values and world views of Aboriginal/indigenous people and addresses the historical and contextual factors that affect Aboriginal/indigenous health.
- Integrates with other strategies and initiatives.
- Is person-centred.
- Is culturally appropriate and meets the needs of ethnic groups at high risk.
- Is a sound investment.
- Is practical, feasible and can be implemented and evaluated.
- Will reduce health inequities.
- Will lead to improvements in health and quality of life.
- Is consistent with the Canada Health Act.
Our environments – our communities, workplaces, schools and homes – have a direct effect on how active we are, our eating habits, rates of obesity, and risks for heart disease and stroke. (Heart and Stroke Foundation of Canada, 2007a) Our food supply, the way our communities are designed and built, and our exposure to tobacco can all affect our health.

For example, when less nutritious foods are cheaper, more readily available and more actively marketed than healthy foods, it is harder for Canadians to make the healthy choice. When people have access to information about nutrition, they are more likely to make healthy choices. (Health Canada, 1996; World Health Organization, 2003) When people live in communities with few shops and services close by, they are more likely to be overweight or obese than people who live in walkable neighbourhoods. When communities have few parks or recreation facilities, it is harder for people to be physically active. (Sanitch, 2003; Butterworth, 2000)

The changes that have occurred in the way Aboriginal/indigenous peoples live – that is, more sedentary lives and high calorie foods – are largely due to environmental changes, including acculturation, urbanization and the “Westernization” of Aboriginal diet, culture and ways of life. (Kmetic, 2007)

Canada already knows from its experience with the Federal Tobacco Control Strategy that changing the environment can change behaviour and reduce risk. Over the past 20 years, federal, provincial, territorial and municipal governments have used a combination of public education about the risks of smoking, taxation, legislation (to limit tobacco advertising, prohibit smoking in public places and stop the sale of tobacco to minors), enforcement, and counselling from health professionals to help people stop smoking. The result? Smoking rates and exposure to second-hand smoke have dropped dramatically. Most workplaces and public places in Canada are now smoke-free. In the five years between 2000 and 2005, the number of Canadians who smoked fell by 23%. (Health Canada, 2000; Health Canada, 2007b)

Canadians can do a lot to reduce their risk of CV diseases, but they cannot do it alone. They need supportive environments that make the healthy choices the easy choices.
The same type of comprehensive approach must now be used to improve the quality of our food supply, build communities that promote physical activity and create opportunities for healthy, active living at school, work and home.

**Inequities Threaten Our Health**

In its efforts to create healthy environments, the health system has traditionally focused on strategies that influence specific behaviours, such as diet, exercise and smoking, but the CHHS-AP recognizes that what Canadians eat, how active they are and whether they smoke is greatly influenced by underlying, “upstream” socio-economic determinants of health, such as income, education and employment. Poorer, less educated Canadians are more likely to be obese and less physically active, to consume fewer fruits and vegetables, and to smoke more than Canadians with higher incomes. (Craig et al., 2005)

As the Chief Public Health Officer said in his 2008 report, “Health inequalities are fundamentally societal inequalities that we can overcome through public policy, and individual and collective action.” (Public Health Agency of Canada, 2008)

A number of jurisdictions are already taking steps to reduce social and health disparities. For example, Quebec, Manitoba, Newfoundland and Labrador, Nova Scotia and Ontario are developing poverty reduction strategies. These strategies aim to raise the standard of living for low wage earners and provide services to help people succeed in the workforce, such as training and literacy programs, affordable housing, early learning and child care services and social supports. A number of Ontario municipalities are now part of the 25 in 5: Network for Poverty Reduction, whose goal is to reduce poverty in Ontario by 25% in five years and by 50% in 10 years.

To help address gender inequities, in 2007 the Heart and Stroke Foundation of Canada introduced the evidence-based Heart Truth campaign to Canada, which is designed to help women understand their heart disease risks, reduce their risk factors and be more active in their own health and care. (Heart Truth website, 2008)
The concept of population health was elaborated in Canada in 1974 with the Lalonde report; it then evolved from a focus on improving overall health status to an emphasis on reducing health disparities. Health Canada has played a key role in promoting population health at the federal level and has officially adopted a population health framework for its programs and initiatives. (Standing Senate Committee on Social Affairs, Science and Technology, 2008a)

In 2005, the federal, provincial and territorial Ministers of Health approved the Integrated Pan-Canadian Healthy Living Strategy. Its goals are to improve overall health outcomes and to reduce health disparities, using a population health approach. The Strategy is focusing first on healthy eating and physical activity, and their relationship to healthy weights.

But more must be done now to create environments that will help improve health and reduce the burden of CV diseases.

The Subcommittee on Population Health of the Standing Senate Committee on Social Affairs, Science and Technology, Chaired by Senator Wilbert Keon, is currently examining the broad determinants that influence the health of Canadians. Its December 2008 report will identify actions the federal government can take to implement a population health approach, which will address the range of factors that influence health. As the Standing Senate Committee on Social Affairs, Science and Technology Subcommittee on Population Health noted in its fourth report, a coordinated, population health approach requires intersectoral action — coordination among different government departments, collaboration among all levels of government and the participation of different stakeholders from non-governmental organizations, industry and communities. (Standing Senate Committee on Social Affairs, Science and Technology, 2008b)

Not All Canadians Can Afford Healthy Foods

To reduce CV risks, all Canadians need healthy, reasonably priced foods. In 2004, just over 9.9% (1.1 million) of households in Canada experienced problems accessing enough safe, nutritious food to meet their dietary needs and lead active, healthy lives. Canadian households most likely to have problems obtaining healthy foods are those with lower incomes or whose main source of income is social assistance; off-reserve Aboriginal households; households that do not own their own dwelling; and households with children headed by a lone female parent. (Health Canada, 2007a)

Access to healthy foods is a particular problem in the North, but Canada has already successfully used pricing strategies and incentives to improve food security in remote communities. For example, the Food Mail Program makes healthy foods available and promotes healthy eating by reducing the postage rate for shipping nutritious perishable foods to remote communities in northern Canada. In 2007, the program was able to lower the cost of food in all communities that participated (i.e., $196 to $347 per week for the average food basket compared with $246 to $766 without the program), equalize food costs among communities and increase the variety of fresh foods available. Without the program, the cost of foods would be higher than the household income in all but a few homes. (Cundill, 2007) At the current time, about 140 communities in three territories and six provinces are eligible for the Food Mail Program, but only about 80 are using it. (F. Hill, personal communication, July 23, 2008)

The cost and availability of healthy food is not just an issue in the North. In other parts of Canada, there are surprising differences in people’s access to a supermarket. For example, Canadians living in some high-need and low-income neighbourhoods in Edmonton do not have a supermarket within easy walking distance. (Smoyer-Tomic et al., 2006)
How Healthy Is Our Food Supply?

Many Processed Foods in Canada Contain Too Much Trans and Saturated Fat and Salt

The quality of the food we eat is key to keeping our blood vessels and hearts healthy. How nutritious is our food now?

On a given day, one out of every four adults and children in Canada eats or drinks something in a fast food outlet. (Garriguet, 2007)

Canadians are eating more processed and prepared foods, and these foods tend to be high in calories, saturated and trans fats, sodium (salt) and simple sugars, and low in fibre and minerals. As a result, one in four men and women in their 30s and 40s derives more than 35% of their calories from fat, which puts them at risk of obesity and CV disease. (Garriguet, 2004) According to the Heart and Stroke Foundation of Canada, trans fats in processed foods are responsible for an estimated 3000 needless cardiac deaths each year in Canada (estimate based on Harvard Public Health data). (Heart and Stroke Foundation of Canada, 2007b)

Canadian adults also consume about double the recommended amount of sodium (salt) each day (3500 mg instead of the 1200 to 2300 mg recommended by the Institute of Medicine in the United States), which leads to high blood pressure and higher risk of CV diseases. (Campbell et al., 2006)

It is possible for countries to reduce the amount of trans fats and sodium (salt) in foods and improve the quality of their food supply. In 2004, Denmark became the first country to regulate an upper limit on the percentage of processed trans fats in food. (Health Canada, 2006) Recently, several jurisdictions, including New York City, have banned the use of artificial trans fats in foods. Finland successfully used a combination of public education and legislation to encourage its food industry to label any foods with more than a certain level of sodium and its restaurant industry to use less salt. The result? A 20% decrease in sodium in the food supply as producers reformulated their products to avoid the “high salt content” label and a 40% decrease in sodium intake. (Laatikainen et al., 2005)

Canada has already taken some steps to reduce the trans fats and sodium (salt) in foods. For example:

- In June 2006, Canada’s Trans Fat Task Force, co-chaired by Health Canada and the Heart and Stroke Foundation of Canada, recommended federal regulation to virtually eliminate processed trans fats in foods. The federal government accepted the trans fat levels recommended by the Task Force but is currently using a voluntary approach combined with public monitoring, reserving the right to regulate in two years if the food industry has not made changes. In the absence of federal regulations, some municipalities in Canada have introduced regulations to ban trans fats.

- In October 2007, Health Canada created the multi-stakeholder Working Group on Dietary Sodium Reduction to advise the federal government on processes and timelines to meet the targets for sodium consumption recommended to Health Canada by the Institute of Medicine in the United States.

- In 2007, Campbell Company Canada received Blood Pressure Canada’s Certificate of Excellence Award for ongoing leadership in sodium reduction. To meet the Heart and Stroke Foundation’s Health Check™ program nutrient criteria, the company has removed the equivalent of nine million teaspoons of salt from its tomato soup alone over the past five years.
In 2006, 44 food companies in the United States spent over $1.6 billion to market food and beverages to children and adolescents. (Federal Trade Commission, 2008) A significant proportion of that advertising also appears on television screens and in-store displays in Canada.

MARKETING AFFECTS FOOD CHOICES

Some companies actively market unhealthy foods – particularly to children. (Federal Trade Commission, 2008) This advertising affects attitudes toward food and food choices. Numerous jurisdictions, including Sweden, Norway, Austria, Belgium, Luxembourg, Greece, Italy, Finland, Germany, Denmark, the United Kingdom and Australia, have developed regulations that limit advertising and marketing of products to young children. Quebec is the only province in Canada to have introduced similar legislation.
FOOD LABELS ARE CONFUSING

Even when Canadians want to eat nutritious foods, they often do not have enough information to make healthy choices. Although Canada is an international leader in mandatory food labelling on packaged foods, only 61% of women and 52% of men “always or usually” read the nutrition facts panel on product labels (Canadian Council of Food and Nutrition, 2008), and those who do often find the information confusing. One of the main weaknesses in Canada’s nutrition facts panel is that there is no standard serving size. For example, “one” serving on the label for packaged bagels may be one bagel, half a bagel, a quarter of a bagel or 100 grams of a bagel. This lack of standardization makes it difficult for consumers to compare the nutritional quality of similar food products.

At the current time, mandatory nutrition labelling applies only to packaged foods in Canada. Some restaurants voluntarily label items on their menus. For example, eight Canadian restaurant chains now use the Heart and Stroke Foundation's Health Check™ logo to identify “healthier” items on their menus. However, information about the nutrition content of food served in restaurants and fast food outlets is still uncommon.

Within the last few months, New York City, San Francisco and the state of California passed laws requiring chain restaurants to list information about the calories – and, in San Francisco, saturated fat, carbohydrates and sodium – in the food they serve at point of purchase.

How Healthy Are Our Physical Environments?

Health Canada published physical activity guidelines for adults in 1998, for older adults in 1999 and for children and youth in 2002. These guidelines describe the amount of time everyone should spend being active each day in order to be healthy. However, only 10% of Canadian children and youth (Active Healthy Kids Canada, 2008), and fewer than 50% of Canadian adults are physically active. (Public Health Agency of Canada, 2009)

The opportunities that Canadians have to be physically active are affected by:

- the way our communities are designed and built, and how safe we think they are
- the environments where we spend most of our time: our homes, schools and workplaces.

Almost one out of every two Canadians aged 12 and older (48%) is physically inactive – down from 57% in 1996, but still unacceptably high. (Public Health Agency of Canada, 2009)

THE WAY OUR COMMUNITIES ARE BUILT AFFECTS HEALTH

People who live in moderate to high density communities and in more walkable neighbourhoods make more trips on foot and bicycle, spend less time driving, are more likely to meet recommended levels of physical activity and are less likely to be overweight and obese than those living in rural areas or low density communities with few shops, services and other amenities close by. (Sanitch, 2003; Ontario College of Family Physicians, 2005; Butterworth, 2000; Heart and Stroke Foundation of Canada, 2005; Frank et al., 2004) Safety is also an issue. According to a Canadian Fitness and Lifestyle Research Institute report, safety concerns keep one in five Canadians from walking or bicycling. (Canadian Fitness and Lifestyle Research Institute, 1999)
Several efforts are already under way in Canada to promote healthy and safe built environments. For example, the Centre for Sustainable Transportation in Winnipeg is working with some provinces to adapt and implement child- and youth-friendly land use and transport planning guidelines including: Ontario, Nova Scotia, British Columbia, Alberta, Saskatchewan and Manitoba. The guidelines are designed to encourage kids to spend less time in cars and more time walking and cycling.

- more dense urban development, with a mix of houses, stores and businesses
- roads and pathways that encourage walking and cycling
- more easily accessible, safe and affordable public transit services
- more parks and recreation facilities, including bike lanes and paths
- attractive, well-lit streets, where pedestrians and cyclists feel safe.

In Canada, there are several examples of new communities that are trying to promote physical activity as well as other aspects of health, including Garrison Woods in Calgary, Dockside Green in Victoria and Simon Fraser University’s UniverCity. The Dockside Green development in Victoria is being monitored for its impact on a range of environmental, social and economic indicators, including the percentage of residents who are overweight or obese, self-perceived general health, and resident use of indoor and outdoor public space and facilities. This information should be used to help create more heart healthy environments and communities.

**The child- and youth-friendly guidelines developed by the Centre for Sustainable Transportation suggest that municipalities:**

- **Involve children and youth in planning.**
- **Identify where children and youth want and need to go and provide ways of getting there by foot or bicycle.**
- **Ensure pedestrian routes used by children are as safe as possible.**
- **Provide separate bicycle paths.**
- **Make the transit system safe, welcoming and affordable for children.**
- **Post and enforce much lower speed limits.** (Kids on the Move website, 2005)

Smart Growth, a broad-based movement that advocates for change in the way cities are designed and built, encourages land use practices that reduce urban sprawl and create more livable communities – where people can walk to schools, stores and activities, instead of having to drive. The types of changes that will improve heart health include:

**SCHOOL, WORKPLACE AND HOME ENVIRONMENTS INFLUENCE HEALTH**

Canadians spend a significant portion of their lives at school, work and home – often in sedentary activities. However, these settings can play a key role in creating supportive environments. It is particularly important to develop work and school environments that encourage active living because the gap between Canadians’ average level of physical activity and the level needed to prevent obesity is so large that leisure-time physical activity alone is unlikely to be enough to reduce obesity.

In 2005, as part of the Integrated Pan-Canadian Healthy Living Strategy, Canada’s Health Ministers made a commitment to develop school nutrition standards and healthy eating programs. Eight of 10 provinces now have nutrition criteria for schools in place, but the criteria are inconsistent and fall short of the standards set by the Institute of Medicine in the United States. (Centre for Science in the Public Interest [Canada], 2007)
Schools are also providing more opportunities for physical activity. Almost all elementary and middle school students in Canada take at least one physical education class per week. In contrast, a significantly lower percentage of high school students take at least one class per week. (Canadian Fitness and Lifestyle Research Institute, 2006)

Policies that limit the amount of unhealthy food sold in schools and promote active living can improve young people’s diets and help them establish healthy eating and exercise habits early in life. School-based initiatives need rigorous evaluation to help identify best practices.

Workplaces should also actively promote health – either by providing more opportunities for physical activity and healthy eating, or by rewarding employees who adopt healthy behaviours. For example, Scotiabank has implemented an initiative whereby all employees who do not smoke pay less for their insurance and their health benefits.

At home, parents can create family environments that encourage their children to be physically active and reduce the amount of time they spend in front of computer and television screens. To help families be more active, it is important to reduce barriers, such as the cost of buying equipment or participating in an organized sport. The federal government has already taken steps to encourage physical activity by making the cost of children participating in organized sports tax deductible; however, the impact of this policy has not yet been assessed.

In the Annapolis Valley in Nova Scotia, parents, teachers, school boards, public health, industry, government and researchers are collaborating to provide more nutritious food in school. Activities include wellness fairs for students and parents, a playground games handbook developed by students, an interdisciplinary unit on healthy eating and physical activity for middle school students, opening the school gym after school for students to use, and offering a nutritious, low cost recess/lunch program for all students. Students in schools that participated in the Annapolis Valley Health Promoting School Project had lower rates of overweight and obesity, and ate more fruits and vegetables than students in other schools. The program, which is funded by the government of Nova Scotia, is now available province-wide. (Annapolis Valley Regional School Board, 2008)

Many children in Canada spend four to six hours in front of a screen each weekday. (Active Healthy Kids Canada, 2008)
Are Our Environments Smoke-Free?

