

## **ALBERTA PROVINCIAL STROKE STRATEGY**

### **Planning for Primary Stroke Prevention**

December 7, 2006



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A – STROKE PREVENTION CONTINUUM

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Social Determinants of Health and References

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*Parts of document excerpted from:*

*Prescribing Prevention, Health Promotion and Stroke Prevention  
Ontario Prevention Clearinghouse  
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Alberta Provincial Stroke Strategy Pillar 1  
Pillar 1 Primary Stroke Prevention Working Group

## 1.0 MOVING UPSTREAM

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Over 75% of all strokes are new strokes, the majority of which occur in high risk individuals with identifiable and modifiable vascular risk factors. Relatively small gains in primary prevention programs offer considerable potential for reducing overall stroke incidence and providing cost containment of the increasing financial burden stroke imposes on the Alberta health care system. Through the APSS we have the opportunity to integrate health promotion and stroke prevention practices across the continuum to reduce the incidence of the major vascular risk factors in the population of Alberta. The effects of health promotion are long term and the benefits may not be recognized for many years. Yet, with the aging population in Alberta and increased incidence of chronic disease in all age groups, it is critical to move upstream and integrate health promotion and primary disease prevention practices to discourage behaviour such as smoking, unhealthy eating, excessive drinking and inactivity and encourage better control of risk factors.

The spectrum of modifiable risk factors which are the focus of stroke prevention are the same risk factors for all forms of vascular disease, including coronary artery disease, renal vascular disease and peripheral vascular disease. These risk factors also impact on chronic disease conditions such as diabetes and dementia. Although this document focuses on stroke prevention activities, it should be appreciated that the development of effective stroke prevention programs will have widespread impact on all these forms of chronic disease. This has major implications in terms of global vascular risk reduction.

This document provides a practical framework for health regions and program planners to use when designing **primary prevention strategies for stroke** and all other forms of vascular disease at the population and individual level (See Section 4 & 5). Incorporating primary care networks and chronic disease management programs is essential to the effective implementation of these strategies at the primary care level (See section 7.0), but must extend beyond this, utilizing imaginative and innovative strategies that allow for broader contact with the public at large. Each health region will pursue different solutions and will develop a different array of services and programs designed to meet local needs. Examples of potential initiatives are outlined in the following pages and regional administrations are encouraged to look also to their sister health regions for potentially useful models and advise in the development of their respective programs.

This document can also be used as a guide by health care providers (family physicians, specialists, public health nurses and others) caring for people with stroke or at high risk for stroke, broadening their understanding of health promotion activities at all levels and how they can apply health promotion and primary prevention principles in their clinical practice (See Section 6).



"I am standing by the shore of a swiftly flowing river and hear the cry of a drowning man. I jump into the cold waters. I fight against the strong current and force my way to the struggling man. I hold on hard and gradually pull him to shore. I lay him out on the bank and revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help.

I jump into the cold waters. I fight against the strong current, and swim forcefully to the struggling woman. I grab hold and gradually pull her to shore. I lift her out onto the bank beside the man and work to revive her with artificial respiration. Just when she begins to breathe, I hear another cry for help. I jump into the cold waters. Fighting again against the strong current, I force my way to the struggling man. I am getting tired, so with great effort I eventually pull him to shore. I lay him out on the bank and try to revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help.

Near exhaustion, it occurs to me that I'm so busy jumping in, pulling them to shore, applying artificial respiration that I have no time to see who is upstream pushing them all in...."<sup>1</sup>

<sup>1</sup>Adapted from a story told by Irving Zola as cited in McKinlay, John B. "A case for refocusing upstream: The political economy of illness." In Conrad and Kern, 2nd edition, 1986, *The Sociology of Health and Illness: Critical Perspectives*. pp. 484-498.

## **2.0 THE BURDEN OF STROKE**

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Chronic diseases, including stroke, place a heavy burden on individuals, caregivers and society as a whole in terms of morbidity and mortality. Stroke results in disabilities that impede normal daily functions and activities, seriously affecting quality of life. Stroke is a major cause of acquired long-term disability in the adult populations and is the fourth leading cause of death in Canada. It is the most common neurological disease requiring admission to hospital. In the province of Alberta, there are approximately 5500 documented new stroke cases each year and at present 25,000 stroke survivors. Stroke incidence in North America averages 150 cases per 100,000 per year and will increase by 1%-2% per year for the next decade as the population ages. The cost of stroke care in Alberta is approximately \$200-\$300 million annually and this does not include any calculation for loss in productivity or earned income.

## **3.0 STROKE IS PREVENTABLE**

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Stroke and other common chronic diseases (including coronary, renal and peripheral vascular disease) are linked by common preventable risk factors many of which are related to lifestyle. Individuals can significantly reduce their chances of having a stroke and other vascular events by not smoking, increasing physical activity and eating a healthy diet. Some individuals are at higher risk for stroke than others and medications such as blood pressure-lowering agents, antiplatelet or anticoagulant drugs or surgery can significantly reduce the number of strokes by half among high risk individuals if these risk factors are detected and treated early. Socio-economic determinants also impact overall health and need to be considered at the individual and population levels.

Only 25% of all strokes are repeat strokes, significantly limiting the potential gains from secondary prevention initiatives alone. Relatively small gains in primary prevention programs offer considerable potential for reducing overall stroke incidence and reducing the financial burden stroke imposes on the Alberta health care system.

Primary prevention involves modifying risk factors before symptoms or illnesses occur at the individual or population level. Many health regions are placing increasing emphasis on primary prevention and developing upstream approaches by focusing on primary prevention activities such as healthy eating and active living. As well, primary prevention includes detecting disease in its early stages before major complications arise. Many health regions are developing primary care and chronic disease networks to better prevent the development of risk factors and identify risk factors before a stroke or other cardiovascular event occurs. Refer to Appendix A for a description of how primary prevention and health promotion spans the stroke prevention continuum.

## 4.0 STROKE PREVENTION – A MULTI-FACETED APPROACH

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Preventing stroke and other cardiovascular diseases in Alberta will require a multifaceted approach that goes beyond a specific focus on a particular disease. In Alberta there are many government departments, health regions, formal and in-formal community-based organizations and groups, working to promote health and reduce risk factors for chronic disease including stroke. A collaborative approach, that includes representation from the communities they are intended to serve, is the most effective approach to disease prevention.

Population-based awareness and individual educational strategies should encompass and be designed to:

- Inform the public/individual about stroke risk factors emphasizing early detection
- Motivate and enable the public/individuals with modifiable risk factors to address them
- Convince the public/individuals without behavioral risk factors to avoid them

The following table highlights components of stroke and cardiovascular disease prevention at community, health service and system levels. Application of these components is outlined in Sections 6 & 7.