Despite the progress that Canada has made in reducing smoking and exposure to second-hand smoke, tobacco use is still a key risk factor for CV diseases. In fact, over the past two to three years, Canada’s efforts to reduce smoking have stalled, especially among teenagers and men between the ages of 20 and 44 (Figure 10a and 10b). In 2007, 15% of Canadians between the ages of 15 and 19 were current smokers (Figure 10c). (Health Canada, 2008) More young women are now smoking newer tobacco products, such as flavoured cigarillos. (Physicians for a Smoke-Free Canada, 2008)

Figure 10b


Figure 10c

New strategies are needed to discourage smoking, and to counter industry efforts to develop and market products that are attractive to youth and circumvent current tobacco control legislation. Workplaces can play an active role by making their grounds and facilities smoke-free, offering smoking cessation programs and providing incentives that encourage employees to stop smoking.

In 2003, when Capital District Health Authority in Nova Scotia implemented its 100% smoke-free policy on all sites, the employer also introduced “To Be Tobacco Free,” a best practice tobacco intervention program for employees, physicians and volunteers. Facilitators with addictions training use a combination of ongoing peer support, adult education, motivational interviewing techniques and pharmacological aids to help people stop smoking. In 2004/05, 1900 people participated in the program, 33% remained smoke-free six months after the intervention, and 44% were smoking less and still trying to stop. (Jolemore and Steeves, 2006)

Hospital-based smoking cessation programs can be highly effective in helping patients become smoke-free because people who have had a heart attack or have been diagnosed with another CV disease may be motivated to change their lifestyle. The University of Ottawa Heart Institute has developed a smoking cessation program for patients, which consists of consultation, intervention, information, follow-up and feedback. About 44% of the almost 1500 in-patients who participate in the program each year remain smoke-free for six months or longer. Twelve other hospitals in the region are now replicating the program and using it to assist all smoking patients, not just those with heart disease. The Ottawa model is also being used in River Valley Health in New Brunswick and the Vancouver Coastal Health Authority in British Columbia. As the Heart Institute notes, having smoke-free facilities and grounds (i.e., a supportive environment) made it more important for hospitals to offer sensitive, responsive and successful programs to assist smokers. (Champlain Cardiovascular Disease Prevention Network, 2007; Reid et al., 2006)

One of the barriers for Canadians who want to stop smoking is the cost of smoking cessation programs and aids. (Zawrtailo, 2008) To create a more supportive environment, governments and the health care system can help remove or reduce this barrier by including smoking cessation aids in provincial health plans – particularly for low-income Canadians. Quebec is the only province to currently offer this type of incentive.

Health Is More Than Health Care

The health care system and ministries of health cannot create healthy environments on their own. They need the active support of other ministries, including transportation to improve public transit and create more roads with bike lanes, education to shape school policies, and finance to develop tax policies and incentives.

A number of jurisdictions are using a “whole-of-government” approach to create healthy environments. For example, ActNow BC is a cross-government health promotion initiative to improve health by reducing risk factors, which recognizes that population health goes far beyond the responsibility of a single ministry or a single environment. ActNow BC involves 20 provincial ministries, and is led by the Minister of Healthy Living and Sport and supported by an ActNow Assistant Deputy Minister’s committee. Representatives from each provincial ministry sit on the committee and meet monthly to share information and develop strategies. ActNow BC’s aim is to have British Columbia lead North America in healthy living and physical fitness. The initiative has set fairly aggressive provincial goals for physical activity, healthy eating, weight, tobacco use and alcohol use during pregnancy. ActNow BC supports schools, employers, local governments and communities to develop and promote programs that make “healthy choices easy choices for all British Columbians.”
Quebec has also launched a government action plan to promote healthy lifestyles and prevent weight-related problems. The Quebec government has allocated $20 million a year for 10 years from tobacco taxes to support collaborative projects that promote healthy lifestyles. In Quebec, all ministries and agencies are also required to consult with the Ministry of Health and Social Services about any laws or regulations they are developing that could have an impact on health.

Successful programs in Europe use both a whole-of-government approach and a whole-of-community approach. For example, Ensemble, prévenons l’obésité des enfants (Together, let’s prevent obesity in children), a program in France, has the support of professional associations, the association of mayors of France, and six federal ministries, including those responsible for health, youth, sport, towns, agriculture and food, and business. The program mobilizes communities – parents, teachers, schools, doctors, stores, and national and local governments – to reduce obesity in children between the ages of 5 and 12 and to improve family nutrition. Towns organize activities that promote a balanced diet and recreational exercise, such as school breakfast programs, safe routes for walking to school, sports activities, organized physical activity at playtime, presentations by local producers about healthy foods and opportunities to try and taste new foods. (Westley, 2007; Watson, 2007) Children are weighed and measured each year in school. Overweight or at-risk children are encouraged to see a doctor, and they and their families receive personal coaching about diet and physical activity.

Whole-of-government approaches have the potential to identify other government policies that have a negative impact on health or create health inequities. They also are able to ensure that any new policies and programs reduce rather than increase social and health inequities.

Lessons Learned

Efforts to create supportive environments are most effective when they:

- are part of a comprehensive strategy that includes social marketing, legislation/regulation, individual education and the advice of health care professionals
- involve all parts of society – community, the private sector, the health care system and government
- reach people in all the settings where they live, learn, work and play
- aim to reduce inequities in risk, education, literacy or income.

Recommendations

Supportive environments can make the healthy choice the easy choice – for all Canadians. To create healthy environments, Canada can and should use a combination of education, legislation, regulation and policy to promote healthy eating and physical activity, to reduce smoking, and to address the underlying “upstream” social inequities that affect health. Many of the “upstream” determinants of health require action beyond the health care system and the Canadian Heart Health Strategy and Action Plan. Several provincial governments are implementing whole-of-government approaches to policy development, but solving problems like poverty and food insecurity will require significantly more intersectoral leadership and action.
A/ Socio-economic Determinants of Health

Although the focus in the health system tends to be on behavioural risk factors for CV disease – such as poor diet, lack of exercise and smoking – the CHHS-AP recognizes that these determinants are in fact greatly influenced by the “upstream” socio-economic determinants of health. We also acknowledge the huge opportunity to prevent CV and other chronic diseases by addressing these broader societal issues. To achieve success in this area requires broad intersectoral action, leadership and the involvement of all levels of governments, using whole-of-government approaches within each level of government, working collectively with the volunteer sector, industry and society in general.

The CHHS-AP Steering Committee anticipates the final report of the Standing Senate Committee on Social Affairs, Science and Technology Subcommittee on Population Health and supports actions to overcome health and societal inequalities, including the actions outlined in the Chief Public Health Officer’s Report on the State of Public Health in Canada, 2008 to:

- reduce poverty
- improve employment and working conditions
- reduce food insecurity
- improve the built environment both to encourage physical activity and to increase access to affordable housing
- improve access to early childhood education and care
- improve access to education and literacy training
- improve social supports.

B/ Environmental Factors

1.1 Improve the nutritional quality of Canada’s food supply and access to healthy foods:

- Eliminate processed trans fats in Canada’s food supply through regulation as recommended by the Trans Fat Task Force, including replacing trans fats with healthier alternatives to saturated fats.

- Accelerate the work of Health Canada’s Working Group on Dietary Sodium Reduction to drive daily levels of sodium (salt) intake down to recommended levels and ensure timely implementation of the Working Group’s recommendations.

- Improve food labelling regulations and other processes to make the portion sizes on the mandatory nutrition facts panel consistent across similar products and provide clear, accurate information about nutritional values, including calories, saturated and trans fats, sodium (salt), simple sugars, fibre and minerals.

- Develop guidelines, with regular monitoring, for fast food restaurants and food service outlets to post the calorie count per portion for each item at point of purchase.

- Ban the advertising and marketing of “unhealthy” foods and beverages to children in all media based on clear definitions of “healthy” foods, and provide incentives to encourage the food industry to voluntarily market “healthy” foods to children.

- Provide sustainable funding to expand the Food Mail Program to more northern and isolated communities.

- Identify best practices for providing healthy foods in schools, and disseminate this information to school boards.

- Encourage employers to implement healthy food policies in workplaces and to make healthy foods available to employees. Government organizations and hospitals should lead the way by serving only healthy foods.
1.2 Create more opportunities for physical activity:

- Increase support for infrastructure development that promotes active, healthy living (e.g., sidewalks, walking paths, recreation centres, parks, bike paths and lanes) by, for example, designating a specific portion of the $33 billion Building Canada – Modern Infrastructure for a Strong Canada plan (2007-2014) for this purpose.

- Promote and showcase Canadian and international best practices/examples of community planning and design that enhance healthy, active living.

- Identify best practices for providing daily opportunities for physical activities in schools that will help children meet Health Canada’s physical activity guidelines, and disseminate this information to school boards.

- Provide incentives to employers to implement healthy, active living policies and to offer employees opportunities for regular physical activity.

- Provide tax incentives to ensure opportunities for children to be more physically active, such as offering refundable tax credits to low-income families and exempting the sale of bicycles, helmets and other sports equipment from GST/HST.

1.3 Reduce exposure to and use of tobacco:

- Enhance community programs that keep youth from starting to smoke.

- Develop regulations to control the sale of flavoured “cigarillos” and address other tobacco industry measures that attempt to circumvent current tobacco control legislation.

- Identify best practices for schools to keep children and youth from starting to smoke, and disseminate this information to school boards.

- Support employers to develop tobacco policies and offer smoking cessation programs to employees, such as improving access to programs and aids that help people become smoke-free.

- Support successful smoking cessation programs, such as the one developed by the University of Ottawa Heart Institute, at other clinical settings in Canada.
However, even in healthy environments, Canadians’ ability to make healthy choices – to eat healthy foods, be active, not smoke, and manage their blood pressure, cholesterol and weight – is affected by the information they receive, their ability to understand and use that information, their motivation to change and the supports available to help them.

Health information is currently available from many sources, including government publications and websites, brochures, media campaigns sponsored by pharmaceutical or other companies, brochures in doctor’s offices, health charity websites, newspaper and magazine articles, the Internet, individual blogs, and radio and television reports.

Some of the information may be confusing. Many Canadians – particularly older Canadians – are not “health literate”: they do not have the skills to sort through various health messages, understand them and then use that information to improve their health. (Statistics Canada, 2003)

Despite the amount of information available about CV diseases, many Canadians do not realize they are at risk or how serious the risks are. For example:

- Although 60% to 70% of Canadians with heart disease had high cholesterol before they were diagnosed, many did not know their cholesterol levels – even though there is strong evidence that managing cholesterol can save lives. (Shepherd et al., 1995)
- Heart disease and stroke is the leading cause of death for women, but only 13% of women know this. (Heart Truth website, 2008)
- Most women still consider CV disease a man’s disease.
- Few parents think their own children are overweight. (Canadian Medical Association, 2006)

Healthy environments will provide the foundation to help all Canadians lead healthier lives.
When people do not think they are at risk, they are less likely to take steps to protect their health.

To be able to lead healthier lives, Canadians need to know their risk and have accurate information, education, skills and support. To build a heart healthy nation, Canada needs more effective ways to communicate information about CV health and risks, and to promote and provide regular screening of blood pressure, cholesterol and other lipid levels, blood sugar, weight and abdominal obesity.

Do Canadians Have the Information They Need to Lead Healthy Lives?

**MESSAGES ABOUT RISK FACTORS CAN BE CONFUSING**

Many of the risk factors that cause CV diseases also contribute to diabetes, kidney disease, cancer, dementia and other chronic illnesses, so many different chronic disease organizations and strategies are talking about the importance of healthy eating and physical activity. In some cases – such as advice about alcohol consumption or the benefits of certain medications – the information conflicts.

To ensure that Canadians receive accurate health information, the key chronic disease organizations should be working together – pooling their expertise, human resources and influence – to develop and communicate clear, consistent messages about common risk factors. Some promising collaborative work is already under way. For example, in 2003, the Heart and Stroke Foundation of Canada, the Canadian Cancer Society, the Canadian Diabetes Association, the Canadian Council for Tobacco Control, the Coalition for Active Living and the Dietitians of Canada established the Chronic Disease Prevention Alliance of Canada (CDPAC), a network of organizations working together to develop integrated chronic disease policies and programs. CDPAC is now an alliance of 10 national organizations linked to a network of provincial and territorial organizations.

The CHHS-AP supports these collaborative efforts – which have the potential to enhance the individual efforts of different disease groups – and encourages the different disease strategies to go farther. Social marketing and awareness campaigns should target the general public as well as individuals at high risk, such as Aboriginal/indigenous peoples, Asians, blacks, seniors, women over age 50, people who have more than one risk factor for CV diseases and people with low incomes.

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**Key Messages**

Canadians need accurate, authoritative information on CV health as well as education, skills and support to help them lead healthier lives.

Information about CV risks is currently available from many sources but can be contradictory.

Chronic disease organizations should work together to develop consistent messages about shared risk factors and effective public education and social marketing campaigns.

Canada should make health literacy a priority, so Canadians will have the skills to assess and use health information.

Interactive tools will help Canadians be more aware of their risks and more involved in their own health and care.

Canadians should be screened regularly for early signs of CV risk factors.

Screening programs should be provided in different settings in the community.
Promising Practices in Public Education and Social Marketing

Based on experience with the Federal Tobacco Control Strategy and other initiatives, effective public education and social marketing campaigns should:

- Focus on positive messages and results that can be achieved.
- Include population-based information aimed at the general public as well as targeted programs designed to meet the needs of those at high risk of cardiovascular disease.
- Communicate messages that are consistent with other health strategies, in order to reduce confusion and enhance their impact.
- Be interactive and involve the people they are trying to reach – both to engage them in their own care and to ensure the education messages are culturally appropriate.
- Involve the non-health as well as the health sectors in delivering the messages.
- Provide information and support in all settings where people live, work, learn and play.
- Provide incentives.
- Match interventions with communities’ and individuals’ readiness for change.
- Be long-term, multi-year strategies that recognize the time and political will required to change behaviour.

Sustained public education and social marketing campaigns should provide:

- culturally and age-appropriate information
- information in a variety of languages and formats
- practical advice and tools that will help people make healthy choices, such as signs at the point of sale in grocery stores and restaurants
- information on how to access screening and monitoring programs.

INFORMATION ABOUT SELF-CARE CAN BE HARD TO FIND AND USE

Informed Canadians can be their own primary care provider but – to manage their health – Canadians who have already been diagnosed with a CV disease or a risk factor (e.g., high blood pressure or high cholesterol) need accurate, trustworthy information. In fact, information can be an incentive for people to take a more active role in their own health and care.

The Internet is an increasingly important tool for sharing health information – one that has the potential to reduce the disparities between urban and rural areas in accessing information. Approximately 70% of Canadians use the Internet now, and this percentage will increase. (Canadian Radio and Television Commission, 2007) Canada should take advantage of the full potential of Internet technology, while ensuring that those Canadians who do not have easy access to the Internet are still able to receive accurate health information.

When developing Internet information, Canada should create interactive ways for people to obtain information on CV diseases, such as online risk assessments and tips on how to stay active and track their fitness goals. Information sites should also provide places where patients can communicate with others facing the same issues, such as online communities, health forums and blogs.
There are some good interactive forms of CV information already available, such as:

- the Heart and Stroke Foundation of Ontario’s web-based Heart&Stroke Blood Pressure Action Plan™ and the Heart&Stroke Risk Assessment™, which allow people to track their blood pressure and other health risks and provide individual, personalized advice on how to improve health.

- Blood Pressure Canada’s website, www.hypertension.ca/bpc, which provides updated information for patients and health care providers on blood pressure management.

There are also some message boards and blogs where Canadians can “talk” with others trying to reduce their CV risks and be more active in their own self-care; however, these online communities are not as well developed for CV diseases as they are for other diseases, such as breast cancer.

Many Canadians continue to turn to their primary care providers for information or to confirm what they have learned on the Internet. Primary care providers can play a valuable role in directing patients to accurate, authoritative sources of information on CV diseases and in encouraging them to use that information to be active partners in their own care.

**MANY CANADIANS DO NOT HAVE THE SKILLS TO USE HEALTH INFORMATION**

For campaigns and information to be effective, Canadians must have the health literacy skills to be able to use health information to make informed decisions. When Canadians look for health information online using search engines such as Google, they often find it difficult to know how accurate the information is. Is the source biased? Is the site trying to market a product?

Low health literacy is associated with poor health. The situation in Canada is critical. (Rootman and Gordon-El-Bihbety, 2008)

Health literacy is key to helping Canadians find and judge information. In January 2008, a health literacy symposium sponsored by the Canadian Public Health Association Expert Panel on Health Literacy recommended priorities for a nationwide health literacy strategy (Rootman and Gordon-El-Bihbety, 2008):

- Make literacy – and health literacy – a national priority.
- Make health and education sensitive and responsive to language, culture and health literacy.
- Develop programs that help populations at risk make better use of health services.
- Encourage health practitioners to be agents of change.
- Develop an integrated, comprehensive strategy that addresses the needs and concerns of First Nations, Inuit and Métis people.

It is important that efforts to improve health literacy work for everyone and do not increase inequities between those who have easy access to information and services and those who do not. Schools can play an important role in health literacy by developing stronger health curricula.

One of the most effective ways to improve health literacy – particularly among people diagnosed with a CV disease – is to develop user-friendly versions of evidence-based clinical guidelines. This type of information helps patients become aware of the care they should be receiving and talk to their providers about their care. For example, the Canadian Hypertension Education Program has published a public version of the blood pressure guidelines, and the Canadian Stroke Strategy is developing a public version of the Canadian Best Practice Recommendations for Stroke Care. Another way to improve health literacy is to give individuals easy access to their own health records and test results.
The health care system has traditionally used a risk factor approach to promote health, focusing on a particular risk, such as smoking or obesity, and then developing information and education programs that target that risk. This approach can work well with CV diseases – particularly when education about risk factors is combined with screening programs that give people concrete information about their own personal risks as well as ways to reduce them.

With some populations at high risk, a life course approach – combined with a risk factor approach – may be a more effective way to reduce risk (Figure 11). Life course epidemiology is a particularly promising practice in Aboriginal/indigenous communities. Targeting maternal and child health not only leads to better birth outcomes but also helps mothers make adjustments in their lives at a time when they are most amenable to change. With smoking and poor diet well entrenched in many Aboriginal/indigenous communities, (Cooke et al., 2004) the development of healthy habits early in life is key, and early intervention is the best use of limited resources. (Hecmann, 2006)

A life course approach recognizes that life experiences – particularly in the early years – affect habits and choices later in life, and it focuses on promoting health at critical life stages, such as improving fetal nutrition and birth weights; promoting a healthy diet and physical activity in the early years to avoid childhood obesity; giving children information and skills at the age when many first start smoking so they will remain smoke-free; developing programs that keep adolescents physically active; and measuring adolescent blood pressure. At each age and stage of life, people receive the information, skills and supports they need to make healthy choices. (World Health Organization, 2005)

Figure 11
A Life Course Approach to Chronic Diseases

When developing prevention programs, Canada should use both a risk factor and a life course approach, helping children establish healthy lifestyles early and targeting Canadians at key stages of life when their risks of cardiovascular disease are high.

**FEW CANADIANS ARE SCREENED FOR CV RISK FACTORS**

People are more likely to change eating habits or be more active when they know they have a problem. Regular screening for risk factors helps detect problems early, when they can be managed with changes in diet or exercise or with medication – rather than after complications have developed. Various clinical practice guidelines contain recommendations for regular screening of diet, level of activity, obesity (i.e., body mass index, waist circumference) and blood pressure, as well as blood glucose, cholesterol and triglyceride levels. Yet relatively few Canadians – given that 90% have at least one risk factor for CV diseases – are being monitored. When screening is done, it is not always done well or consistently.

The lack of risk factor screening and monitoring may be due, in part, to the large number of Canadians – more than four million, including 240,000 who have a chronic disease – who do not have a family doctor. (Statistics Canada, 2008) About 80% of this group report that they use walk-in clinics or emergency departments when they need care; however, this means that they are unlikely to receive the regular screening that would help detect high blood pressure or cholesterol at an early stage.

**COMMUNITY SCREENING PROGRAMS SHOW PROMISE**

Risk factor screening has traditionally occurred in doctor's offices, but it can also take place at other sites in the community, including pharmacies, schools, fire stations and workplaces – where programs can reach more people. In fact, having trained volunteers take some measurements, such as blood pressure, outside the primary care setting (i.e., in surroundings familiar to participants) can result in more accurate readings. (Kaczorowski et al., 2008)

However, every effort must be made to ensure that:

- Community-based screening is done properly.
- Participants are given their results and know what they mean.
- People receive appropriate, high-quality follow-up and treatment.

Several effective screening programs already operate in community settings across Canada. For example, the Calgary Fire Department offers regular blood pressure measurements for the public, with the screening done by firefighters. Preschoolers in Ontario are now being screened for healthy eating using the Nutrition Screening Tool for Every Preschooler (NutriSTEP™), developed by dietitian researchers at the Sudbury and District Health Unit in collaboration with the Canadian Institutes of Health Research. The questionnaire assesses preschoolers' eating habits and comes with a tool kit that parents can use to improve their child's nutrition. NutriSTEP™ – an example of a life course approach to promoting health – is a requirement of the new Ontario Public Health Standards and is being promoted across the province. The Ministry of Health Promotion plans to monitor results.

Industry can also offer employees effective screening programs for common risk factors as well as programs to improve diet, weight management and health knowledge. For example, in Project Impact, 2700 employees from eight Halifax companies were screened in the workplace for CV risk factors, such as smoking, obesity, blood pressure, cholesterol and physical activity. Over 60% had at least two modifiable risk factors, and 566 agreed to participate in a three-month Health and Wellness Program. The control group received information about their risk factors, while the intervention group received heart health education sessions, individualized exercise programs, nutrition analysis and counselling, a smoking cessation program and a stress management program. All participants – even those who just received information – had a drop in their risk, which reinforces that just knowing about one's risks has value. However, those who received information, counselling and other programs had a greater reduction in risk. According to the sponsors of the project (Atlantic Blue Cross Care, Aventis...
Pharma and the Atlantic Health and Wellness Institute, the results translate into one cardiac event avoided for every 100 participants and one stroke avoided for every 500 participants over a 10-year time period. (C. LeCouteur-Morais, personal communication, November 28, 2007) Workplace screening programs are in the best interest of employers in that they help ensure a healthy workforce and decrease absenteeism. (Renaud et al., 2008) However, more positive incentives for employers are clearly required.

**SETTING PRIORITIES FOR SCREENING**

Risk of CV diseases increases with age, and Canada has an aging population. Indeed, the number of Canadians over the age of 65 is expected to double within the next 15 years. This means that seniors should be a target group for CV education and screening programs. For example, some communities have designed programs for older adults, such as the Cardiovascular Health Awareness Program in Ontario (Kaczorowski et al., 2008) and the Airdrie Community Hypertension Awareness and Management Program in Alberta. (Jones et al., 2008) In these initiatives, local pharmacies hold screening and education sessions, where seniors are assessed for their cardiovascular risk. Trained volunteers take each person’s blood pressure and complete a cardiovascular risk profile. Participants are given a copy of their risk profile, as well as information about how to reduce their risks. Results are recorded in a database and sent to the person’s primary care provider and pharmacist. Seniors, physicians and pharmacists can also access test results online. In addition to individual patient reports, physicians receive a confidential report comparing the proportion of their patients with high blood pressure with those of other practices. This report allows physicians to see whether they are doing as good a job as their peers in helping patients manage blood pressure.

Priority should also be given to other populations with high rates of CV diseases, such as Aboriginal/indigenous peoples, South Asians and African Canadians. In a life course approach, priority would also be given to screening adolescents according to recommended guidelines to identify risk factors early in life.

**WHAT IS THE POTENTIAL OF GENETIC SCREENING?**

Molecular genetics holds great promise for transforming cardiovascular care in the 21st century, and it has the potential to improve diagnosis and treatment. (Robin et al., 2007) Genetic testing is already being used to diagnose many single-gene diseases and, in the near future, may be able to determine whether an individual is genetically susceptible to common CV risk factors. Genetic testing can also be used to detect genetic variations that may affect how people respond to treatment. (Bennett et al., 2007; Kajinami et al., 2004)

Thirty-seven countries are currently involved in a global systematic genetic screening program, called “Make Early Diagnosis to Prevent Early Death” (MEDPED), for dominant familial hypercholesterolemia (FH), a lethal treatable – but difficult to diagnose – disease that affects one of every 250 people in Quebec and one of every 500 in other Canadian provinces. The Netherlands has an ongoing nationwide family-based FH molecular screening program, which has resulted in better treatment for high-risk patients, better adherence to treatment, a lower risk of cardiovascular events and better access to life and disability insurance (Leren et al., 2008; Homsma et al., 2008), and it has proven to be cost-effective. (Wonderling et al., 2004)

Canada has been a leader in genetic screening in the cancer field, initiating successful breast cancer prevention programs that include genetic screening for BRCA1/2 gene mutations. (Oros et al., 2006; Simard et al., 2007) These programs should be a model for other diseases, including CV diseases. Within the next half-generation, we will have the technology to support routine genetic screening for at least some cardiovascular disorders. There is much still to be learned, but this “personalized” approach to diagnosis, risk stratification and optimal treatment is extraordinarily exciting for our future.
Recommendations

Canadians’ ability to make healthy choices – to eat healthy foods, be active, not smoke, and manage their blood pressure, cholesterol and weight – is affected by the information they receive about the risk factors that lead to CV diseases, their ability to understand and use that information, their motivation to change, and the supports available to help them, such as screening and follow-up programs in their communities.

To help Canadians lead healthier lives, we should:

2.1 Bring Canada’s major disease organizations together to:

- Develop and communicate clear, consistent messages about common risk factors for chronic diseases.
- Create and launch comprehensive, sustained public education/social marketing campaigns targeted at high-risk populations to prevent CV and other chronic diseases, including the signs and symptoms of stroke and heart disease, and the actions to take.
- Support the Canadian Public Health Association’s and the Canadian Council on Learning’s work on health literacy.

2.2 Develop and maintain interactive Canadian source(s) of authoritative information on CV health and diseases.

The information source(s) should build on existing initiatives and:

- Provide up-to-date information on key risk factors, including high blood pressure and cholesterol, healthy eating, physical activity, smoking, obesity and diabetes.
- Be supported by interprofessional primary care teams who, in turn, will provide more consistent messages to their patients.
- Include interactive ways for people to identify and assess their own risks and learn practical ways to reduce risk.

Focus on self-care and make Canadians aware of evidence-based guidelines and strategies to reduce risk, improve self-care, promote health and prevent complications at all stages of CV diseases.

Link Canadians to community services that can help them lead healthier lives, such as smoking cessation programs, physical activity programs, dietitian services and support groups.

Have the mandate and resources to develop and maintain information tools and links to related resources.

2.3 Deliver CV risk screening, education and follow-up programs in a variety of community settings. These programs should:

- Have strong leadership and accountability, and be part of community/regional care systems.
- Be evidence-based.
- Be delivered by trained providers and/or volunteers.
- Be offered in settings convenient for Canadians, including workplaces, where incentives should be developed to help employers create and maintain these programs.
- Target groups at risk.
- Focus on key CV risk factors, including blood pressure and cholesterol levels, weight and waist measurement, smoking, fasting blood sugar, family history, nutritional status and physical activity.
- Ensure that risk profile measurements taken during screening are shared with individuals and their primary care providers, and that individuals have the information they need to understand their risk profile.
- Refer people who are at risk for appropriate evidence-based treatments, follow-up services and supports.
- Where possible and practical, use knowledge of genetic variation to identify people with inherited risks for CV diseases.
Although not all Aboriginal/indigenous peoples and communities are at high risk of heart disease and stroke, Aboriginal/indigenous peoples have a higher prevalence of CV and other chronic diseases such as diabetes, cancer and arthritis/rheumatism than Canadians in general (Figure 12). (National Aboriginal Health Organization, 1997) From 1984 to 1995, the hospitalization rate for ischemic heart disease in First Nations communities in Ontario more than doubled (from 76 to 186 per 10,000 people) while hospitalization rates for the rest of the province declined. (Shah et al., 2000; Harris et al., 2002) In 1991, 31% of First Nations adults reported having a chronic health problem; by 2002/2003, 63.7% reported at least one long-term health condition. (National Aboriginal Health Organization, 2005)

There is little information available specifically on Inuit and Métis health, but, based on traditional measures such as body mass index, the Inuit – particularly Inuit women – are at higher risk from overweight and obesity than other populations. (Young, 2007) Two in five Métis people are physically inactive, one in three is overweight, one in five is obese and one in three is a daily smoker. (Public Health Agency of Canada, 2009)

The Constitution of Canada recognizes three groups of Aboriginal peoples: Indians (or First Nations), Inuit and Métis. These three separate peoples have unique heritages, languages and cultural practices.
The CV health of Aboriginal/indigenous peoples is threatened by smoking, substance use, sedentary lifestyles and poor diet. Of these risk factors, poor diet is the most complex because it is related to the changing tastes of a new generation (i.e., Westernized diets), the high cost and lack of access to healthy foods (i.e., food insecurity) and less access to traditional foods because of climate change and harvesting costs. Social and economic factors also affect health. For example, the health problems of many Inuit are compounded by overcrowded housing, low levels of education and income, prevailing mental health issues (e.g., guilt, hopelessness, low self-esteem, substance use/abuse, suicidal ideation and poor coping skills). (S. Carriere, personal communication, December 18, 2007)

If nothing is done to address the heart health crisis in Aboriginal/indigenous communities, the situation will become much worse – simply because of demographics. The Aboriginal population in Canada is growing much faster than the rest of the population (Figures 13a and 13b). If we do not act now, both the well-being of Aboriginal/indigenous peoples and the sustainability of health care systems across the country will be threatened.
Figure 13a
Population Projections for Aboriginal and Canadian Populations

Data Sources:

Figure 13b
Projected Growth for Aboriginal and Canadian Populations

Data Sources:
While CV disease is a crisis for many Aboriginal/indigenous peoples, there is hope. Many Aboriginal/indigenous communities – in Canada, in the United States and internationally – are actively developing and implementing programs and services to reduce CV diseases and improve treatment. If we use what we already know and build on the strengths of Aboriginal/indigenous communities, we can prevent disease and avoid the health problems and costs.

To end the CV crisis among Aboriginal/indigenous peoples, Canada must engage Aboriginal/indigenous communities in developing their own heart health solutions, support comprehensive health promotion programs that address the health and social factors that put people at risk, improve screening programs, provide integrated treatment services, and develop the information to guide prevention and care programs.

Environments and the Broader Determinants Threaten Health

In Aboriginal communities health is conceived less as a personal matter than as a harmonious order in which the person is integrated in an encompassing social, temporal, spiritual and non-empirical environment. (Ootoova et al., 2001) As a natural by-product of respectful balance and harmony in the universe, “health” or the good life unfolds from broader social and environmental order.

No matter how well designed and effective clinical and programmatic efforts are in the short term, environmental factors have enormous power to override gains, prompting many to view the individual in context as the only appropriate focus of intervention and analysis. (Kirmayer et al., 2003; Willms, 2005)

Efforts to solve the CV disease crisis among Aboriginal/indigenous peoples must focus not solely on individual health behaviours but also on the environment and policies that influence individual behaviour – including equitable access to primary care and other health services. Lifestyle modification campaigns, such as smoking cessation programs, have not been as successful with Aboriginal/indigenous peoples as with Canadians in general. This is largely because they focus only on individual risk factors and do not address the broader socio-economic determinants of health or the need for healthy environments.

Aboriginal/indigenous peoples vary widely in their cultural strength and history, community infrastructure, economic opportunity, language and group identity. Because of this diversity, health and healing efforts must be designed to meet the needs of different communities. Strategies to reduce CV diseases and improve treatment for Aboriginal/indigenous peoples must take into account those living in Aboriginal/indigenous communities as well as the more than 50% of the population that live away from their home communities. Solutions must meet the needs of both urban and rural/remote communities.

Most CV diseases begin in childhood, and habits formed early can affect health throughout life. Risk accumulates over time and increases with age. However, it is possible to delay illness and deaths from chronic diseases by intervening early. (World Health Organization, 2005) A life course approach – targeting people at critical stages in their lives – may be an effective way to enhance health.