HEALTH PROMOTION IS MULTI-LEVEL AND CROSS-SECTORAL
<p>COMPONENTS:</p> <p>Community Health Promotion (See Section 7)</p> <ul style="list-style-type: none"><li>• Advocating healthy public policy</li><li>• Encouraging community action</li><li>• Creating supportive environments for health (school, workplace, community)</li><li>• Providing information and education</li><li>• Involving non-health sectors and external health organizations</li></ul> <p>Health services (See Section 6 &amp; 7)</p> <ul style="list-style-type: none"><li>• Education about healthy lifestyles for everyone</li><li>• Case finding/screening for adults and teens</li><li>• Lifestyle education and medication for high blood pressure and other chronic disease risk factors</li><li>• Promotion of self-care/follow-up</li><li>• Creation of a system of services</li><li>• Interdisciplinary teams</li></ul> <p>System support (See Section 6 &amp; 7)</p> <ul style="list-style-type: none"><li>• Education resources</li><li>• Clinical practice guidelines</li><li>• Surveillance, research, evaluation</li><li>• Information systems and decision-support tools</li><li>• Coalitions/networks</li></ul> <p><i>Modified from: Canadian High Blood Pressure Prevention and Control Program National High Blood Pressure Prevention and Control Strategy <a href="http://www.hypertension.ca/chep">http://www.hypertension.ca/chep</a></i></p>

## Population Level

A broad range of factors and conditions have a strong influence on our health, factors that have little to do with access to health services. These factors are called the determinants of health and include individual elements, such as biology and personal health practices, as well as elements outside the influence of the individual, such as physical, social and economic environments. Population health addresses the entire range of health determinants going beyond the risk factors for a particular disease or condition.

A population health approach looks to examine root causes of poor health, reduce barriers to health and increase opportunities for people to improve their overall well-being and quality of life.

### RECOMMENDATION

It is important that health regions ensure that people have effective and accessible health services while working in partnership with other sectors to address the broader determinants of health.

### RECOMMENDATION

Determinants of health should also be acknowledged and considered by health care providers when targeting individual health promotion and stroke prevention interventions, activities and programs. For example, family income and cultural issues need to be addressed at the individual patient level to increase compliance to treatment and lifestyle change recommendations.

The broad determinants of health include:

• Income and Social Status	• Personal health practices and coping skills
• Social support networks	• Healthy child development
• Education and literacy	• Biology and genetic endowment
• Employment/working conditions	• Health services
• Social environments	• Gender
• Physical environments	• Culture

A full list and explanation of these determinants of health are listed in Appendix B.

## Health Promotion

Health Promotion is the process that enables people to increase control over, and improve their health (Ottawa Charter for Health Promotion, 1986). Health promotion goes beyond the absence of disease. It is multilevel and considers the health of individuals, organizations and communities, and to achieve its goals and objectives requires partnerships with other sectors beyond health.

### RECOMMENDATION

Health regions need to integrate health promotion practices throughout all parts of the health continuum.

Health regions can work towards changing the distribution of cardiovascular and stroke risk factors by keeping people well, preventing progression of disease by controlling existing risk factors and preventing re-occurrence after a stroke or TIA has occurred.

Comprehensive health promotion programs and practices address multiple risk factors, reach different audiences through different channels or venues and use a variety of approaches. Approaches may include education, advocacy, environmental support, policy development and community development and mobilization.

## 5.0 PLANNING FOR STROKE PREVENTION

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Primary prevention can be offered by a population-based approach, where whole populations or parts of the population are targeted to make changes for better health, for example to make the community 'smoke-free' or to build more recreation facilities to encourage more active lifestyles.

Primary prevention is also offered on a one-to-one level, usually geared to changing specific behaviors, for example to help an individual stop smoking, or to change their diet to encourage more fruits and vegetables.

### Population Approach

Regional Health Authorities and other organizations, like the Heart and Stroke Foundation of Alberta, offer a wide range of services in a variety of community and primary health care settings aimed at promoting physical and mental well being. In the past few years several provincial coalitions and networks have been founded to address primary prevention and chronic disease prevention including the Alberta Health Living Network.

Examples of other coalitions and prevention strategies in Alberta are:

- Alberta Coalition for Healthy School Communities
- Healthy Alberta Communities
- Alberta Tobacco Reduction Strategy
- Healthy U

For a more complete listing refer to the Alberta Health Living Framework: An Integrated Approach ([www.ahln.ca/](http://www.ahln.ca/))

As well, local coalitions and networks to address healthy living have been established in many cities and towns throughout Alberta to target more community-specific needs.

## Individual Approach

Primary prevention targeted to individuals is usually implemented in the primary health care setting, and the physician, nurse, or the individual may initiate a discussion of stroke and vascular disease risk reduction. Common topics for these discussions include the importance of managing risk factors by:

- stopping smoking
- being physically active
- eating a healthy diet
- taking appropriate medications to reduce specific risks such as high blood pressure

Primary Prevention also encompasses detecting disease in its early stages before major complications arise. Emphasis is placed on case finding, surveillance, periodic health exams, and controlling specific risk factors through medication. It is advised that health regions optimize the use of allied health resources such as pharmacists, fire departments, nurse practitioners, communities, volunteers and others to help identify high risk individuals earlier in the disease process.

Prevention starts early. The Heart and Stroke Foundation of Canada Jumping In to the Curriculum program for school age children grades 4 to 6 is an example. Jump rope activities are integrated into curricula for mathematics, social studies, science and the arts. The Heart and Stroke Foundation has also developed a web-based interactive program (BP Action Plan) to help identify hypertension, the primary risk factor for stroke, and direct individuals to the appropriate resources for effective management (<http://www.heartandstroke.ca>).

### RECOMMENDATION

Both individual and population health based approaches at the community, health service and system level are key to reducing the incidence of stroke.

Health regions are encouraged to incorporate all facets of stroke and cardio-vascular disease prevention in a comprehensive integrated health promotion/primary prevention strategy. These strategies should also coordinate with provincial and national initiatives.

## 6.0 BEST PRACTICES - COMMON RISK FACTORS FOR STROKE

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There are three categories of risk factors for stroke and other cardiovascular disease. They are related to:

- disease conditions including family history
- lifestyle issues such as smoking behaviour
- social determinants such as poverty

Stroke prevention is about reducing - or eliminating - these risks.

**Disease Condition and Lifestyle risk factors tables** on the following pages describe the:

- magnitude of these risk factors
- impact they have on stroke incidence in Alberta
- best practices/action plans for managing these risk factors.

The best practices/action plans for managing risk factors for stroke are based on **Canadian Stroke Strategy Best Practice Guidelines** and other accepted standards of practice. Canadian Stroke Strategy (CSS) Best Practices recommendations document is now complete for 2006 and has been posted on the CSS Website at: [www.canadianstrokestrategy.ca](http://www.canadianstrokestrategy.ca). These recommendations are endorsed by APSS Pillar 1 – Health Promotion and Disease Prevention. The methodology for the development of these standards is available on the web-site. The standards are a result of an extensive review of the national and international evidence-based best practices in stroke prevention and management. Canadian targets and guidelines are referenced for the management of blood pressure, dyslipidemia and diabetes.