For example, in response to a plea for community Elders to address the diabetes epidemic, doctors at the Kateri Memorial Hospital collaborated with dietitians, researchers and school officials to develop the Kahnawake Schools Diabetes Prevention Program. The goal is to reduce diabetes by reducing obesity and high fat/high calorie diets and increasing physical activity. The program consists of three components: children in grades 1 to 6 learn about nutrition, fitness, diabetes, the human body and healthy lifestyles at school; parents and caregivers receive a home support program on nutrition, physical activity and health lifestyles; and the community is involved through a local advisory board. The program started as a three-year pilot in the mid-1990s, which demonstrated that this intervention did have an effect on eating habits: participants drank less pop and ate fewer high fat foods. Local universities are now involved, and the program trains service providers from other communities to deliver similar multi-faceted prevention programs to all community school children. (Paradis, 2005)

The Aboriginal HeartSmart Kids™ program developed by the Heart and Stroke Foundation is designed to reach children early by integrating culturally sensitive information about heart health into the curriculum. Educators in 177 of 241 communities with a First Nations band have been trained to use the program, and most parts of the curriculum are well used. Among teachers who have used the program, 83% find it excellent or good in cultural sensitivity.
Lack of Screening Threatens Health

Despite high rates of cardiovascular disease and other illnesses, many Aboriginal/indigenous peoples lack access to services – particularly screening and monitoring for chronic disease and basic physician services. Because they are not tested and diagnosed, many do not receive treatment or rehabilitation until they are close to death.

In Australia, the New South Wales Aboriginal Vascular Health Program organized a series of demonstration projects to address diabetes, circulatory diseases and renal disease by offering risk assessment, early intervention and health promotion and/or by improving coordination of existing services and collaboration among service providers. The Program used activities that are not traditionally part of more targeted heart health efforts, including building the capacity of local teams by providing support, education, training and resources; developing partnerships; using culturally appropriate teaching methods guided by community members; and creating local ownership. More than 1000 Aboriginal people were screened. The success was attributed to the fact that projects were flexible enough to meet local needs, engaged the community in collaborative ways and provided responsive, hands-on support. (New South Wales Department of Health, 2004)

Although First Nations living on-reserve are at a higher risk of mortality from acute myocardial infarction (72.7 per 100,000 compared with 52.1 per 100,000 for all Canadians), they are less likely than Canadians in general to receive routine early testing for heart disease risk, such as cholesterol testing. (National Aboriginal Health Organization, 2005)

Screening, treating and monitoring people for risk factors for CV diseases is an effective way to reduce risk. For example, the Alaska Inuit Diabetes Prevention Project screened participants for a number of risk factors, including blood pressure, cholesterol levels and glucose tolerance. One group received a four-year intervention that included a counselling session and yearly mailings about healthy diet and exercise. They were specifically encouraged to eat more foods with omega-3 fatty acids and to avoid foods with palmitic acid, a common saturated fat. When they were screened again after the intervention, participants had lower levels of cholesterol, fasting glucose and blood pressure than members of another group who received just the yearly mailings. (Ebbesson et al., 2005)

Promising Practices

Effective interventions for Aboriginal/indigenous people share the following features. They:

• are developed through partnerships and collaboration with Aboriginal/indigenous communities
• use a team approach
• create capacity within Aboriginal/indigenous communities to promote health
• use a life course approach
• focus on specific risk factors
• provide more equitable access to care
• are culturally appropriate
• match the needs and readiness of the people/communities involved.
Lack of Equipment, Technology and Health Care Providers Threatens Health

Even when Aboriginal/indigenous peoples are diagnosed and receive treatment, they often do not have the same access to care as most Canadians – particularly if they live in remote and isolated communities. While telehealth and e-medicine can help, Aboriginal/indigenous peoples need better access to cardiac life support, specialists and other, often simple diagnostic equipment (e.g., x-ray, electrocardiogram) in their communities. (Cooke et al., 2004)

There is also a shortage of Aboriginal/indigenous health care providers. Efforts are under way to recruit Aboriginal/indigenous people to health careers, and progress is being made, but there are still relatively few Aboriginal/indigenous providers. More must be done to ensure that Aboriginal/indigenous peoples receive culturally competent care from interprofessional primary care teams.

Jurisdictional Disputes Threaten Health

The capacity to end the heart health crisis in Aboriginal/indigenous communities is also affected by jurisdictional issues. The federal government is responsible for health care services provided in Aboriginal/indigenous communities, while the provinces and territories are responsible for health care services that Aboriginal/indigenous peoples receive in hospitals and outside their home communities. The provinces and territories also fund some services provided in Aboriginal/indigenous communities. Disputes between jurisdictions can delay services and cause severe hardship – as in the case of Jordan Anderson, a First Nations child who died in a Winnipeg hospital instead of with his family in his home community because the governments could not agree on how to share his medical care costs. (In 2007, the Government of Canada passed Jordan’s Principle, a resolution establishing a “child first” principle for resolving jurisdictional disputes.)

Lack of Information Threatens Health

Information is key to improving Aboriginal/indigenous health, but there have been few systematic efforts to gather data on the CV health and risks of Aboriginal/indigenous peoples – and most of the information that does exist is for First Nations populations rather than Inuit or Métis. There is very little information that specifically addresses CV disease treatment or management in Canadian Aboriginal/indigenous communities or how acute, rehabilitative or end-of-life planning and care is provided. Aboriginal/indigenous communities need more specific local, regional and national data on First Nations, Métis and Inuit peoples so they can develop unique strategies for each group. More directed research is required to understand the distinct health needs of First Nations, Inuit and Métis peoples, to engage and support the community and to develop effective interventions that have cultural integrity.

Some individual efforts are under way to collect information, but they are not systematic. For example, the BRAID study, co-funded by the Aboriginal Diabetes Initiative and the University of Alberta, was designed to collect information on diabetes and metabolic syndrome (i.e., abdominal obesity, abnormal blood fats, high blood pressure and glucose intolerance) on people in a First Nations community in Northern Alberta. (Kaler et al., 2006) A research team collected blood pressure, fasting glucose and body mass index measurements as well as family history on almost 300 people over age 6 who had not previously been diagnosed with diabetes. About 50% of the adults and 40% of the children and adolescents had metabolic syndrome, a condition associated with a high incidence of CV diseases. Rates of obesity, pre-diabetes and metabolic syndrome were particularly high in participants who were aged 18 or older. All participants were offered follow-up services by a nurse, dietitian or physician.
In the United States, efforts have been made to collect much more extensive information on a larger, more diverse group of Aboriginal/indigenous peoples. The Strong Heart Study is a longitudinal analysis of cardiovascular disease in American Indian communities: the largest epidemiological study of American Indians ever undertaken. (Center for American Indian Health Research, 2008) Over 4500 people from 13 tribes and communities in three geographic areas in the United States are participating. The five-phase study looks at mortality rates among people aged 35 to 74, findings from clinical examinations (i.e., risk factors) and the role of genetics. It includes a family study to help identify genes that might contribute to risk. The study has constructed a genetic map and is doing a genome scan to analyze changes in risk. In addition to increasing knowledge about the risks of cardiovascular disease, the study may lead to new therapeutic and prevention strategies for Aboriginal/indigenous peoples.

Lack of Engagement Threatens Health

To end the CV health crisis in Aboriginal/indigenous communities, Aboriginal/indigenous peoples and communities must be actively engaged in developing their own CV health solutions and plans. At the same time, Aboriginal/indigenous peoples and communities must be an integral part of the Canadian Heart Health Strategy and Action Plan.

All the recommendations in this report apply to all Canadians, including Aboriginal/indigenous peoples. In addition, Aboriginal/indigenous leaders should work with their communities, governments and non-governmental organizations to develop a multi-year action plan to engage Aboriginal/indigenous communities and identify culturally appropriate ways to reduce risk, improve care, respond to urgent needs, and address social and health inequities.

Recommendations

3.1 Develop a multi-year action plan to meet the CV needs of Aboriginal/indigenous peoples and communities using a partnership approach involving Aboriginal/indigenous organizations; federal, provincial, territorial and municipal governments; Aboriginal/indigenous communities; and non-governmental organizations.

3.2 Create a national Aboriginal/indigenous centre (or network of centres) for chronic disease prevention and management to coordinate the implementation of the action plan. Together, the centre and the plan will:

Create Heart Healthy Aboriginal/indigenous Communities:

- Engage community institutions and build community capacity in prevention interventions – particularly those related to tobacco reduction, school-based nutrition, fitness/sports and recreation.
- Promote promising practices, such as limiting tobacco sales to minors, removing unhealthy food from schools and providing opportunities for regular physical activity.
- Ensure approaches to CV disease prevention and care that respect traditional knowledge, Aboriginal/indigenous values and individual/community readiness.

Help Aboriginal/indigenous Peoples Lead Healthier Lives:

- Adopt a life course approach to risk reduction with a focus on early life.
- Work with other chronic disease strategies/organizations, such as cancer, diabetes, lung and stroke, to develop comprehensive prevention programs for Aboriginal/indigenous peoples.
Continue the Reform of Health Services: Provide Integrated, Patient-Centred Cardiovascular Care:

- Ensure a continuum of care between community-based and regional health authorities.
- Provide the same standard of CV care available to other Canadians.
- Improve access to care by making effective use of interprofessional teams – which should include nurse practitioners, dietitians, and primary care and specialist physicians all linked together – employing cardiovascular disease management algorithms, community and home care services and telehealth/e-medicine technologies.

Build the Knowledge Infrastructure to Enhance Prevention and Care:

- Oversample Aboriginal/indigenous peoples in periodic versions of the Canadian Health Measures Survey, and include Métis and Inuit in the First Nations Regional Health Survey.
- Advance the development and application of First Nations-, Inuit- and Métis-controlled databases that link with national databases.
- Establish an accurate, current database of evidence-informed chronic disease interventions as a means of tracking and sharing best practices.
- Improve screening, surveillance and monitoring systems within Aboriginal/indigenous health service agencies by ensuring that all clinical, research, survey and federally managed data are available locally.
- Support intervention and evaluation studies, particularly on food security and multi-component interventions.
- Fund research on interventions that address individuals and communities in context and that reflect Canadian Institutes of Health Research guidelines and other recommended research practices for working with Aboriginal/indigenous communities.

Develop the Right Service Providers With the Right Education and Skills:

- Strengthen the Aboriginal/indigenous health workforce by providing chronic disease intervention training, intercommunity mentoring and exchange, more bursaries, and more seats in medical and nursing faculties, and by extending regional Heart and Stroke Foundation outreach and support.
- Improve the cultural competency of non-Aboriginal/indigenous health service providers by providing residency incentives in the North, by rotating visiting specialists to rural, remote and isolated areas, and by incorporating cultural competency education and practical models/approaches for working with Aboriginal/indigenous peoples into professional training curricula.
Given the large number of Canadians who are likely to develop CV diseases over the next 10 to 20 years, they will also need efficient care. If the system does not become more efficient and effective, it will be overwhelmed by the demand for care and the cost of that care.

As noted earlier, this chapter focuses primarily on cardiovascular disease and the care of people with heart disease; however, the directions (such as improving access to care, establishing effective regional networks and the use of evidence-based guidelines) are consistent with the approaches recommended for treating other chronic diseases and, in particular, with the Canadian Stroke Strategy.

A great deal of CV disease can be prevented, but once disease and its complications have developed, they usually cannot be cured. CV diseases are chronic, deteriorating conditions that people have to manage and endure for the rest of their lives. To enjoy the best possible quality of life, they need timely, integrated, patient-centred care.
The Building Blocks for Integrated, Patient-Centred Care

Patient-centred cardiac care consists of the following key elements:

**Self-Care.** Individuals and their families are partners in their own health and care. They have easy access to information and services that help them to monitor their health (e.g., weight, blood pressure, cholesterol, abdominal obesity, eating habits and physical activity); improve their eating and exercise habits; and take medications prescribed by a care provider regularly. They know their own risk factors, have access to their health records and are involved in the decisions about their care. They have “voice, choice and representation.”

**Team-Based Primary Care.** Primary care practitioners (i.e., family physicians, nurse practitioners, nurses, pharmacists, dietitians, exercise specialists and social workers) work in teams to provide information and support to help their patients stay healthy; monitor their patients to detect any risk signs early; and engage patients at risk in their own care, giving them information and support to help them manage their risk and/or prescribing medications to help patients manage or reduce their risks (e.g., stop smoking, lower blood pressure and/or cholesterol, or lose weight).

**Emergency Care.** People who suffer a heart attack have access to immediate emergency services with care on site and during transport to a hospital that has the people and equipment to provide the right care in a timely manner.

**Specialized Care.** Teams of specialists, including cardiologists, cardiac surgeons, nurses, pharmacists, diagnostic technicians, rehabilitation professionals, geneticists and researchers who are based in regional centres and are part of a regional network, provide a range of timely diagnostic, medical and surgical interventions.

**Rehabilitation Services.** Patients recovering from a heart attack, stroke, cardiac surgery or congestive heart failure receive the exercise, active living aids, dietary counselling and other services that help them recover quickly to their maximum capacity, adopt a healthier lifestyle and prevent another occurrence.

**Home/Community Care.** Patients who need help after they leave hospital to recover from surgery or manage conditions such as heart failure or stroke receive home care services in their community and are helped to reintegrate back into their community.

**End-of-Life Planning and Care.** Patients with life-threatening heart conditions receive information and support with end-of-life planning and care early in the course of their disease. Providers communicate effectively with patients and their families about their prognosis and the advantages and disadvantages of different treatments.
How Integrated Is the System Now?

In an integrated, patient-centred system, all cardiovascular services have to work well together. Canadians need to be able to move easily from one cardiac care service to another, and their care should be seamless.

Although Canadians generally receive excellent cardiac care and jurisdictions across Canada are working to develop more integrated systems (e.g., reforming primary care services, developing interprofessional primary care teams, establishing regional networks of specialized cardiac services), there continue to be gaps and weaknesses in the way services are organized and delivered.

Fragmented Services Complicate Patient Care and Affect Outcomes

Cardiac care services continue to be fragmented. The problem of fragmented services is not unique to cardiovascular disease. It is an issue for all chronic diseases. People with chronic diseases require ongoing comprehensive care and management.

The problem is even worse for Canadians who have other chronic diseases as well as heart disease because services are often organized in disease-specific silos.

Chan, a 38-year-old man who recently had a cardiac procedure, was referred back to his primary care practitioner for ongoing monitoring and care. However, his primary care doctor had no information on the tests or procedures performed, the medications Chan received in hospital or his recommended treatment plan. Some of the advice Chan received from his primary care doctor contradicted the specialist’s instructions, so he was confused about his ongoing care.

Earl, a man in his early sixties with diabetes who lives in a small community in northern Alberta, was recently diagnosed with cardiac disease and referred to a specialist in Edmonton. Before his condition was fully diagnosed and treated, he made at least six trips to the cardiac centre in the city several hundred miles away — each one to spend only a short time with a different specialist or technician. He also had to make two other trips to see specialists about his diabetes. For each trip, his son had to take time off work to drive him. Earl is confused about his overall care, and he and his family have lost several weeks of work time and income.
A number of jurisdictions are beginning to use a chronic disease prevention and management model to provide more integrated, patient-centred care. Many are adapting the Chronic Care Model originally developed by Wagner (Figure 14) (Wagner, 1998), which illustrates the need for various components of the health system to work together and with community resources to provide care. In this model, productive interactions between informed patients and a proactive care team lead to better health outcomes.

The CHHS-AP Steering Committee has adapted the Wagner model to include an emphasis on chronic disease prevention as well as management (Figure 15). Chronic disease prevention and management is about relationships between patients and the interprofessional primary/chronic care team, between the primary care team and specialized regional networks that provide episodic acute care, and between the health care system and the community. In a chronic disease prevention and management program, all parts of the health care system would work together – using clinical information systems to help them provide timely, responsive, patient-centred care.

A chronic disease prevention and management program is particularly well suited for patients with complex, long-term illnesses such as heart disease and for the growing number of Canadians who have more than one chronic disease (e.g., heart disease and diabetes).

Figure 15
Chronic Disease Prevention and Management for CV Diseases
The Chronic Disease Prevention and Management Program in Brief

In a chronic disease prevention and management program:

- Canadians with heart disease or at risk for cardiovascular disease are identified as early as possible and offered interventions tailored to their needs (e.g., education, monitoring, medication and case management).

- Patients and their caregivers are actively involved and receive the information, skills and support to take more responsibility for self-care.

- Interprofessional primary care teams – made up of a mix of health professionals, including physicians, nurse practitioners, nurses, dietitians, pharmacists, physiotherapists, exercise specialists – support self-care, provide continuity of care and work in partnership with patients to maintain health and/or manage disease.

- The interprofessional teams provide coordinated care and make effective use of all providers’ skills. Care is provided by the most appropriate provider, in the most appropriate setting. Patients are referred to the “right” member of the primary care team and, if necessary, to the “right” specialty service.

- Specialists provide advice, co-manage patients, provide episodic care and support primary care teams.

- Transitions of care are highly organized. When patients have to move between levels of care, they understand their own role and the role of each provider. Patients and providers receive appropriate information, and the services are in place to allow patients to move easily through the system (e.g., acute care, home care and cardiac rehabilitation services).

- Information systems are used to help patients and providers share information, to guide care and to support surveillance and evaluation.

- The patient’s health and care are continually monitored, and the data are used to assess and improve quality of care and outcomes. Feedback is provided to patients, practitioners and the system.