The **Primary Stroke Prevention Checklist** on page 17 corresponds to these risk factors and can be used as a guideline by primary health care providers and teams to screen for stroke risk factors at the individual patient level. Family physicians and other members of the primary health care team may also use the **Framingham Cardiac Risk Assessment (for Men and Women)** to assess the cardiovascular and stroke risk in all populations. See <http://www.chinookprimarycarenetwork.ab.ca/extranet/resources/guides.php> for an example of this tool to assess the clinical risk of cardiovascular disease. Other relevant clinical guidelines for family physicians/primary care networks in this series and available on this website are:

- Building Healthy Lifestyles: Risk Factor Clinical Guide
- Building Healthy Lifestyles: Vascular Protection Hypertension Clinical Guide
- Building Healthy Lifestyles: Dyslipidemia Clinical Guide
- Building Healthy Lifestyles: Diabetes Clinical Guide

**Social Determinants** and their implications for health are discussed further in Appendix B. These should be acknowledged and considered when targeting individual health promotion and stroke prevention interventions, activities and programs. For example, family income and cultural issues need to be addressed at the individual patient level to increase compliance to treatment and lifestyle change recommendations.

Refer to Appendix C for a **Resource List for Stroke Prevention**

## BEST PRACTICES – COMMON RISK FACTORS FOR STROKE

### 6.1 DISEASE CONDITION

D I S E A S E   C O N D I T I O N			
Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
<b>Asymptomatic Carotid Stenosis</b>	Individuals with Asymptomatic carotid stenosis >70% have an increased risk of stroke (1).	Prevalence of carotid stenosis in patients greater than 65 years of age was 7% in women and 9% in men (Framingham study).	The majority of patients will benefit most from best medical therapy however this is an area of controversy and uncertainty and individuals with high grade stenosis and/or other complicating features should be referred for assessment by a stroke specialist. Best medical management should focus on aggressive management of major risk factors of hypertension, smoking, diabetes, diet and elevated lipids. All patients with asymptomatic carotid stenosis should be on an antiplatelet agent, a statin (target LDL <2.0) and probably an ACE-I or ARB (APSS Pillar 1).
<b>Atrial Fibrillation</b>	Individuals with atrial fibrillation have 3-5 times greater risk for ischemic stroke (2).	3% of population aged 45+ has atrial fibrillation 5.9% by age 65 and over.  10% of population aged >75.	<b><u>Antithrombotic Therapy for Atrial Fibrillation</u></b> 8a. For primary prevention of stroke in patients with atrial fibrillation, ASA or anticoagulation with warfarin should be considered based on the clinical circumstances. (BPS-WG; Evidence Level A, CSS #8)  8b. Patients with stroke and atrial fibrillation should be treated with warfarin at a target INR of 2.5, range 2.0 to 3.0, (target INR of 3.0 for mechanical cardiac valves, range 2.5 to 3.5), if they are likely to be compliant with the required monitoring and are not at high-risk for bleeding complications. (CSQCS, ASA, Australian, SIGN, VA/DoD; Evidence Level A/I, CSS #8)  Patients who, for whatever reason, are deemed unsuitable candidates for long term anticoagulation should be treated with ASA 81 mg/d and consideration should be given to referral to a cardiac centre for consideration of other options for rhythm control. (Pillar 1)
<b>Cholesterol</b>	High cholesterol: Doubles the risk of ischemic stroke. Increases the risk of heart disease (3).	Nearly half of all Canadians have elevated cholesterol (4).	Screening for elevated cholesterol should be done for anyone with: <ul style="list-style-type: none"> <li>• heart disease, or diabetes, hypertension</li> <li>• men aged 40 or older</li> <li>• women who are postmenopausal or over age 50</li> <li>• smokers•abdominal obesity (waist measurement of more than 102 cm for men, and more than 88 cm for women) (5)</li> <li>• Family history premature in first degree relative; male &lt;55 and female &lt;65 years</li> </ul>

**D I S E A S E   C O N D I T I O N**

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			<ul style="list-style-type: none"> <li>• Manifestations of hyperlipidemia (xantholasma, xanthoma, or corneal arcus (38))</li> </ul> <p><b><u>Lipid Management</u></b>  <b>5a. Lipid Assessment:</b></p> <p>Fasting lipid levels (TC, TG, LDL-C, HDL-C) should be measured every 1 to 3 years and other cardiovascular risk factors assessed for all men 40 years or older, and women who are post-menopausal and /or 50 years or older. (CDS, VA/DOD, Class IIa, Level C, CSS #5). More frequent testing should be performed for patients with abnormal values or if treatment is initiated (Canadian Lipid Guidelines 2006).</p> <p>Screen at any age adults with major CAD risk factors (such as diabetes, smoking, hypertension, obesity, cardiovascular disease, chronic kidney disease, lupus, exertional chest discomfort, evidence of atherosclerosis). (CDG; Evidence Level IIa/C, CSS #5)</p> <p>For asymptomatic patients the 10 year cardiovascular risk may be assessed by using Framingham vascular risk engine and their cholesterol lowered according to the recommendations by the Canadian Dyslipidemia guidelines (CDG) (APSS Pillar 1).</p> <p><b>5b. Lipid Management:</b></p> <p>Ischemic stroke patients with LDL-C of &gt;2.0 mmol/ L should be managed with lifestyle modification, dietary guidelines, and medication recommendations (CSQCS, Australian, VA/DOD; Evidence Level A, CSS #5)</p> <p>Statin agents should be prescribed for all patients who have had an ischemic stroke/TIA event (Australian, VA/DOD; evidence level A), in order to achieve a target goal of an LDL-C of &lt;2.0 mmol/L and TC/HDL-C &lt; 4.0 mmol/L (CDS, CSQCS; Evidence Level A, CSS #5).</p>
<b>Coronary Heart Disease (CHD) or</b>	CHD: Doubles the risk of ischemic stroke	4% of Canadians self-report being diagnosed with a heart problem	Medical management Lifestyle counseling

**D I S E A S E   C O N D I T I O N**

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
<b>Ischemic Heart Disease</b>	(6).	(NPHS 2000)  Death due to CHD • Men 36% • Women 38%	Consult AHA guidelines etc.
<b>Diabetes</b>	Diabetics have 1.5-2.5 greater risk for ischemic stroke (7).  Diabetes is strongly correlated with high blood pressure, high cholesterol and obesity (8).	3.6% of Albertans over age 12 have diabetes (33)	<p><b><u>Diabetes Management (CSS #6)</u></b></p> <p><b>6a. Diabetes Assessment:</b></p> <ul style="list-style-type: none"> <li>◆ All individuals should be evaluated annually for type 2 diabetes risk on the basis of demographic and clinical criteria. (CDA; Evidence Level D)</li> <li>◆ A fasting plasma glucose (FPG) should be performed every 3 years in individuals &gt; 40 years of age to screen for diabetes. (CDA; Evidence Level D) More frequent and/or earlier testing with either an FPG or plasma glucose drawn two hours after a 75-g oral glucose load should be considered in people with additional risk factors for diabetes. (CDA; Evidence Level D) Some of these risk factors include: family history, high risk population, vascular disease, history of gestational diabetes, hypertension, dyslipidemia, overweight, abdominal obesity, polycystic ovary syndrome.</li> <li>◆ In adults fasting lipid levels ( TC, HDH-C, TG and calculated LDL-C) should be measured at the time of diagnosis of diabetes and then every 1 to 3 years as clinically indicated. More frequent testing should be performed if treatment for dyslipidemia is initiated. (CDA; Evidence Level D)</li> <li>◆ Blood pressure should be measured at every diabetes visit. (CDA; Evidence Level D)</li> </ul> <p><b>6b. Diabetes Management (CSS #6) :</b></p> <ul style="list-style-type: none"> <li>◆ Glycemic targets must be individualized (CDA, ESI; Evidence Level III); however, therapy in most patients with type 1 or type 2 diabetes should be targeted to achieve an A1C ≤7.0% in order to reduce the risk of microvascular(CDA; Evidence Level A/I) and macrovascular complications. (CDA; Evidence Level C)</li> <li>◆ To achieve an A1C ≤7.0%, patients with type 1 or type 2 diabetes should aim for FPG or preprandial PG targets of 4.0 to 7.0 mmol/L and 2-hour postprandial PG targets of 5.0 to 10.0 mmol/L. (CDA; Evidence Level B)</li> <li>◆ If it can be safely achieved, lowering PG targets toward the normal range should be considered (CDA; Evidence Level C/3): A1C ≤6.0% (CDA; Evidence Level D); FPG/preprandial PG: 4.0 to 6.0</li> </ul>

**D I S E A S E   C O N D I T I O N**

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			mmol/L (CDA; Evidence Level D); and 2-hour postprandial PG: 5.0 to 8.0 mmol/L. (CDA; Evidence Level D) ♦ Adults at high risk of a vascular event should be treated with a statin to achieve an LDL-C ≤2.0 mmol/L. (CDA; Evidence Level A/1) ♦ Unless contraindicated, low dose ASA therapy (80 to 325 mg/day) is recommended in all patients with diabetes with evidence of CVD, as well as for those individuals with atherosclerotic risk factors that increase their likelihood of CV events. (CDA; Evidence Level A)
<b>Family History of Stroke and/or CVD</b>	There is support for an inheritable component to stroke (9).	Having a parent or sibling with stroke prior to age 65, increases risk of stroke by 70% (10).	Assessment and management of risk factors for stroke Lifestyle counseling
<b>High Blood Pressure (HBP)</b>	Untreated HBP increases the risk of stroke 3-4 times (11).  Treatment of HBP can reduce strokes by 38% and fatal strokes by 40% (12).  Treating blood pressure to the recommended target levels will reduce the risk of coronary events by 15% (CHEP).	22% of Canadian adults have HBP and the incidence of HBP increases with age, weight, alcohol use and diabetes (13).  33% are not treated and not controlled (14).	<p><b><u>Blood Pressure Management</u></b></p> <p><b>4a. Blood Pressure Assessment (CSS #4):</b></p> <p>All persons at risk of stroke should have their blood pressure measured at each healthcare encounter. (RCP, CHEP; Evidence Level C)</p> <p>Patients found to have elevated blood pressure should undergo thorough assessment for the diagnosis of hypertension following the current guidelines of the Canadian Hypertension Education Program (ASA, CHEP, RCP; Evidence Level A).</p> <p><b>4b. Blood Pressure Management (CSS #4):</b></p> <p>Patients with ischemic stroke who are beyond the hyper-acute period should be prescribed anti-hypertensive treatment to target normal blood pressure. (ASA, CSQCS, CHEP, RCP; Evidence Level A)</p> <p>Target blood pressure levels as per the Canadian Hypertension Education Program (CHEP) guidelines for prevention of stroke and other vascular events.</p> <p>CHEP guideline recommendations 2007  <a href="http://www.hypertension.ca/chep">http://www.hypertension.ca/chep</a>:                      • Strong consideration should be given to the initiation of</p>

**D I S E A S E   C O N D I T I O N**

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			<p>antihypertensive therapy after the acute phase of non-disabling stroke or transient ischemic attack (Grade A).</p> <ul style="list-style-type: none"> <li>• Caution is indicated in deciding whether to lower blood pressure in the acute stroke situation; pharmacological agents and routes of administration should be chosen to avoid precipitous fall in blood pressure (Grade D)</li> <li>• Following the acute phase of a stroke, patients should have their blood pressure chronically controlled to a target of less than 140/90 mmHg (Grade C)</li> <li>• Treatment with an ACE inhibitor/diuretic combination is preferred (Grade B)</li> </ul>
<b>Previous Stroke</b>	Approximately 25% of stroke survivors have another stroke within 5 years (15).	Over 5500 strokes each year in Alberta and close to 25000 people living with stroke.	See APSS Secondary Stroke Prevention Guidelines for management of TIA and previous stroke
<b>Transient Ischemic Attack (TIA)</b>	<p>Risk of stroke for individuals with TIA:</p> <ul style="list-style-type: none"> <li>• 5% within 48 hours</li> <li>• 8% within 1 month</li> <li>• 12% within 1 year and</li> <li>• up to 30% within 5 years (17).</li> </ul>	Although it is difficult to estimate the incidence of TIA's since possibly only 10-25% of patients who experience a TIA are admitted to hospital. Less than half the people with symptoms of a TIA sought medical attention promptly and only 10 percent went to the emergency room (18)	See APSS Secondary Stroke Prevention Guidelines for management of TIA
<b>Hormone Replacement Therapy</b>	In post-menopausal patients 50-80 years of age, HRT has not proved to be an effective strategy for vascular disease prevention and is associated with an excess risk of 8 cases per 10,000 patient years each of myocardial infarction, stroke, pulmonary embolus and invasive breast cancer (31, 34 - 37).	In the 1990s HRT (combination estrogen + progesterone) was thought to be cardioprotective in post-menopausal women as was widely prescribed for women 50-80 years of age. The exact incidence of HRT in the population at this time is not known.	<p>As a population health measure HRT is not an effective measure for reducing cardiovascular risk in women. Although the relative risk of stroke with HRT rises on an individual basis by approximately 40%, the increase in absolute risk is modest and only 0.08% with similar additional risks of myocardial infarct, pulmonary embolus and invasive breast cancer. The associated risks for short term use controlling perimenopausal symptoms is unknown but likely lower than the above figures. Alternate forms of therapy should be tried first for relief of perimenopausal and menopausal symptoms but if these fail, patients should be informed of the risks involved and some may wish to accept these risks of HRT (31, 34 - 37).</p> <p>Discuss all health risks and benefits associated with HRT and goals of treatment</p>

D I S E A S E   C O N D I T I O N			
Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			Counsel all women about lifestyle changes to reduce or prevent heart disease and stroke

References - Appendix B.