The chronic disease prevention and management program also includes the types of actions that governments and communities can take to create supportive environments and healthy public policies. While primary and specialized care providers focus on providing patient-centred monitoring, education, care and treatment, public health practitioners and others in the community focus on reducing social and environmental risks to heart health. The model brings together health promotion, prevention and care, and involves a partnership among individuals and families, communities and health professionals.
According to organizations in the United States, Europe and Canada that use a chronic disease prevention and management model of care, this approach has a measurable impact on both health and the cost of care:

- In the eight-country EuroAction Project, 888 patients and 225 partners participated in a one-year comprehensive, family-based heart disease prevention and management program delivered by interprofessional teams made up of cardiovascular prevention nurses, dietitians, physiotherapists, cardiologists and general practitioners. The program had a measurable impact on diet, exercise and use of evidence-based medications: 78% of patients met the European targets for eating fruits and vegetables compared with 39% who received usual care; 50% achieved physical activity targets compared with 22%; and 58% had their blood pressure controlled compared with 41%. People participating in the program were also more likely to adhere to prescribed preventive medications, such as statin medication. (Wood, 2006)

- In a trial of the chronic disease prevention and management model with two million people, the Florida Agency for Health Care Administration (Medicaid) reported that 48% of participants experienced a drop in blood pressure, the prevalence of class III and IV heart failure dropped by 45%, hospitalizations were down 22%, and the average length of stay dropped by 51%. Hospital payments were also down 70%. (Pfizer Health Solutions Inc., 2004)

Several provinces, including British Columbia, Alberta, Ontario, Quebec and Nova Scotia, are implementing the chronic disease prevention and management strategies for at least some diseases. To meet the needs of patients at risk and those with cardiovascular disease, this process should be accelerated and should include all provinces and territories.

**Geography Affects Care**

Where people live matters. The quality and consistency of cardiac services varies across the country, and treatment and outcomes differ depending on where people go for care. Timely access to services – particularly specialized cardiac care – continues to be a problem for Canadians, especially those who live in rural and remote areas.

To help reduce geographic and other inequities in access to care, most parts of Canada and many other jurisdictions have developed or are developing regional integrated networks of specialized cardiac care. These networks plan for some or all of the cardiac services in their geographic area rather than in just one hospital, and they focus on making the best use of skills and resources.

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For patients with acute heart problems, speed and experience matter: patients with ST-segment elevation myocardial infarction who receive primary percutaneous coronary intervention within 90 minutes at centres that perform a high volume of these procedures have better health outcomes. (Jacobs et al., 2007) However, few centres – particularly those in smaller communities – can provide the procedure within the 90 minutes recommended by the American College of Cardiology and the Canadian Cardiovascular Society.
Treatments for heart attacks and heart failure can be performed in several different sites throughout the region, while more specialized treatment and procedures, such as angiography and cardiac surgery, are performed in a limited number of high volume sites. Other conditions, including those requiring complicated risk factor management (like familial hypercholesterolemia, cardiomyopathies, rhythm abnormalities and congenital heart disease), are managed in specialized, multidisciplinary clinics throughout the region. These programs are very effective in reducing hospitalizations and emergency department visits, improving quality of life and controlling costs. This approach can work well in a shared care model with primary care teams. Unfortunately, some clinics do not receive adequate funding to achieve optimal efficiency.

In an integrated regional network, a centralized triage system assures that all patients receive appropriate care within an appropriate length of time (Figure 16).

Figure 16
Integrated Regional Network for Specialized Cardiac Care
All parts of the network work together to ensure that people are assessed, referred and transported quickly to the best site for their care. They develop processes and procedures that ensure timely care.

Patients who have a heart attack because of a blocked artery to the heart muscle need to have their blood flow re-established as quickly as possible. Minutes of delay result in more damage to the heart muscle.

For example, the Libin Cardiovascular Institute and the Calgary Health Region have a program to ensure rapid access to re-perfusion therapy for patients suffering a heart attack. Emergency service providers record an electrocardiogram on all patients with acute chest pain that is suspected to be heart-related and transmit it electronically to the on-call interventional cardiologist. Patients with an acutely blocked artery are then directed to the appropriate hospital, where they bypass admitting and emergency and go directly to the catheterization laboratory for immediate angioplasty and stenting as needed. According to data from the Canadian Institute for Health Information, for the past four years Calgary has had the lowest mortality rate for heart attack victims in Canada.

The New Brunswick Heart Centre has developed a comprehensive triaging process for patients who need cardiology interventions: gathering all clinical information on a patient at the outset and triaging all referrals using objective rating tools. (Doucet, 2007)

Integrated regional networks can have a positive impact on both timeliness and quality of care. For example, to improve the quality of key procedures provided at different sites, the Cardiac Care Network of Ontario negotiated accountability agreements with its 18 member hospitals and established interprofessional committees of clinicians, nurses, administrators and ministry officials to identify opportunities for quality improvements. As a result, between 1994 and 2000, deaths during or after bypass surgery dropped 32%. (Rachlis, 2004)

Patients Struggle to Navigate the System

Despite the progress that has been made in developing integrated regional networks for some specialized cardiac care, patients continue to find it difficult – and sometimes costly – to navigate the system. The cardiac care system should learn from the cancer care system's experience in helping patients connect with the services they need when they need them.

Quebec, Nova Scotia and Alberta are now using patient/system navigators to help improve the quality and consistency of care for cancer patients. The navigators ensure that patients are referred appropriately, their care is coordinated and all the professionals involved in their care have the information they need. These navigators also help patients who live in rural and remote areas to coordinate their appointments, so they can make fewer visits to regional centres, and to access services such as telephone support and telemonitoring, instead of driving long distances to receive a test result. In cancer programs that use navigators, health professionals are now working more collaboratively with less duplication of services, and patients are better prepared for the different levels of care they receive. (Corporate Research Associates, 2004)

Alberta has recently added system navigators to their regional cardiac care teams with the goal of facilitating transitions in patient care and making the system more efficient. This innovative approach should be replicated in other regions across the country (Figure 17).
Patients Are Still Waiting Too Long for Some Services

Over the past four to five years, the federal and provincial/territorial governments have invested significant resources into cutting wait times for cardiovascular procedures, and there has been progress in cardiac bypass surgery. (Health Council of Canada, 2007) However, surgery is only one component of care. Consultations and diagnostic procedures are equally important steps in a patient’s journey through the cardiac care system, and wait times for these services should also be reduced.

The Quebec Cardiology Network has established a “medically acceptable waiting time” for all cardiac procedures as well as a provincial system to monitor all patients waiting for a procedure. The network carefully monitors access and productivity, and uses this information to make recommendations to the Quebec government to ensure that all patients receive timely care.

Between 2004 and 2006, the Cardiac Care Network of Ontario increased the proportion of patients who received care within maximum wait time guidelines for all procedures, including elective cardiac bypass surgery (from 86% to 98%), urgent cardiac surgery (from 79% to 86%) and urgent catheterization (from 75% to 85%). The Cardiac Care Network also reported a 50% reduction in the regional variation of wait times. The Network was able to achieve this progress by establishing a system of:

- triaging patients based on an urgency rating scale developed by an expert committee
- monitoring patients to identify any changes in their status
- developing efficient processes to transfer patients to specialty centres for procedures and to move them back to community facilities as soon as feasible
- using regional cardiac care coordinators to help patients navigate the system.

Using a national panel of experts, the Canadian Cardiovascular Society has developed a series of wait time benchmarks for the continuum of cardiovascular services, from access to a specialist through access to heart failure clinics. These medically acceptable wait time benchmarks are being used by a number of institutions across the country to help improve patients’ access to care.
The concept of wait times currently being applied to cardiac procedures should also be applied to other aspects of care where timing affects outcomes, such as how early statins are given after an acute coronary syndrome and how quickly patients with heart failure are evaluated and treated. This approach will require more consistent use of risk scores to determine which patients should be admitted, transferred or treated as outpatients.

Using Technology to Improve Access and Reduce Inequities

Technology can be a valuable tool in reducing inequities, providing more patient-centred care and engaging patients in their own care. For example, digital images from diagnostic tests can now be transmitted electronically, and viewed off site, reducing the need for patients and providers to travel. Other promising technologies such as self-management tools, telemonitoring and structured telephone support (Clark et al., 2007) can help patients and the care team detect problems early. These technologies have the potential to greatly improve care for patients in rural and remote communities, who may not even have to leave home to be diagnosed or monitored.

The virtual Heart Function Clinic (vHFC) is an interactive website developed by the British Columbia Alliance on Telehealth Policy and Research (BCATPR), a research team that focuses on developing telehealth services in the area of cardiovascular disease to improve routine care for patients in rural and remote communities. Patients log on each morning to enter their weight for the day and answer questions about how they are feeling. They can then see graphs that show them how they are doing. If there is a problem, the nurse at the Heart Function Clinic will call. The BCATPR is now incorporating the patient’s primary care team. If there is a problem, the nurses will triage the patient and alert his or her primary care provider, who can then use the system to obtain a “quick cardiology consult” by email if needed. With this “shared care” model, patients in areas with no specialist support can still be connected to a team that can provide advice and support to the primary care providers. The BCATPR believes this technology will help patients avoid re-hospitalizations as well as long trips to urban centres to see specialists. It will also improve the dissemination of guideline-based care to primary care providers.

The BCATPR has also developed a virtual cardiac rehabilitation program. Patients complete an online assessment form about their medical and lifestyle history and then receive education sessions using Flash technology, weekly tasks such as measuring and entering blood pressure and body weight, peer support chat groups (to mimic in-class peer support), exercise heart rate uploads and scheduled chat sessions with the nurse, dietitian and exercise specialist. When they log in, patients are automatically directed to the list of tasks they need to complete for that week of their program. The patient’s primary care provider can view his or her heart rates in order to monitor progress, and the nurse will contact the primary care provider if there is any change in the patient’s symptoms or interventions. Patients liked the program and achieved a 75% increase in their exercise capacity, as compared with another group receiving usual care.

The University of Ottawa Heart Institute has a home monitoring system that uses patients’ phone lines to transmit vital signs, weight, electrocardiogram and other information to an advanced practice nurse. The system can be customized to meet the needs of specific patients and to provide assistance with self-care. It tracks data and identifies problems, so patients can receive care at home instead of having to be readmitted to hospital.
Culture and Other Social Factors Affect Care

Vulnerable populations – including people who are socially and/or economically disadvantaged or members of specific ethnic populations – often have difficulty accessing the full range of cardiac screening, diagnosis and care.

As noted earlier, many Aboriginal/indigenous communities do not have access to culturally sensitive care or to specialized care and essential equipment, such as defibrillators and oxygen therapy, routinely available in other communities. Aboriginal/indigenous peoples need special attention to ensure that they receive the same standards of care and access to cardiac services as other Canadians. Strategies to reduce cardiovascular disease and improve treatment for Aboriginal/indigenous peoples must take into account those living in Aboriginal/indigenous communities as well as the more than 50% of the population that live away from their home communities. To ensure that models of care fully recognize the unique needs of Aboriginal/indigenous populations, Aboriginal/indigenous people and their leaders must be engaged in planning and delivering their care.

Patients Are Often Passive Recipients of Care

Self-care and informed, involved patients are key to preventing and managing heart disease, yet – in most settings – patients continue to be passive recipients of care.

In a chronic disease prevention and management program, patients are full partners in their care. They receive information and training in techniques such as goal setting, action planning and problem solving that help them play a major role in maintaining their health. They are also involved in planning their care and treatment.

In the ideal patient-centred model, patients also have a voice in designing the organization’s programs and services. For example, the 13 practices involved in the California Diabetes and Cardiovascular Care Collaborative redesigned the way they delivered care to meet patients’ needs by making patient information available at the point of care, offering group visits, scheduling planned care visits, screening patients for depression and following up with patients on their action plans and adherence to their medication. Together, the practices outperformed the state averages for blood pressure and cholesterol control by 20 percentage points. (Johnson et al., 2008)

In the Chronic Disease Self-Management Program, a collaborative project developed by Stanford University and the Northern California Kaiser Permanente Medical Care Program now in use in the Yukon and British Columbia, patients are trained to lead groups of people with chronic diseases. (Johnson et al., 2008) The program, which is similar to the “buddy” model used in many Aboriginal/indigenous communities, is based on the assumption that people with chronic disease share similar concerns and problems, and can teach disease management skills (e.g., how to develop an exercise program, healthy eating, problem solving, how to use medication, and how to communicate with family, friends and health care providers) as effectively, if not more effectively, than health professionals. In randomized controlled trials in the United States and Canada, participants in the Chronic Disease Self-Management Program had fewer hospitalizations and fewer emergency room and outpatient visits. They were more successful in changing behaviour and maintaining the changes over time than those in the control group.

Families play a key role in chronic disease prevention and management. For an individual to change smoking, eating and exercise habits, his or her family must be supportive. When the EuroAction Project actively involved patients’ partners in the cardiovascular disease prevention program, 77% of the partners achieved European targets for eating fruits and vegetables compared with 54% of the partners of people receiving usual care. (Johnson et al., 2008)
Only 20% of Patients Receive Rehabilitation Services

Specialized cardiac rehabilitation programs provide up to six months of exercise, dietary counselling and other therapies for people recovering from a heart attack, coronary artery bypass surgery or other acute event. These highly cost-effective services can reduce cardiac deaths by 20% to 25% (Taylor, 2006) and should be available to all patients who can benefit. However, highly specialized cardiac rehabilitation programs are usually based in regional centres and are not available in all communities. As a result, only about 20% of the patients who could benefit receive rehabilitation services. (Suskin et al., 2002; Arthur et al., 2004)

The recent Cardiac Rehabilitation Pilot Project funded by the Ontario government demonstrated that rehabilitation services can be organized and delivered in ways that make evidence-based care accessible to more people. The 24 sites that participated in the project were able to serve 60% more people in a year. The program cost about $1,500 per person – considerably less than the $8,000 to $10,000 to treat myocardial infarction or the $10,000 to $20,000 per person for coronary artery bypass graft surgery – and participants’ risk profiles improved substantially over the six-month program. (Suskin et al., 2002)

The pilot sites achieved these outcomes by offering a standard program across all sites and by pushing services and expertise out into different settings in the community. While the intensive, supervised exercise program cannot be offered everywhere, many other aspects of cardiac rehabilitation can be integrated into the chronic disease prevention and management services offered by interprofessional primary care teams. In fact, monitored home-based exercise programs are as effective as supervised exercise for low-risk patients. (Arthur et al., 2002; Jolly et al., 2006; Jolly et al., 2008)

Other jurisdictions, such as the United Kingdom, Finland and Australia, have adopted strategies to make cardiac rehabilitation available to more patients in a variety of settings – including primary care settings, community settings and workplaces. Cardiac rehabilitation guidelines can and should be adapted for use in other settings.

In Canada, regional cardiac rehabilitation facilities should serve as resource centres, providing rehabilitation services directly for patients with complex needs (e.g., patients with congenital heart disease or heart failure) and supporting the primary care, chronic disease prevention and management teams to provide evidence-based cardiac rehabilitation services for other patients.

Cardiac rehabilitation is a systematic program that includes comprehensive targeted cardiovascular risk factor therapies, behaviour modification strategies designed to improve long-term lifestyle and adherence to medication, and therapeutic physical activity – primarily for people recovering from heart attack and coronary artery bypass surgery. The programs, which are delivered by interprofessional teams including physicians, nurses, exercise specialists, dietitians, social workers and others, help patients make changes that will lead to healthier lifestyles over the long term and will prevent another heart attack or acute incident.
Promising Practices in Cardiac Rehabilitation

For cardiovascular rehabilitation to have the greatest positive impact:

- Rehabilitation must be recognized as an integral part of cardiac care.
- Patients should be engaged as early as possible during their disease so they can reap the greatest benefits from rehabilitation.
- Providers should take a patient-centred approach, designing each patient’s rehabilitation program to meet the patient’s needs while still being consistent with best practice guidelines.
- Programs should be developed to meet the needs of adults with congenital heart disease and for elderly patients with heart failure.
- Special efforts must be made to ensure that patients who have not traditionally been referred for rehabilitation have access to these services.
- Patients’ families should be involved so they can help the patient and themselves adopt a healthy lifestyle.
- Workplaces should be involved in rehabilitation in order to support the patient’s return to work if at all possible.
- Programs should have access to tools such as care algorithms, point-of-care electronic decision support, and training.
- A surveillance system should be established to monitor system- and patient-level outcomes.

Few Cardiac Patients Receive End-of-Life Planning and Care

Many people with advanced heart failure do not receive services that could help them and their families make informed decisions about their care at the end of life.