*Table excerpted (with modification) from Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse, Second Edition, Summer, 2004*

*Action Plan Source: Canadian Stroke Strategy (CSS) Best Practices and Standards: Canadian Best Practice recommendations for Stroke Care 2006 and APSS Pillar 1*

## 6.2 LIFESTYLE

L I F E S T Y L E			
Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
<b>Excessive Alcohol Consumption</b>	<p>Excessive alcohol consumption is linked to rising blood pressure and obesity (19)</p> <p>Binge drinking can double the risk of ischemic stroke and increase the risk of hemorrhagic stroke 2-3 fold (20).</p>	<p>About 22% of Albertans age 12 and older drink at an unhealthy level.</p> <p>Males – 30.5% Females – 13.1% Both – 22.4% CCHS (33)</p> <p>Definition of Binge Drinking: 5 or more drinks on one occasion, 12 or more times a year</p>	<p><b><u>Life Style Management</u></b></p> <p>Persons at risk of stroke and patients who have had a stroke should be assessed for and given information about risk factors, lifestyle management issues (exercise, smoking, diet, weight, alcohol, stress management), and be counselled about possible strategies to modify their lifestyle and risk factors. (Adapted from RCP, NZ, Australian, VA/DOD, HSFO; Evidence Level III/C/R, CSS #3)</p> <p>The lifestyle and risk factors and interventions include:</p> <ul style="list-style-type: none"> <li>Alcohol consumption: no alcohol to moderate consumption (less than two standard drinks per day). Men: less than 14 drinks per week / Women: less than 9 drinks per week. (CHEP 2007; Grade B, Australian, ASA; Evidence Level C/III)</li> </ul>
<b>Unhealthy Eating Practices</b>	<p>A diet high in fruit and vegetables and low in meat, fish, and poultry substantially reduced blood pressure in hypertensive subjects</p>	<p>56% of Albertans age 12 and over consume fruits and vegetables less than 5 times daily.</p>	<p><b><u>Life Style Management</u></b></p> <p>Persons at risk of stroke and patients who have had a stroke should be assessed for and given information about risk factors, lifestyle management issues (exercise, smoking, diet, weight, alcohol, stress management), and be counselled about possible strategies to modify their lifestyle and risk factors. (Adapted from RCP, NZ, Australian, VA/DOD, HSFO; Evidence Level III/C/R, CSS #3)</p> <p>The lifestyle and risk factors and interventions include:</p> <p>CHEP 2007 Recommendations</p>

## L I F E S T Y L E

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			<p>Dietary Recommendations It is recommended that hypertensive patients and normotensive individuals at increased risk of developing hypertension consume a diet that emphasized fruits, vegetables and low-fat dairy products, dietary and soluble fiber whole grains and protein from plant sources and that is reduced in saturated fat and cholesterol (Dietary Approaches to Stop Hypertension [DASH] diet).</p> <p>Salt Intake</p> <ol style="list-style-type: none"> <li>1. In normotensive individuals at increased risk of developing hypertension and considered salt-sensitive such as Canadians of African descent, persons older than 45 years of age and persons with chronic kidney disease or diabetes, dietary sodium intake should be restricted to less than 100 mmol/per day (Grade D).</li> <li>2. For prevention of hypertension, in addition to a well balanced diet, a dietary sodium intake of &lt;100 mmol/day is recommended (Grade B).</li> <li>3. In hypertensive patients, dietary sodium intake should be limited to 65-100 mmol/day (Grade B).</li> </ol>
<p><b>Overweight</b></p>	<p>Being overweight increases risk of stroke, high blood pressure, high cholesterol and diabetes (23).</p> <p>Among women, stroke risk increases with increasing Body Mass Index and weight gain after 18 (24).</p>	<p>In Alberta, 57% of males and 40% of females have a BMI&gt;25.</p> <p>Males – OW 42%, OB 16.6% Females – OW 26%, OB 14.3% Both – OW 34.1%, OB 15.5% CCHS (33)– Aged 18 and over</p> <p>Definition: OW overweight BMI 25-29.0; OB obese BMI 30+</p>	<p><b>Life Style Management</b></p> <p>Persons at risk of stroke and patients who have had a stroke should be assessed for and given information about risk factors, lifestyle management issues (exercise, smoking, diet, weight, alcohol, stress management), and be counselled about possible strategies to modify their lifestyle and risk factors. (Adapted from RCP, NZ, Australian, VA/DOD, HSFO; Evidence Level III/C/R, CSS #3)</p> <p>The lifestyle and risk factors and interventions include:</p> <ul style="list-style-type: none"> <li>• Weight: maintain goal of a BMI of 18.5 to 24.9 kg/m<sup>2</sup> and a waist circumference of &lt;88cm for women and &lt;102 cm for men. (CHEP, ASA;</li> </ul>

## L I F E S T Y L E

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan
			Evidence Level II/B-C)
<b>Sedentary Lifestyle</b>	<p>Sedentary lifestyle also contributes to other stroke risk factors, e.g. high blood pressure, becoming over-weight, diabetes and heart disease.</p> <p>Physical activity has a protective effect for both sexes (25/26).</p>	<p>43% of Albertans age 12 and over are physically inactive.</p> <p>Males – 41.9% Females – 44.5% Both – 43.2% CCHS (33) – Aged 12 and over</p> <p>Definition: Leisure time physically inactive</p>	<p><b><u>Life Style Management</u></b></p> <p>Persons at risk of stroke and patients who have had a stroke should be assessed for and given information about risk factors, lifestyle management issues (exercise, smoking, diet, weight, alcohol, stress management), and be counselled about possible strategies to modify their lifestyle and risk factors. (Adapted from RCP, NZ, Australian, VA/DOD, HSFO; Evidence Level III/C/R, CSS #3)</p> <p>The lifestyle and risk factors and interventions include: Exercise: moderate exercise (an accumulation of 30 to 60 min) of brisk walking, jogging, cycling or other dynamic exercise 4 to 7 days each week. Medically supervised exercise programs for high risk patients (e.g. those with cardiac disease). (CHEP, NZ, ASA; Evidence Level A-B/ I-II, CSS #3)</p>
<b>Smoking</b>	<p>Smoking increases the risk of stroke and myocardial infarction two to six times, most strongly in people under age 55 (27). Over 90% of all symptomatic peripheral vascular disease is directly related to smoking.</p> <p>Second hand smoke doubles the risk for stroke and MI (28).</p>	<p>23% of Albertans age 12 and over smoke. Stopping smoking reduced stroke risk within 2-4 years.</p> <p>Males – 24.6% Females – 21% Both – 22.9% CCHS (33) – Aged 12 and over</p> <p>Definition: Daily or occasional smoker</p>	<p><b><u>Life Style Management</u></b></p> <p>Persons at risk of stroke and patients who have had a stroke should be assessed for and given information about risk factors, lifestyle management issues (exercise, smoking, diet, weight, alcohol, stress management), and be counselled about possible strategies to modify their lifestyle and risk factors. (Adapted from RCP, NZ, Australian, VA/DOD, HSFO; Evidence Level III/C/R, CSS # 3)</p> <p>The lifestyle and risk factors and interventions include:</p> <ul style="list-style-type: none"> <li>Smoking: smoking cessation; nicotine replacement therapy and behavioural therapy. (CSQCS, ASA, RCP; Evidence Level II/B-C, CSS #3)</li> </ul>

## L I F E S T Y L E

Risk Factor	Elevated Stroke Risk	Incidence in the Population	Action Plan

References in Appendix B.

Table excerpted (with modification) from: *Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse 2<sup>nd</sup> Edition, Summer 2004*

Action Plan Source: *Canadian Stroke Strategy Best Practices and Standards: Canadian Best Practice recommendations for Stroke Care 2006 and APSS Pillar 1*

### 6.3 PRIMARY PREVENTION CHECKLIST

PRIMARY PREVENTION CHECKLIST		
GOALS: To raise awareness of risk for stroke. To provide continuing education and support to modify risk factors for stroke		
CLIENT / PATIENT:		
Questions	Yes	Evidence
1. Age over 55?		Stroke risk approximately doubles with every decade after 55.
2. Family history of stroke and /or cardiovascular disease?		There is evidence of an inheritable component to stroke.
3. High Blood Pressure?		Untreated high blood pressure increases the risk for stroke 3-4 times.
4. Are they at risk for diabetes/ do they need to be tested for diabetes?		Diabetics have 1.5-2.5 greater risk for ischemic stroke. Diabetes is also strongly correlated with high blood pressure, high cholesterol and being overweight.
5. Does this patient have high (bad) cholesterol or do they need to be screened for high cholesterol?		High cholesterol in the blood can double the risk of ischemic stroke. Further, high cholesterol can increase the risk of heart disease (an independent risk factor).
6. Is the patient a smoker, or living with second hand smoke?		Smoking increases the risk of stroke two to six times. Second-hand smoke doubles the risk for stroke.
7. Is the patient overweight?		Being overweight increases risk of stroke, high blood pressure, high cholesterol and diabetes.
8. Is the patient physically inactive?		A sedentary lifestyle is an independent risk factor for stroke and also increases the risk of high blood pressure, becoming over weight, diabetes and heart disease.
9. Is the patient a heavy drinker?		More than 1-2 drinks per day (maximum of 8 for women and 13 for men per week) and binge drinking can double the risk of ischemic stroke and increase the risk of hemorrhagic stroke 2-3 fold. Heavy drinking is also linked to rising blood pressure and obesity.
10. If a smoker and female, is she on birth control pills or HRT?		HRT increases the risk of stroke, heart attack, pulmonary embolus and invasive breast cancer.
11. Does this person fall into an at-risk socio-economic group defined by low education, or lower occupational level? For example: Does the individual rent his/her home?		Socioeconomic factors account for a significant proportion of the variation in heart disease. Living conditions, education and occupational levels are key predictors of heart disease, an independent risk factor. For example; there is evidence that house ownership is a discriminating measure of socio-economic status in predicting risk of coronary heart disease.

**Excerpted** *Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse 2<sup>nd</sup> Edition, Summer 2004*

## **7.0 PRIMARY HEALTH CARE, CHRONIC DISEASE MANAGEMENT AND STROKE PREVENTION**

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The major treatable risk factor for stroke in Canada is high blood pressure (29), the presence of which increases the relative risk of stroke four-fold. Other significant risk factors include physical inactivity, diabetes, smoking and dyslipidemia (29). All these conditions can be screened for, and treated, in a primary care setting. Thus, primary prevention of stroke, on an individual basis, falls largely into the realm of primary health care.

Primary health care, while often delivered in the family practice setting, is a broad term that refers to a person's contact with the health care system, where services are mobilized and coordinated to promote health, prevent illness, care for illness and manage ongoing health problems. It extends beyond traditional health services and often includes partnerships with other health and social services. Community development and community involvement in planning for health services and priorities is an important component of primary health care.

The establishment of Primary Care Networks and Chronic Disease Prevention and Management systems in Alberta is another approach designed to better meet the health needs of individuals with or at risk for chronic disease including stroke.

### **RECOMMENDATION**

It is recommended that all health regions incorporate best practices related to stroke prevention and management in the implementation of Primary Care Networks, Chronic Disease Management Systems and other primary care delivery systems to avoid duplication and fragmentation.


**This section provides a checklist and worksheet for health regions to measure against the central components that are known to be effective in the prevention of stroke and other cardiovascular diseases. These components can be used in the development of local primary care networks and chronic disease management services.** The framework, based on the Wagner Chronic Care Model (30), considers care delivery for stroke prevention under a number of domains which include:

- Health system organization and design
- Information systems and decision support
- Self-management
- Community
- Teams of health care providers

This model identifies the essential elements of a health care system that encourage high-quality care for stroke and other cardiovascular disease prevention.


## 7.1 Health System Organization and Design

The Canadian health care system is largely organized around an acute care model whereby people develop an illness and the system responds to the acute episode. There has been little organized effort at prevention, early detection and ongoing management of chronic diseases, including stroke and other cardiovascular disease. To function effectively, health systems must manage chronic disease in an integrated and system-wide manner using a chronic disease management model that incorporates early identification, triage to the most appropriate level of care (specialist or primary care), team-based approaches to care, use of care pathways and routine follow-up.

Component		HOW / WHERE? Give Examples
1. Are early identification screening programs for individuals at risk for stroke being used in your community?		CHAMP – Pharmacy based blood pressure screening Firehall – Blood pressure screening programs Heart and Stroke BP Action Plan
2. Are triage systems in place to get high risk people (resistant or complex hypertension, cholesterol, diabetes) to the appropriate specialized clinic?		
3. Are primary care networks/family physicians using clinical guides, care maps/algorithms to identify and provide care to peoples with hypertension, dyslipidemia and other cardiovascular risk factors?		
4. Are people at risk for stroke receiving regular follow-up checks?		
5. Are case management services used to coordinate care for complex people?		
6. Is your health region active in advocating for healthy public policy?		
7. Is there a broad range of health promotion programs in your community? Do your health promotion programs create supportive environments in schools, workplaces and in community settings?		
8. Are multiple strategies being used to promote health within the community (e.g. education, social marketing, healthy public policy, community development etc.)?		


## 7.2 Information Systems and Decision Support

Clinical Information Systems provide timely access to clinical information about the individual and serves as a tool to enhance and coordinate care. Information can also be analyzed at the population level to help target appropriate services and interventions.

Component		HOW / WHERE? Examples
1. Does the community have access to population-based data to identify priorities for prevention including stroke and other related cardiovascular diseases?		
2. Are clinical systems in place to provide patient and physician reminders and alerts related to stroke and other CVD risk factors and appropriate management and interventions?		
3. Are decision support tools, such as stroke algorithms, care pathways, screening tools etc. available to help identify patient needs, design interventions and monitor progress? Are these used by primary care networks / family physicians?		


### 7.3 Self-Management

All people make decisions and engage in activities and behaviours that impact their health. Outcomes depend, to a great degree, on a person's ability to take control and accountability for their health. When health care providers partner with patients/clients/families, the care is more likely to be acceptable and appropriate in addressing their needs.