The lack of end-of-life planning and care in CV disease is mainly due to the uncertainty about when someone with heart disease is nearing the end of life and the fact that the CV care system is focused on prolonging life. When “cure” is the goal, important conversations about quality of life and end-of-life planning and care often do not happen.

Although the pathway from heart disease to death is not as predictable as it is for diseases like cancer, heart disease is still a life-threatening illness: 50% of people diagnosed with heart failure die within five years. Yet most patients with heart failure are not offered end-of-life planning and care. This is an issue because as many as 60% of the people who die with heart failure will die suddenly and would benefit from the opportunity to discuss and plan for the end of life.

Patients with heart failure who do not die suddenly will deteriorate over time, even though their disease trajectory may be highly variable. They will often experience symptoms not classically attributed to heart failure, such as pain, falls, cognitive problems, mood and anxiety symptoms, loss of function, sleep disturbances and anorexia, and they could benefit from the symptom management approach used in end-of-life care. (Caldwell et al., 2007; U.K. Department of Health, 2000; McPherson et al., 2006)

According to research, patients would prefer more communication about end-of-life planning and more opportunities for decision making earlier in the course of their disease. (Caldwell et al., 2007; Selman et al., 2007)

Few guidelines for cardiac care include end-of-life planning and care. Even when they do – such as the United Kingdom guidelines that call for good communication regarding “prognosis and living with uncertainty” (U.K. National Institute for Clinical Excellence, 2003) – patients and their care providers often do not recall receiving information about their condition or being involved in the decision-making process. (Murray et al., 2002)
The 2006 Canadian Cardiovascular Society Recommendations on the Diagnosis and Management of Heart Failure included advanced medical directives, wishes for resuscitative care, substitute decision makers, ethical issues and opportunities for patients to re-evaluate their preferences as their condition changes. (Arnold et al., 2006) However, uptake of these recommendations must be broader to change the system.

To provide patient-centred care, the cardiac care system needs a better understanding of when, how and where patients should receive end-of-life planning and care. The system also needs more information on existing end-of-life care services and their capacity to meet the unique end-of-life planning and care needs of people with heart disease, which are quite different from the needs of cancer patients usually referred to palliative care programs (in 2007, about 90% of people who received end-of-life care were cancer patients).

While some lessons can be learned from the palliative care programs used in cancer care, these models are not appropriate for people with cardiovascular disease, particularly those with heart failure. More research is required to identify best practices in end-of-life planning and care for people with cardiovascular disease, to assess the effectiveness of symptom identification and management in patients with advanced heart failure, and to develop strategies and techniques to talk to patients about disease progression and symptom management. A better understanding of the impact of demographic, geographic, ethnocultural and other variables on end-of-life care will also help improve counselling and match patients to interventions. A broad-based Canadian multidisciplinary end-of-life research working group has been formed, funded by the Canadian Institutes of Health Research, to examine critical end-of-life issues for cardiac and respiratory patients, but work will be required to translate findings into practice.

To meet the end-of-life needs of people with heart disease:

- The system needs to develop interprofessional strategies and ethical guidelines for providing culturally appropriate end-of-life planning and care.
- Health care providers need specialized training in how to talk with patients and families about end-of-life planning and care, and how to ensure their discussions are culturally appropriate.
- The cardiac care system should develop more effective ways to help patients with advanced heart failure identify symptoms that could be managed through appropriate palliative care services.

**Guidelines Alone Are Not Enough to Change Practice**

Ideally, every Canadian diagnosed with a particular heart disease or risk should receive the most effective, up-to-date treatment. Health care providers should follow clinical guidelines that are developed based on research evidence. However, experience over the past 20 years shows that just developing clinical guidelines is not enough to influence practice; other efforts are required to actually translate research knowledge into clinical care.

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**Improvements in the treatment and control of hypertension are associated with a significant decline in deaths from stroke and heart failure, a 50% decrease in the rate of deaths from heart attacks and a drop in hospitalization rates. (Campbell et al., 2006)**
The Canadian Hypertension Education Program, a made-in-Canada knowledge translation program, has demonstrated the benefits of a more organized and active approach to developing and promoting the use of clinical guidelines. In that program, experts in CV care meet annually to review the research and update the recommendations on how best to diagnose and manage hypertension. Teams of health care professionals then translate the expert recommendations into practical tools and simple consistent messages about how to treat patients with hypertension. The tools and messages are disseminated widely to physicians, nurses, pharmacists and other health care professionals. A large group of volunteers helps to evaluate the impact of the program. This process of evaluating the impact of the hypertension recommendations is coordinated with federal and provincial government programs and has resulted in a comprehensive system of assessing hypertension management in Canada. This process has helped to identify where the guidelines are working and not working and facilitates ongoing improvement in the development of the recommendations. In the nine years that the Canadian Hypertension Education Program has been in place, the quality and consistency of hypertension care has improved dramatically. The program involves collaboration among government, health care professionals and scientific organizations, and it could be a model for efforts to manage other risk factors for heart disease.

The Canadian Stroke Strategy, a partnership between the Canadian Stroke Network and the Heart and Stroke Foundation, is using a similar comprehensive approach to close the gap between evidence and practice, and ensure that all Canadians have access to integrated, high-quality stroke prevention, care and rehabilitation. Canadian Best Practice Recommendations for Stroke Care were released in 2006 and widely disseminated (and are now being updated). Providers are being educated about the guidelines, public education campaigns are making Canadians more aware of the signs and symptoms of stroke and how to respond, stroke services are being monitored to see whether they are meeting set benchmarks for quality care, and research is being funded to improve both care and health care delivery. The Canadian Stroke Strategy has also established performance indicators that will be used to measure the timeliness, quality and consistency of stroke care across the country and the extent to which the guidelines are being followed in practice settings. Over the past three years, Ontario reports an increase in the number of patients receiving evidence-based treatment for ischemic stroke. (Stroke Evaluation Advisory Committee, 2007)

In 2006 the Canadian Cardiovascular Society adopted an innovative “closed-loop” model of clinical practice guideline development on the diagnosis and management of heart failure to translate guidelines into practice. In the spirit of collaborative development of timely, practical and effective guidelines, this model incorporates ongoing end-user and stakeholder input and evaluation to drive the next iteration of guidelines and their dissemination to each audience. The annual update process assures continuous quality improvement in this important area of disease management.

Initiatives such as the Canadian Hypertension Education Program, the Canadian Stroke Strategy Best Practice Guidelines and the Canadian Cardiovascular Society’s Heart Failure Knowledge Translation Program should continue to be funded and developed, and the same comprehensive approach should be used to promote evidence-based practice in other key areas of cardiovascular disease prevention and care, including management of dyslipidemia, congenital heart disease, coronary artery disease and heart rhythm abnormalities.

In addition, there is a need for a comprehensive set of quality indicators for the common cardiac conditions – which can be monitored and regularly reported. The Safer Healthcare Now initiative has adopted a set of quality indicators for acute heart attack and implemented systems to collect the necessary data to monitor change over time. (Safer Healthcare Now, 2008) This approach needs to be developed and adopted for other conditions such as heart failure, certain arrhythmias and cardiac surgery.
Recommendations

To provide more integrated, patient-centred and efficient services, health care systems in Canada must make some fundamental changes in the way they organize and provide cardiac care. They must make effective use of people, technology and other resources to address inequities.

There is no “one size fits all” model for providing cardiac care. The best way to organize cardiac services depends on geography and on the needs of the population being served (i.e., age, ethnicity and risk factors). However, chronic disease prevention and management programs combined with integrated regional networks of specialized cardiac care hold the greatest promise to improve access and make the best use of resources and skills.

To fulfill their promise, integrated regional networks must continue to find better ways to triage patients, provide timely care, manage wait times and improve patients’ ability to self-manage their conditions when they have to wait for care. Significant investment needs to be made to encourage the health care delivery system to be innovative.

4.1 Accelerate the implementation of chronic disease prevention and management as the preferred model for delivering most cardiovascular care in Canada:

- Accelerate the development and training of interprofessional primary care teams with new roles and working relationships.
- Implement process improvements and change management.
- Document and disseminate best practices in patient partnerships, self-care and patient-centred care and in organizing and delivering patient-centred care.

4.2 Improve access to high-quality, appropriate, coordinated specialized cardiovascular care, including diagnostics, acute care, cardiac rehabilitation and end-of-life planning and care:

- Provide incentives for the continued development of regional integrated networks of specialized cardiovascular care.
- Establish triage systems that will ensure that those in greatest need are seen first.
- Implement and monitor a system of evidence-based maximum recommended wait times—particularly for consultative services and diagnostic testing.
- Expand the use of telemedicine technologies within and between provinces and territories to provide care as well as patient and provider education (e.g., telestroke).
- Incorporate “system navigators” into regional teams to help patients and their health information move easily between services and providers.
- Continue to develop and implement specialty clinics within integrated regional networks staffed by interprofessional teams to manage complex cardiovascular conditions such as heart failure, congenital heart disease, certain abnormal heart rhythms and chest pain.
- Continue to develop rehabilitation programs in underserved regions, and incorporate cardiac rehabilitation services into primary care-based chronic disease prevention and management programs.
- Provide support for end-of-life planning and care information and services, including episodic support and respite services for informal caregivers.
Establish, maintain, promote and evaluate the use of updated, evidence-based, interprofessional clinical guidelines in preventing and managing cardiovascular risk and disease, treatment, rehabilitation and end-of-life planning and care:

- Support the ongoing development, implementation and regular updating of best practice guidelines in the Canadian Stroke Strategy, the Canadian Hypertension Education Program, and the Canadian Cardiovascular Society’s Heart Failure Knowledge Translation Program and guidelines for lipids/cholesterol.
- Create a pan-Canadian task force to develop clinical practice guidelines for end-of-life planning and care for individuals with advanced CV disease.
- Support the development of user-friendly self-care guidelines for patients and effective ways for patients to access this information.
- Create a pan-Canadian initiative to develop a comprehensive set of quality indicators for CV prevention and care programs – to include recommended monitoring methods.
Patients need information to manage their health and make informed decisions. Providers need information to develop programs and services, work well with other providers, and improve practice and quality of care. Managers and health administrators need information to plan, develop budgets, administer programs and evaluate progress. Governments need information to know where to invest resources. And, the entire field needs knowledge and research to guide prevention strategies and develop better treatments for the future.

Information can help drive change. For example, the information infrastructure built to support the tobacco strategy was able to provide data on smoking patterns, consumer attitudes and behaviours, industry practices, the impact of smoking on health, and the impact of prevention efforts on smoking. The Federal Tobacco Control Strategy used this information to persuade policy makers, providers and the public to adopt policies and regulations to discourage smoking and to invest in prevention programs. According to Health Canada, “Understanding Canadian trends in tobacco use [was] vital to the effective development, implementation and evaluation of tobacco control strategies, policies and programs.” (Health Canada, 2007b)

To build a heart healthy nation, Canada needs accurate, timely information on CV risks, diseases and treatments – and fast, easy ways to share that information with researchers, policy makers, providers and the public. Where do we stand now? What information do we have? What’s missing? How effective are our information systems?

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Without better data, those responsible for health care renewal are working in the dark.
(Health Council of Canada, 2007)
What Do We Know About CV Diseases in Canada?

As a nation, we currently do not know how many citizens suffer a heart attack each year. We have some information on the number of people who have been diagnosed with certain CV diseases and on the health care services they receive. For example, hospitals and health authorities have information on hospital stays, emergency visits, home care and other services. Ministries of health know the insured services each person in each province or territory has received. The Canadian Institute for Health Information has some information from all provinces and territories on all hospital stays but has information from only some provinces and territories on other services, such as home care and mental health services. Statistics Canada collects data on mortality rates by cause of death but cannot link that information to the health services people received or use it to improve treatment and reduce deaths due to CV diseases.

Several provinces have developed cardiac registries – including the Cardiac Care Network of Ontario, Improving Cardiovascular Outcomes in Nova Scotia (ICONS), the Alberta Provincial Project for Outcome Assessment in Coronary Heart Diseases (APPROACH), the BC Cardiac Registry and the Quebec Cardiac Registry. The Canadian Stroke Network has also established a stroke registry. As a result, Canada has become a world leader in linking these registries with provincial health services/administrative databases and using this information to monitor key conditions and improve care.

Despite these innovative information initiatives, there are glaring gaps in our knowledge of CV diseases and the associated risk factors. Most of the registries were developed by researchers to answer questions about a certain condition or outcome, or by clinicians to support clinical care. Canadians become part of a registry only when they reach the stage where they experience an event such as angiography, surgery or hospitalization, so the data do not provide a complete picture.

Key Messages

Information is key to preventing and reducing illness and deaths from CV diseases.

To develop a robust national surveillance system for CV diseases, Canada needs more effective ways to collect information on risk factors, prevalence and incidence, and treatment outcomes.

Although provinces and territories have administrative databases and a number of groups and organizations have developed CV disease patient registries, the information collected is based on different data definitions, making it difficult to share, pool or compare information.

Canada is a world leader in electronic health records, but it still lags behind other countries in its use of electronic medical records in physician offices.

In implementing CV information systems, every effort must be made to safeguard the privacy and confidentiality of health information.

Chronic disease prevention and management information systems are not yet in widespread use, but they have the potential to significantly improve CV health and care.

Patient information systems will help patients play a more active role in their own health and care, and have the potential to contribute to better health outcomes at lower cost.

To capitalize on the dollars invested each year in research and attract more research funding, Canada needs a CV research plan that will provide knowledge to improve prevention and care.

Canada has the potential to contribute to worldwide efforts to prevent and manage CV diseases, but it must do more to move new knowledge into practice and to market.
To reduce the burden of CV disease, Canada needs a more robust pan-Canadian disease surveillance system that can provide reliable, timely, comparable data on:

- the prevalence and incidence of CV risk factors
- the prevalence and incidence of CV diseases
- the prevalence and incidence of CV diseases in Aboriginal/indigenous people and in other ethnocultural groups where there is a paucity of information
- access to services (i.e., Who is receiving care? Is the care appropriate? Is it timely? Are there any geographic, financial or other barriers?)
- rates of treatment and control
- patterns of care and trends in the use of drugs, devices, information technology, and surgical and medical interventions
- patient outcomes after treatment
- causes and location of death.

Canada Lags Behind Other Countries in CV Disease Information Systems

Canada’s current surveillance system relies on varied sources of data, such as self-reported surveys, rather than routinely measuring common risk factors for CV diseases, including blood pressure, cholesterol and other lipid levels, weight, eating habits and physical activity. Because many Canadians do not know that they have high blood pressure or abnormal cholesterol levels, self-reported surveys consistently underestimate the number of people at risk for CV disease. There is also no consistent mechanism for gathering information about the food Canadians eat and their consumption patterns. The Canadian Community Health Survey gathers some data on food and nutrition, but the last comprehensive survey of Canadians’ consumption patterns was reported in 2004. (Statistics Canada, 2004)

Although the current surveillance system has a fair amount of information on CV diseases, it lacks key data on heart failure, heart attack, stroke and congenital heart disease. For example, we know how many Canadians suffer a heart attack and are admitted to hospital, but we do not know how many have a heart attack and die before reaching a hospital.

Steps are being taken to close these information gaps. The Canadian government has committed to funding the Canadian Health Measures Survey: a biennial survey that will measure the weight, waist circumference, fitness level, blood pressure, cholesterol and other physical measures of CV health of 5000 citizens. The survey will help monitor the prevalence of CV risk factors in the population and develop targeted prevention and education programs. However, the survey as it is currently planned will not provide enough information on certain populations at high risk for CV diseases, such as Aboriginal/indigenous peoples, South Asians or the elderly. With additional resources, the Canadian Health Measures Survey could periodically oversample these populations, which would provide valuable information on their risks and lead to more effective programs and services for these communities.

Although Canada has a number of valuable CV disease patient registries, each registry was developed independently using different data definitions and standards, so it is not easy to pool or link information from different jurisdictions. When jurisdictions can pool their data, they can create a better picture of CV diseases across the country. For example, what are the risk factors? Which diseases are most common? What treatments do people receive? What are their health outcomes? Do the risks, diseases, treatments and/or outcomes vary in different parts of the country? When researchers, health planners and clinicians can access data from across the country, they can make better use of the information to compare the impact of different treatments; assess the cost-effectiveness of investments in new pharmaceuticals, tests and procedures; and develop more effective prevention programs and therapies.
Some work is already under way that may provide a model for linking data on CV diseases. The Longitudinal Health and Administrative Data (LHAD) Initiative—a partnership among provincial and territorial ministries of health and Statistics Canada, the Canadian Institute for Health Information, the Canadian Council of Cancer Registries and the Vital Statistics Council for Canada—is working to link provincial and territorial administrative data with Statistics Canada population health survey data, the births and deaths databases, and the Canadian Cancer Registry. CV researchers may be able to use the LHAD data sets to examine the role of modifiable risk factors in the first hospitalization for selected CV diseases across provinces, taking into account both socio-demographic characteristics (e.g., household income) and co-morbidities (e.g., high blood pressure).