Component		HOW / WHERE? Examples
1. Are stroke patients/families and those with risk factors encouraged to be full participants of the health care team helping to define problems, set priorities, establish goals, create treatment plans and solve problems?		
2. People at risk for stroke who self-monitor are more likely to achieve positive outcomes. Are people encouraged to self-monitor (eg. blood pressure, blood sugar) in your vascular risk reduction programs?		Examples:  Home blood pressure readings
3. Do people have access to their health information and receive personalized feedback on test results and findings so they are able to participate in their care and make informed decisions?		
4. Are educational programs/support groups available to facilitate self-management?		


## 7.4 Community

Health care delivery has traditionally been fragmented in the Canadian health care system. Just as primary care has evolved separately from acute/specialist care, so too has the formal health care delivery system separated itself from the community. However, numerous resources exist within the community to help provide care to the patient at risk for stroke. As well, strengthening community ownership and control by mobilizing community resources to meet the needs of individuals and populations will have a greater impact on stroke prevention outcomes.

Component		HOW / WHERE? Examples
1. Are communities involved in decisions about how to prevent and manage risk factors for stroke and other cardiovascular diseases?		
2. Does the community have access to population-based data to identify priorities for prevention?		
3. Are the broader health determinants and non-health related services considered when implementing stroke/cardiovascular prevention programs?		
4. Attention to diversity issues can improve compliance and design of appropriate stroke prevention services. Is diversity considered when involving communities and individuals in prevention programs and interventions?		Indo-Asian Cardiovascular Health and Management Program – peer volunteers and diversity services
5. Numerous resources exist in the community to help provide care for those at risk for stroke. Are other community partners/coalitions/networks used to help deliver services, provide information and education?		i.e. Heart and Stroke Foundation, recreation facilities, health clubs, pharmacists, others  Examples of other coalitions and prevention strategies in Alberta are: <ul style="list-style-type: none"> <li>• Alberta Coalition for Healthy School Communities</li> <li>• Healthy Alberta Communities</li> <li>• Alberta Tobacco Reduction Strategy</li> <li>• Healthy U</li> </ul>
6. Are there processes for community development and mobilization around significant cardiovascular health issues to create and promote supportive environments?		

## 7.5 Teams of Health Care Providers

A range of health knowledgeable health care providers working in collaboration with family physicians will allow the health system to better prevent illness and manage people with chronic diseases using evidence-based care decision tools and guidelines.

Component		HOW / WHERE? Examples
1. Do groups of family physicians have access to a team of other disciplines and strong service linkages with primary, secondary and tertiary care for the prevention of stroke?		
2. Are staff in primary health care settings knowledgeable about where and how to access services for stroke prevention and in initiating case management as needed?		
3. Are the skills of each member of the team maximized? Do the teams work collaboratively in stroke prevention?		
4. Are organized primary care networks and other innovative primary health care service delivery models available in your health region?		
5. Are evidence based/best practice guidelines used by primary care professionals (family physicians and others) in your health region to prevent stroke? <b>See Best Practices - Common Risk Factors for Stroke.</b> Section 6.0		

# APPENDIX A

## STROKE PREVENTION CONTINUUM

# APPENDIX A

## ALBERTA PROVINCIAL STROKE STRATEGY Stroke Prevention Continuum

### Well

- No illness
- No risk factors

#### Goal

- Health maintenance, health promotion, prevention, screening

#### Model:

- Primary prevention, population health, community development, partners, some health region involvement, self-management

#### Focus:

- Education, awareness
- Avoid unhealthy lifestyle practices
- Self-management focus

#### HCP:

- Less specialized
- HCP, lay, facilitator

#### APSS Documents:

- Planning for Primary Stroke Prevention
- Public Awareness – Risk Factors

### Latent

- No illness
- Risk factors present

#### Goal

- Control of risk factors, early detection through screening, case finding, surveillance
- Health maintenance, health promotion.

#### Model:

- Long term, ongoing follow-up
- Cohort management, some one-on-one, community based, community partners, self-management

#### Focus:

- Control of risk factors, lifestyle
- Avoid unhealthy lifestyle change, medication as needed, self-management focus

#### HCP:

- Family Physicians, Primary health care providers, primary care networks

#### APSS Documents

- Planning for Primary Prevention
- Public Awareness – Risk Factors

### Chronic (Established disease/controlled chronic)

- Post-acute stroke event - stroke or TIA

#### Goal

- Secondary prevention to prevent or delay future disease events, clinical & functional improvement, health promotion, Q of Life

#### Model:

- Intensive, mainly one-on-one, specialist/facility or hospital-based service
- Stroke Specific Clinics – Stroke prevention, Stroke Follow-up
- Other Specialist Clinics – Vascular Risk Reduction, cardiology, neurology, heart failure etc
- Chronic Disease Clinics – Hypertension, dyslipidemia, diabetes, cardiac rehab etc.

#### Focus:

- Symptom control through medication, lifestyle change, self-management

#### HCP:

- Specialists, sub-specialists, family physicians with focused interest in stroke

#### APSS Documents

- Primary / Secondary Prevention Guidelines
- SPC Checklists
- ABC's of Stroke Prevention
- Taking your Blood Pressure
- Public Awareness – Blood Pressure

# APPENDIX B

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## SOCIAL DETERMINANTS OF HEALTH

Key Determinant	Underlying Premise	Evidence
1. Income and social status	The healthiest populations are those in societies that are prosperous and have an equitable distribution of wealth.	<p>Low-income Canadians are more likely to die earlier and to suffer more illnesses than Canadians with higher incomes, regardless of age, sex, race and place of residence.(47)</p> <p>Large gaps in income distribution lead to increases in social problems and poorer health among the population as a whole.(48)</p> <p>Older women are much more at risk than older men. According to the 2001 Canadian Census, of the seniors living in low income, 71% were women and 29% were men.</p>
2. Social support networks	Support from families, friends and communities is associated with better health. Such social support networks can be very important in helping people solve problems and deal with adversity, as well as in maintaining a sense of mastery and control over life circumstances.(49)	<p>A U.S. study found that social ties reduce our risk of disease by lowering blood pressure, heart rate, and cholesterol.</p> <p>For example, researchers found that people who had no friends increased their risk of death over a 6-month period. In another study, those who had the most friends over a 9-year period cut their risk of death by more than 60%.(50)</p>
3. Education and literacy	<p>Health status improves with level of education.</p> <p>Education is closely tied to socioeconomic status and promotes health and prosperity by equipping people with knowledge and skills for problem-solving. It also helps provide a sense of control and mastery over life circumstances including opportunities for job and income security, and job satisfaction. And education and literacy improve people's ability to access and understand information to help keep them healthy.(51)</p>	<p>Canadians with low literacy skills are more likely to be unemployed and poor, to suffer poorer health and to die earlier than Canadians with high levels of literacy.(52)</p> <p>People with higher levels of education have better access to healthy physical environments and are better able to prepare their children for school than people with low levels of education.(53)</p> <p>They also tend to smoke less, to be more physically active and to have access to healthier foods.(54)</p>
4. Employment / working conditions	<p>Unemployment, underemployment, stressful or unsafe work are associated with poorer health.</p> <p>People who have more control over their work circumstances and fewer stress related demands of the job are healthier and often live longer than those in more stressful or riskier work and activities.</p>	<p>Unemployed people have a reduced life expectancy and suffer significantly more health problems than people who have a job.</p> <p>Research shows that psychosocial factors – the things that make us mentally healthy – are equally important to workers' health. These factors include: how much control employees have over their work, the degree of support they get from coworkers and supervisors, the flexibility of their work schedule, and the pace of work. These factors are linked to rates of absenteeism, or how much time off workers take.</p> <p>They are also linked to illnesses like repetitive-strain injury, lowback pain and problems with high blood pressure.</p> <p>A major review done for the World Health Organization found that high levels of unemployment and economic instability in a society cause significant mental health</p>