When developing strategies to link databases, governments, organizations and researchers must address issues of data quality, privacy and ownership, the timeliness of data, and the capacity for analysis—as well as mechanisms for health system planners, researchers and evaluation specialists to access, link and pool anonymized health data at little or no cost. They must also make every effort to ensure that CV databases address the information needs of disadvantaged populations, including Aboriginal/indigenous people, different ethnocultural groups, poorer Canadians and Canadians who do not have a family physician.

In an effort to build a stronger national disease surveillance system, the Public Health Agency of Canada has developed a diabetes surveillance system that links hospitalization data, provincial health administrative data and survey results, and the Agency plans to do the same for stroke and hypertension. The same approach could also be used for coronary disease, heart failure and congenital heart disease, among other conditions. Although imperfect, this type of surveillance is an economical way to enhance the amount and quality of information available to monitor CV diseases in Canada until more comprehensive data sets are developed through electronic health records, electronic medical records and chronic disease prevention and management information systems.

The Role of Cohort Studies in Understanding CV Diseases

One of the most effective ways to understand CV diseases is to follow a cohort or representative group of Canadians over a long period of time—at least 20 years—to see who develops heart disease or stroke and why. Cohort studies can identify factors that affect both risk and resilience. They can help researchers understand the potential impact of recent social and cultural changes, such as the increases in obesity and diabetes, the decrease in smoking and changes in eating habits, on Canadians’ CV health. They also provide a means to assess the effect of clinical and social interventions such as controlling hypertension or reducing the amount of sodium in processed foods. For example, the Framingham Heart Study, a U.S. cohort study, demonstrated the importance of controlling hypertension in reducing stroke, heart attacks and heart failure; it also helped identify individuals at greatest risk of cardiovascular disease. For the past 50 years, Canada has relied on the Framingham Heart Study to make educated assumptions about CV risks in Canada, but, given the growing differences between the Canadian and U.S. populations, this approach is no longer adequate. In fact, the Framingham cohort is no longer representative of the U.S. population, much less the Canadian population.

The Canadian Partnership Against Cancer, which is funded by the federal government, is in the process of establishing a large national cohort study that plans to follow 300,000 Canadians over 20 to 30 years to obtain a more complete picture of their health and habits, including what they eat and how much they exercise, as well as environmental variables. Canada could profit greatly from enhancing the national cancer cohort study to include more about CV and other chronic disease risks.
Canada Does Not Have Performance Measures for Cardiac Care

Information is key to improving the quality of CV care. Measurable quality indicators are needed to provide the legitimate data that hospitals and other health care settings need to shape care. Although performance measures have been established for stroke care in Canada, the cardiac care system has yet to agree on common clinical quality indicators, how to measure them or how to report the results to providers, funders and the public.

Measuring quality is critical to improving care and ensuring the sustainability of the health care system. (Rachlis, 2004)

The Canadian Cardiovascular Outcomes Research Team (CCORT), a pan-Canadian research team of more than 30 cardiovascular researchers from five provinces (Nova Scotia, Quebec, Ontario, Alberta and British Columbia), is working to measure and improve the quality of cardiac care delivered in Canada. In partnership with the Canadian Cardiovascular Society, CCORT developed the first Canadian quality indicators for acute myocardial infarction and congestive heart failure, and recommended national benchmarks for high-quality care for all Canadian hospitals and cardiovascular practitioners. (Tran et al., 2003; Lee et al., 2003) CCORT investigators also led the development of Canadian quality indicators for bypass surgery and angioplasty, using large, national population-based databases from Statistics Canada and the Canadian Institute for Health Information and linking large population-based provincial clinical registries to other administrative databases. (Lee et al., 2003; King et al., 2004; Bhatia et al., 2006) This important work could be the basis for comprehensive quality indicators and the systems to monitor them.

In fact, Safer Healthcare Now is using the CCORT indicators as part of its initiative to improve care for acute myocardial infarction. The program includes a “getting started kit” and measurement worksheets for different aspects of care.

In the Enhanced Feedback for Effective Cardiac Treatment (EFFECT) study, the first randomized trial to determine whether public cardiac report cards in Ontario improve the quality of cardiac care for patients in Ontario hospitals, the Institute for Clinical Evaluative Sciences broke new ground by publicly releasing the performance of Ontario hospitals on indicators such as “door-to-needle” time for thrombolytic therapy. The research showed that more than 400 lives could be saved each year in Ontario (1200 nationally) if hospitals used evidence-based medical therapies with all eligible patients. (Tu et al., 2004; Tu et al., 2005)

The Canadian Stroke Strategy has developed performance measures and a performance measurement manual to accompany the Canadian Best Practice Recommendations for Stroke Care, and it is working to establish specific benchmarks. Also, the Canadian Stroke Network has partnered with Accreditation Canada to develop a stroke program accreditation process, the first disease-specific accreditation process in Canada.

Efforts by researchers to set benchmarks, measure quality and report results should be supported and expanded to include “upstream” benchmarks for preventing CV diseases and enhancing self-care as well as “downstream” benchmarks for improving clinical care.
Challenges With Electronic Health Records and Electronic Medical Records

Electronic health records (eHRs) are essential to integrated, patient-centred care. They store all electronic information about a client’s care – including clinical records, lab results, diagnostic tests, medications, hospital services, immunizations and communicable diseases – in one secure place, where it can be accessed and used by professionals providing care, while still safeguarding the person’s privacy. Electronic health records help providers communicate with one another about a patient’s care, access information quickly, reduce medical errors, and improve quality and productivity. With eHRs, providers are able to see the results of all tests and medications ordered by other providers, so they can avoid repeating tests or prescribing medications that could lead to drug interactions. At a press of a button, providers can access evidence-based guidelines, which will help them make informed clinical decisions.

All provinces and territories, in partnership with Canada Health Infoway, are in the process of developing eHRs. Approximately 50% of Canadians will have eHRs by 2010; 100% will have them by 2016. As of 2008, 85% of the pharmacists in Alberta are using the province’s eHR. According to Canada Health Infoway, by 2012, all provinces except Ontario will have eHRs in place, and Ontario will have eHRs for all citizens by 2015. When eHRs are fully implemented, they will form the foundation for a comprehensive information system for CV and other chronic diseases, providing real-time information that can be used to plan and assess treatment services. The CHHS-AP fully supports efforts to implement this technology.

Although Canada leads almost all countries (except the United Kingdom) in implementing eHRs, we still face challenges in making the technology work for providers and for patients. For example, a relatively small proportion of primary care physicians – fewer than one in four in most provinces – use electronic medical records (eMRs) now to record information about patient care. Canada lags behind Australia, New Zealand and many countries in Europe in the development of eMRs. Most of our primary care practitioners still use paper charts, and that information cannot be integrated easily into eHRs. To reap the maximum benefits of eHRs, all providers involved in a person’s care must be able to access records online and input new information; however, it will likely be 10 years before even 80% of physician offices have eMRs. To speed this process, some provinces, including British Columbia, Alberta and Saskatchewan, plan to facilitate the development of eMRs for all their physicians within the next five years. The CHHS-AP strongly supports these initiatives. In the meantime, jurisdictions are developing web-based viewers as part of their eHRs, so practitioners who do not have eMRs can still see the information that is in their patients’ eHRs, such as lab test results.

A third challenge is the concern about the safety and privacy of the health information stored in eMRs and eHRs, and the mechanisms to safeguard confidentiality when data are shared. Canada Health Infoway is currently working with all jurisdictions to ensure that the systems will be able to “talk” to one another, share anonymized health data and have in place mechanisms to protect the privacy and confidentiality of individual health records.

Canada Needs Information Systems for Chronic Disease Prevention and Management

The chronic disease prevention and management model depends on information systems and tools that help providers manage patient care, such as tools to record and monitor key heart health measures (e.g., blood pressure, cholesterol levels, weight and abdominal obesity), reminders, alerts and real-time decision-making tools. Members of the primary care team use the system to schedule screening tests and for regular monitoring and follow-up. The information system helps ensure that patients with more than one chronic condition, such as heart disease and diabetes, receive coordinated, evidence-based care that meets all their needs.

These systems, which must be able to link with eHRs, are not yet widely available. As of fall 2008, the Calgary Health Region and Capital Health in Alberta were the only regions in Canada to have implemented a patient-centred chronic disease management system that is fully integrated with its eMR and with the patient’s eHR.
Canada Needs Information Tools and Systems for Patients

Canadians with cardiovascular disease can do a great deal to manage their own health, but they need information about the best ways to do this, as well as regular contact with providers to help them stay on track. All Canadians should be able to access their eHRs and know how to use and interpret the information. They should also be able to access other information, self-management tools and systems to enhance their health, such as links to support groups.

• At Sunnybrook Health Sciences Centre in Toronto, patients can use the MyChart Personal Health Record to see and keep records of their care, amend family health history (e.g., allergies and medication history), view clinic visit notes, request prescription refills, send messages to providers and connect to videos and other information. The result has been better informed patients, fewer phone calls and consultations and more efficient workflow.

• In the New Brunswick Care@Home program, patients recovering from heart surgery use home monitoring technology to transmit their health information to clinicians.

• The Canadian Stroke Network, as part of the Canadian Stroke Strategy, has developed StrokEngine, an online resource for stroke survivors receiving post-acute care services.

• Several provinces are making effective use of telemedicine to provide education and help patients, providers and informal caregivers to manage stroke and heart disease care and rehabilitation.

The move toward information systems for patients will have far-reaching implications. Canadians will have to be able to connect to the Internet and be knowledgeable enough to use the technology to find, understand and apply health information (i.e., be health literate). Information systems for patients have the potential to increase health inequities for Canadians who may already be at high risk and who cannot take advantage of the technology. However, they also have the potential to reduce health inequities for Canadians who live in rural and remote areas by giving them easier access to information and reducing travel time and costs.

Although the development of information systems for patient use is in its infancy, there are a few promising innovative programs in Canada that allow patients to view or control their health records, let them enter information and forward it to their providers, and encourage them to use chronic disease management systems and tools for self-care. For example:

• Grand River Hospital in Waterloo, Ontario, has developed a patient portal, called My CARE Source, that cancer patients can use to access their treatment plans, manage their appointments, monitor side effects and symptoms, ask their care providers questions, and re-order prescriptions. Patients will eventually be able to use the portal to see lab and diagnostic results. The hospital expects the portal to result in better outcomes for patients and fewer admissions to hospital for adverse drug events or other complications.

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It is conceivable that patients will soon access their eHR online – the same way they now access their bank account.
Gaps in Research

The Canadian Institutes of Health Research and the Heart and Stroke Foundation annually invest approximately $150 million in CV research in Canada. Provincial health research organizations, philanthropic organizations and the pharmaceutical and medical devices industry also fund some CV research. To obtain the greatest return on research investment, Canada needs a CV research plan that will:

- Enhance our understanding of causes of both large and small blood vessel diseases and identify novel targets for prevention and therapy.
- Create better knowledge of the evolving role of genetics and proteomics in assessing individual risk and designing personalized prevention and treatment strategies.
- Support emerging areas of research, such as analyzing cause of death and health care services utilization prior to death, the role of end-of-life planning and care, the impact of mental health as a co-morbid condition and independent risk factor, Aboriginal/indigenous health, and the intersection between income and health.
- Help to develop economic and decision-making models that funders and policy makers can use to evaluate the benefits of various interventions.

Relatively little research has been done on effective ways to prevent CV diseases, to detect and intervene in early disease states, or to improve the organization and delivery of care. Canada must provide more support for population health and intervention research to evaluate the impact of policies and programs – including incentives – on health and to study the social, cultural and environmental factors that affect CV health.

In terms of prevention research, the focus should be on:

- the life course approach, including exploring the critical periods in an individual’s life that increase his or her risk for CV diseases and how CV risks accumulate throughout the life course
- identifying at-risk populations and detecting the early presence of disease in order to be able to implement effective interventions
- how changes in socio-economic status throughout the life course affect CV outcomes
- the effectiveness of prevention interventions (policies and programs) in different populations and communities
- the impact on health of legislation developed by other government departments
- the economics of prevention and early intervention.

Canada Lags Behind Other Countries in Capitalizing on Research

Canada currently lags behind other countries in its ability to capitalize on research. According to the Conference Board of Canada, Canada depends on other countries for a large majority of the innovative medicines, medical devices and other health technology we need. In the 2007 European Innovation Scoreboard, Canada barely made it into the ‘Innovation Followers’ group – and it is in danger of soon joining countries such as Cyprus, Slovenia and Spain in the ‘Moderate Innovators’ group. …

When it comes to innovation, Canada is a land of great potential. Health and related life sciences and technologies should be areas of strength and competitive advantage for Canada. (Conference Board of Canada, 2008)
Substantial efforts are needed (and needed now) to revitalize Canada’s health innovation system and refuel Canada’s capacity to commercialize health innovations. (Conference Board of Canada, 2008) Initiatives such as the Industry Canada Networks of Centres of Excellence program have achieved some success in translating Canadian discovery into commercial products, but Canada must do more to apply new knowledge to the development of new treatments and technologies that will enhance health and contribute to the economy. To build a sustainable national competitive advantage based on science and technology, the Government of Canada has made a commitment to:

- Translate knowledge into practical applications to improve our wealth, wellness and well-being (entrepreneurial advantage).
- Build on our research and engineering strengths, generate new ideas and innovations, and achieve excellence by global standards (knowledge advantage).
- Grow our base of knowledge workers by developing, attracting and retaining the highly skilled people we need to thrive in the modern global economy (people advantage). (Industry Canada, 2007)

This policy position makes the case for more investment in CV research and researchers, as well as in the capacity to move new knowledge into practice and new treatments and technologies to market.

**Recommendations**

Accurate, timely information and good ways to share it are absolutely essential to health. Canada needs information for patients, providers, managers and government, and information to guide prevention, improve care and support research. To close the CV information gap and build the information infrastructure to enhance prevention and care, Canada should use the following strategies.

5.1 **Gather Canadian data on the prevalence and incidence of CV risk factors, diseases and health inequities in Canada:**

- Provide resources to the Public Health Agency of Canada to expand CV disease surveillance in Canada to include conditions such as heart failure, heart attack, stroke, hypertension and congenital heart disease.
- Provide resources to Health Canada and Statistics Canada to co-lead the regular collection of comprehensive, standardized food and nutrient consumption data.
- Facilitate the linkage of death certificates with health services utilization data.
- Provide resources to create a Canadian pre-hospital cardiac arrest registry.
- Enhance capacity in Statistics Canada’s biennial Canadian Health Measures Survey by oversampling key target populations such as certain ethnic groups (e.g., South Asians), Aboriginal/indigenous persons on reserves and in the Far North, and the elderly.
- Work with the Canadian Partnership Against Cancer to develop and support a Canadian cohort study of chronic diseases that includes risk factors for CV diseases.
- Facilitate the development of pan-Canadian data standards for regional CV patient registries to improve data quality and allow data to be linked and pooled.

**Canada already has tremendous strengths – including the drive and ingenuity of our people, the relative strength of our fiscal position, and our strong research base. But, Canada can and must do more to turn our ideas into innovations that provide solutions to environmental, health, and other important social challenges, and to improve our economic competitiveness.** (Industry Canada, 2007)
5.2 Support Canada Health Infoway’s efforts to accelerate the development and implementation of the electronic health record (eHR), the electronic medical record (eMR), chronic disease prevention and management information systems, and consumer health solution capabilities across Canada:

- Review the barriers and facilitators to the use of the eMR in primary care in Canada, and develop an action plan to speed its adoption.
- Develop effective ways for health information systems to support chronic disease prevention and management programs that leverage the eHR and can bridge the gap until the eMR is more widely available.
- Develop effective ways for patients to access their clinical information.
- Develop mechanisms to facilitate the use of clinical information from the eHR and the eMR (while respecting citizen privacy and confidentiality) to support surveillance, system management, policy research and ongoing assessment of the effectiveness of Canada’s health care system and disease prevention strategies.

5.3 Improve knowledge to inform CV prevention and cardiac care:

- Hold a pan-Canadian CV research summit, involving the Canadian Institutes of Health Research, the Public Health Agency of Canada, the Heart and Stroke Foundation of Canada and the members of the National Alliance of Provincial Health Research Organizations, to develop a strategic, coordinated pan-Canadian CV research agenda to address the future needs of our country.
- Establish a network of centres of excellence in vascular health to improve our basic understanding of both large and small vessel diseases, identify promising (bio)markers as well as new targets for prevention and therapy, and pursue knowledge translation (clinical trials) and commercialization.
- Support the Canadian Institutes of Health Research to fund additional research into genetics/proteomics-based diagnostics, markers of prognosis, and tools for personalized prevention and care.
- Provide more support for population health and intervention research to evaluate the impact of policies and programs on health.
- Evaluate the impact of economic policies such as tax incentives to increase physical activity (e.g., the children’s fitness tax credit), and advocate to enhance incentives that are found to be effective and do not increase health inequities.
- Support knowledge translation initiatives to help prevention programs and clinical settings to translate research findings rapidly into practice and to market.
Canada Lacks Information on the CV Workforce

At the current time, we do not have a clear picture of the future need for CV care or the current capacity of the CV workforce, so it is difficult to identify, in hard numbers, how many primary care practitioners, dietitians, specialist physicians, diagnostic imagers and other care providers we will need.

Canada needs better information on the CV workforce, including the number of people working in the system, workforce trends and an assessment of the scope of practice for all members of interprofessional teams. More work must also be done to forecast accurately the number and mix of skills required – now and in the future – to meet the population’s CV prevention and cardiac care needs.

Shortages Threaten Prevention and Care

CV prevention and cardiac care services face the same human resource issues as the rest of the health care system: shortages of family physicians, public health practitioners and other health care providers; the aging of nurses and acute care specialists; the small number of Aboriginal/indigenous health professionals; and underutilization of other care providers, such as primary care nurse practitioners, who could play a key role in cardiac care.

While we do not know exactly how many health care professionals and workers in other disciplines will be required over the next 10 to 20 years for CV prevention and cardiac care, we do know that over four million Canadians do not have a primary care physician. (Statistics Canada, 2008)

To provide high-quality CV prevention and cardiac care services, the system is in urgent need of:

- epidemiologists and people skilled in informatics who can manage surveillance programs
- social scientists to help better understand the social determinants of health
• public health professionals, community planners and policy specialists who can take the lead in population-wide efforts to prevent diseases and to reduce the social and environmental factors that affect heart health
• primary care practitioners, including physicians, nurses, pharmacists, physiotherapists, dietitians and experts in physical activity
• cardiologists and stroke neurologists
• Aboriginal/indigenous health care providers
• specialists who are flexible enough to adapt to new needs and technologies
• program evaluators and policy specialists who can assess the effectiveness of services.

Over the past eight years, jurisdictions across Canada have taken steps to increase training positions for professions in short supply. The number of physicians – particularly family physicians – in practice in Canada has increased, as have the number of nurse practitioners (by 80% between 2003 and 2006) and nurses (by 10%, or over 27,000 new nurses). (Canadian Institute for Health Information, 2007) The total number of training positions for cardiologists across the country also increased over the past five years, although some jurisdictions have reduced or capped the number of training places for cardiologists.

Current workforce shortages are exacerbated by increasing entry-to-practice requirements and longer training programs. Because of the length of training, the full impact of the increases in enrolment will not be felt in the health care system for a number of years. Even with these increases, Canada will need comprehensive recruitment and retention programs to attract people to careers that will support CV prevention and cardiac care.

Some provinces are trying to mitigate the impact of workforce shortages and increasing demand by developing new roles in the health care system and making more effective use of other providers such as nurse practitioners and physician assistants, among others.

Canada’s Aboriginal/indigenous population represents 3.6% of the Canadian population (2006 Census), yet less than 1% of physicians in Canada are from the Aboriginal/indigenous population. More must be done to recruit Aboriginal/indigenous people to health careers and to ensure that all health providers working with Aboriginal/indigenous peoples have the knowledge and skills to provide culturally sensitive care.

In Alberta, pharmacists now have the authority to prescribe medications in certain circumstances, and the system is using nurse practitioners, international medical graduates and physician extenders to be able to provide more care. A randomized trial conducted in Edmonton showed that using community pharmacists and nurses to monitor the blood pressure of people with diabetes led to a significant improvement in blood pressure management. (Tsuyuki et al., 2002)
Canada Lags Behind Other Countries in Its Use of Interprofessional Teams

Interprofessional teams are an effective way to integrate services, compensate for shortages of certain professions, such as family physicians, and improve care (Institute of Medicine, 2001) – particularly for primary care and prevention/rehabilitation services. However, a recent survey of seven member countries of the Organisation for Economic Co-operation and Development (OECD) showed that Canada makes significantly less use of teams and non-physicians to provide primary care than other developed countries such as the United Kingdom, the United States, New Zealand, Australia, the Netherlands and Germany. (Schoen et al., 2006)

Although some health science faculties are now introducing interprofessional education, most health care providers are still trained in profession-specific silos that are highly treatment-focused and give relatively little attention to health promotion and disease prevention.

According to experience in both the United States and the United Kingdom, integrating nurses, pharmacists and other health care providers into the primary care team (i.e., allowing them to work to their full scope, providing training and providing appropriate compensation) can transform primary care and give patients access to a wider range of services. (Campbell et al., 1998) Teams are also a good way to redistribute workload and ensure skills are available where they are most needed. (Health Council of Canada, 2005) Allowing practitioners to work to their full scope can improve work satisfaction, recruitment and retention. (Canadian Health Services Research Foundation, 2006; Health Canada, 2006)

For example, the Tui’kn Initiative, a multi-community, cross-jurisdictional collaboration, developed a new model of primary health care for five First Nations communities struggling with high rates of diabetes on the island of Cape Breton in Nova Scotia.

The success of the Tui’kn Initiative was due to:

- encouraging stakeholders to participate when they were ready and recognized the need for change
- addressing the root causes of limited service access
- considering the cultural context and relevance of health interventions. (Hampton, 2006)

By working closely with Dalhousie University’s medical school, local provincial health authorities and the health directors of the five First Nations communities, the Initiative was able to replace sporadic physician care with mobile primary care teams that include nurse practitioners supported by physicians. Six full-time family doctors on a return-of-service fee schedule participate in collaborative teams and provide a set number of clinical hours and home visits, in-patient care, support for program development and occasional after-hours service. The Initiative includes a mobile blood collection service for smaller, more remote communities, which helps people with the blood monitoring required for diabetes treatment, and, as a result, compliance with monitoring schedules has soared. The Dalhousie University’s Population Health Research Unit helped train local health teams to manage health information. An electronic patient record system was introduced that links the communities with district hospital-based information systems, allowing for more integrated health planning regionally and locally as well as access to decision support tools.
Traditional Approaches to Education Will Not Meet Health Needs

Health care providers must have the skills to work in teams, to work in partnership with patients and communities to enhance health, and to continually acquire new skills. The time has come for health science faculties to better respond to the current needs of the health system. They must commit to training graduates to work in teams and to solving the problems created by the increasing length of initial training programs.

If we are to expect graduates to work effectively in interprofessional teams, they must be trained together – or at least have opportunities for training within an interprofessional team environment. Traditional departmental structures should be replaced with models that reflect evolving care delivery models. Accreditation bodies should evaluate specialty designations that are a better “fit” with the chronic disease prevention and management model and the shared care model.

The CV workforce also faces intense pressure to continually develop new skills to keep pace with new knowledge and to care for the growing number of Canadians who have two or more chronic diseases – yet there are few opportunities for ongoing training or career laddering. The education system must respond to the need for ongoing training to help health care providers adapt to new knowledge and technologies. Shorter initial training programs combined with regular opportunities for lifelong learning and career laddering may be a more effective way to prepare the health workforce and meet Canadians’ health needs.

Based on the results of the National Medical Council examinations, Canada has already demonstrated that the length of medical training can be shortened without measurable negative impact on physician performance.

Incentives Are Needed to Encourage Team Practice

Incentives shape practice. The way some health care services are funded (such as by the fee-for-service method) does not promote or encourage interprofessional teams or chronic disease prevention and management. Instead, it continues to reward individual practitioners rather than teams, and acute procedures more than health promotion, monitoring, education and rehabilitation services.

Both the federal Primary Health Care Transition Fund and some provincial primary care team initiatives have offered financial incentives to encourage physicians to participate in teams, but the three-year federal transition fund may not have been long enough to achieve its goals.
The traditional fee-for-service funding for medical services recognizes the amount of care provided, but not the quality, comprehensiveness or timeliness of that care. It does not compensate providers for the time it takes to educate patients and families or engage them as partners in their care, or for the time required to work as part of an interprofessional team. As a result, health care professionals have little incentive to work collaboratively or give as much attention to prevention, early detection of risk factors, and treatments that prevent or delay crises and enhance quality of life. Innovative models are required that provide incentives for all members of primary health care teams.

Procedure-based funding can be a problem when recommended procedures and the people who perform them change. For example, the shift to less invasive therapies has reduced the demand for certain cardiac surgeries. In a fee-for-service model, this change could have a direct impact on surgeons’ incomes and the system’s ability to retain those surgeons. The system needs incentives that adequately support all members of the care team and reward evidence-based care. In regional networks of specialized cardiac care where funding for medical specialties is not based on the fee-for-service method, interdisciplinary teams have developed to care more effectively for patients with heart failure, implanted devices, chest pain and abnormal rhythms. Canada has the potential to develop the right mix of incentives and supports to encourage individual health care professionals to work in interprofessional teams.

Some jurisdictions, such as the United Kingdom, New Zealand and Australia, have introduced “pay-for-performance” incentives that reward physicians or hospitals based on their performance against certain indicators for clinical care, preventive care, organizational quality and patient satisfaction, and this approach can be an effective incentive for the “right” care. For example, hospitals that participated in a pay-for-performance program in addition to public reporting of their performance results showed greater improvements in quality than hospitals that had public reporting only – including a 5.2% improvement in the treatment of heart failure. (Lindenauer et al., 2007)

British Columbia has used pay for performance to encourage physicians to provide certain preventive services (e.g., $100 for assessing cardiovascular risk using a series of validated measures). While pay for performance may be an effective tool, it has not yet been well defined or studied and may have unintended consequences. When care is provided by an interprofessional team, it is also difficult to determine which provider should be rewarded for a particular outcome. A more effective strategy may be to reward the integrated regional network for specialized cardiac care with recognition or additional resources. This approach would encourage more teamwork across the network and greater accountability to the public and funders for the quality of care provided by the network.

Whenever possible in both primary care and integrated regional networks for specialized cardiac care, funding and other incentives should be used to promote and reward high-quality, patient-centred care, teamwork and innovation. Ideally, incentives should reward improved outcomes as well as the more traditional benchmarks. Examples might include:

- proportion of patients with hypertension or high cholesterol who are receiving evidence-based therapies
- percentage of patients adhering to medications after discharge
- percentage of patients participating in and completing cardiac rehabilitation
- smoking cessation rates.

Rewarding performance requires the development and regular assessment of a system of quality indicators for each of the various forms of CV disease.
Recommendations

To develop the right people to provide CV prevention and care, Canada must take a more systematic approach to workforce planning. In collaboration with the federal, provincial and territorial governments’ efforts to implement the Pan-Canadian Health Human Resource Strategy, Canada must:

6.1 Strengthen and maintain the CV prevention and care workforce:

- Identify the number and mix of health providers and skills required to meet population needs.
- Recruit and/or develop people with key skills, including epidemiologists, experts in public health/population health, primary care providers, specialists, informatics professionals, social scientists, community planners, program evaluators and policy specialists.
- Encourage faculties of health sciences to ensure that health education programs teach an integrated approach to chronic disease prevention, management and care, provide more education on health promotion and disease prevention, and prepare a workforce that can adapt quickly to new knowledge and technologies.
- Provide incentives for education programs to prepare providers to work in interprofessional teams.
- Provide incentives for health care providers to work in interprofessional teams.
- Challenge educational programs to critically review the length of their training programs and the impact on efforts to ensure an adequate supply and mix of health professionals and skills to meet Canada’s health needs.
Over the past two decades, Canada has made major progress in addressing CV diseases. Our success in cutting the number of premature deaths from heart disease and stroke must be applauded. However, the burden of CV diseases continues to grow, and we cannot be complacent. We now face a potential epidemic of CV diseases across the country and a CV crisis in Aboriginal/indigenous communities.

Fortunately, we have within our grasp the knowledge and skills to create a much brighter, healthier future for Canadians. We know what to do and how to do it. This is different from the situation with other chronic diseases, where many of the causes and solutions are unclear. To change the current trajectory of CV disease, we must sharpen our understanding of the factors that increase risk of cardiovascular disease, look both within and beyond the health system for opportunities to improve CV health, and focus on actions that are practical, achievable, affordable, sustainable and measurable.

To build a heart healthy Canada, we need a comprehensive approach that addresses not only the clinical risks, such as high blood pressure, high cholesterol, obesity and diabetes, but also the environments where people live, learn, work and play. We also need to address the socio-economic factors that contribute to health inequities and that create a greater burden of CV disease among certain groups in the population.

Our Targets

The Canadian Heart Health Strategy and Action Plan supports and endorses targets that Canada has set for healthy eating, physical activity, healthy weights, trans fats and sodium in food, and smoking, as defined in several initiatives; these include the Integrated Pan-Canadian Healthy Living Strategy, the Trans Fat Task Force, the Working Group on Dietary Sodium Reduction, the Federal Tobacco Control Strategy and the Canadian Diabetes Strategy. Provinces and territories, regional health authorities and public health departments have set targets to improve the health of their populations. Some have also established targets to reduce poverty.
The CHHS-AP has identified a number of ambitious but achievable targets for prevention and care of CV diseases.

**BY 2020:**

1/ Decrease the annual mortality rate from CV diseases by 25% (from 227/100,000 population in 2004 to 171/100,000).

2/ Decrease the burden of CV diseases in the Aboriginal/indigenous population to the same level as in other Canadians.

3/ a Decrease the prevalence of hypertension in adult Canadians aged 18–74 years by 32% (from 22% in 1992 to 15%).

   b Increase the proportion of adult Canadians with hypertension who are aware of their condition by 64% (from 58% in 1992 to 95%).

   c Increase by six-fold the proportion of adult Canadians with hypertension treated to recommended targets (from 12.1% in 1992 to 75%).

4/ Decrease the risk-adjusted 30-day in-hospital mortality rate from heart attacks by 32% (from 10.3% to 7%).

5/ Decrease the risk-adjusted 30-day in-hospital mortality rate from stroke by 25% (from 18.2% to 13.6%).

6/ Decrease the age-standardized number of hospitalizations per year for treatment of heart failure by 25% (from 132/100,000 population in 2005/06 to 98/100,000).

7/ Decrease the age-standardized number of hospitalizations per year for treatment of acute stroke by 25% (from 95/100,000 population in 2005/06 to 71/100,000).

8/ Have CV risk assessments performed on 90% of Canadians aged 45 years and older within the previous five years.

9/ Work with others to reduce the overall smoking rate by 25%.

10/ Abnormal levels of blood cholesterol and other lipids remains a major risk factor for CV diseases. Unfortunately, no population-based measures of lipids are yet available in Canada, so a target cannot be set at this time. However, they are expected soon, and once available a target can be set. In the meantime, aggressive measures to improve this risk factor are encouraged as part of the Strategy.

11/ By 2015, achieve the following targets by working with others who have set these targets:

   • Increase the proportion of Canadian children and adults eating at least five servings of vegetables and fruit per day by 20%.

   • Increase the proportion of Canadian children and adults who are physically active by 20%.

   • Decrease the rate of Canadian adults who are overweight/obese by 20% and the rate of childhood obesity from 8% to 5%.
ECONOMIC ANALYSIS

Given the complex relationships among the various risk factors, the potential for advances in diagnosis and therapies, and the effect of changing care delivery models, the Steering Committee recognizes the difficulty in estimating the potential for cost savings as a result of achieving these targets. We are continuing to assess various models but believe that the current estimate of savings of $1 billion per year in direct costs and $2 billion per year in indirect costs are conservative estimates. This is highlighted by recent studies that estimate direct cost savings of approximately $2 billion per year just from decreasing average sodium (salt) consumption to recommended levels. (Joffres et al., 2007; Penz et al., 2008)

Leadership and Partnerships

Stopping CV diseases requires leadership from all levels of government, using whole-of-government approaches. But, governments cannot do it alone. Partnerships are needed, within and outside the health sector, to engage health professionals and their organizations, non-governmental organizations, industry, the media and citizens in creating a whole-of-society, whole-of-the-country approach.

To be successful, we must invest resources and efforts “upstream” on activities that will prevent CV diseases as well as “downstream” in high-quality efficient treatment services for people with heart and other vascular diseases. We must work together – within government, across governments, across sectors, in communities, and in schools, workplaces and our homes – to reduce all the risks that threaten our hearts and our blood vessels. We must change our environments and social norms. At the same time, our health systems and health care providers must work closely with Canadians to provide timely, high-quality, integrated, patient-centred prevention services and care.

We have an enormous opportunity to improve the health of Canadians by implementing the Canadian Heart Health Strategy and Action Plan. We must take responsibility for our health and the future health of our country, and we must act now. There is no time for complacency.


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References