		problems and adverse effects on the physical health of unemployed individuals, their families and their communities.(55)
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*Table excerpted from Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse, Second Edition, Summer, 2004*

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## S O C I A L D E T E R M I N A N T S O F H E A L T H

Key Determinant	Underlying Premise	Evidence
5. Social environments	Social stability, recognition of diversity, safety, good working relationships, and cohesive communities provide a supportive society that reduces or avoids many potential risks to good health.	A 1998 literature review prepared for Health Canada found evidence of a link between health and social capital. Many indicators of social capital were examined, including indicators of family social capital (such as family structure and control in the family) and community social capital (such as trust, civic engagement, memberships and voting). More work needs to be done to understand the connections between social capital and health.(56)
6. Physical Environments	The physical environment is an important determinant of health. At certain levels of exposure, contaminants in our air, water, food and soil can cause a variety of adverse health effects, including cancer, birth defects, respiratory illness and gastrointestinal ailments.	The prevalence of childhood asthma, a respiratory disease that is highly sensitive to airborne contaminants, has increased sharply over the last two decades.(57)  A study in southern Ontario found a consistent link between hospital admissions for respiratory illness in the summer months and levels of sulphates and ozone in the air.(58)
7. Personal health practices and coping skills	Personal health practices and coping skills refer to those actions by which individuals can prevent diseases and promote self-care, cope with challenges, and develop self-reliance, solve problems and make choices that enhance health.  Personal life "choices" are greatly influenced by the socioeconomic environments in which people live, learn, work and play.	In Canada, smoking is estimated to be responsible for at least one-quarter of all deaths for adults between the ages of 35 and 84. Rates of smoking have increased substantially among adolescents and youth, particularly among young women, over the past five years and smoking rates among Aboriginal people are double the overall rate for Canada as a whole.(59)  Multiple risk-taking behaviours, including such hazardous combinations as alcohol, drug use and driving, and alcohol, drug use and unsafe sex, remain particularly high among young people, especially young men.(60)  Diet in general and the consumption of fat in particular are linked to some of the major causes of death, including cancer and coronary heart disease. Over the past two decades, rates of overweight and obesity have more than doubled for Canadian adults, and nearly tripled among Canadian children.(61)

*Table excerpted from Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse, Second Edition, Summer, 2004*

56 *Determinants of population health: A synthesis of the literature*, 1998. Ottawa: Prepared for the National Health Research and Development Program, Health Canada.

57 *Toward a Healthy Future, Second Report on the Health of Canadians*. Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health, September 1999. [http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward\\_a\\_healthy\\_english.PDF](http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward_a_healthy_english.PDF), Chapter 4.

58 Thurston, G.K. Ito, C. Hayes, D. Bates, and M. Lippmann. 1994. *Respiratory*

*hospital admissions and summertime haze air pollution in Toronto, Ontario:*

*Consideration of the role of acid aerosols*. Environmental Research 65:271-290.

59 *Toward a Healthy Future, Second Report on the Health of Canadians*. Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health, September 1999. [http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward\\_a\\_healthy\\_english.PDF](http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward_a_healthy_english.PDF), Chapter 1, 5.

60 *Ibid*, Chapter 5.

61 *Improving the Health of Canadians*, 2004. Canadian Institute for Health Information, Chapter 5, Obesity. [http://secure.cihi.ca/cihiweb/dispPage.jsp?cw\\_page=PG\\_39\\_E&cw\\_topic=39&cw\\_rel=AR\\_322\\_E](http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=PG_39_E&cw_topic=39&cw_rel=AR_322_E)

## S O C I A L D E T E R M I N A N T S O F H E A L T H

Key Determinant	Underlying Premise	Evidence
8. Healthy child Development	A young person's development is greatly affected by his or her housing and neighborhood, family income and level of parents' education, access to nutritious foods and physical recreation, genetic makeup and access to dental and medical care.	Experiences from conception to age six have the most important influence of any time in the life cycle on the connecting and sculpting of the brain's neurons. Positive stimulation early in life improves learning, behavior and health into adulthood.(62)  Tobacco and alcohol use during pregnancy can lead to poor birth outcomes.
9. Biology and genetic endowment	The basic biology and organic make-up of the human body are a fundamental determinant of health.  Genetic endowment provides an inherited predisposition to a wide range of individual responses that affect health status	Studies in neurobiology have confirmed that when optimal conditions for a child's development are provided in the investment phase (between conception and age 5), the brain develops in a way that has positive outcomes for a lifetime.(63)
10. Health Services	Health services, particularly those designed to maintain and promote health, to prevent disease, and to restore health and function contribute to population health. The health services continuum of care includes treatment and secondary prevention.	Disease and injury prevention activities such as immunization show positive results. As hospital length of stay drops it creates a demand for home care and the potential for increased financial, physical and emotional burdens placed on families especially women.(64)
11. Gender	Gender refers to the array of society-determined roles, personality traits, attitudes, behaviors, values, relative power and influence that society ascribes to the two sexes on a differential basis.  "Gendered" norms influence the health system's practices and priorities. Many health issues are a function of gender-based social status or roles.	Men are more likely to die prematurely than women, largely as a result of heart disease, fatal unintentional injuries, cancer and suicide. Rates of potential years of life lost before age 70 are almost twice as high for men than women and approximately three times as high among men aged 20 to 34.(65)
12. Culture	Some persons or groups may face additional health risks due to a socio-economic environment, which is largely determined by dominant cultural values that contribute to the perpetuation of conditions such as marginalization, stigmatization, loss or devaluation of language and culture and lack of access to culturally appropriate health care and services	Despite major improvements since 1979, infant mortality rates among First Nations people in 1994 were still twice as high as among the Canadian population as a whole and the prevalence of major chronic diseases, including diabetes, heart problems, cancer hypertension and arthritis/rheumatism, is significantly higher in Aboriginal communities and appears to be increasing.(66)  In a comparison of ethnic groups, the highest rate of suicide occurred among the Inuit, at 70 per 100,000, compared with 29 per 100,000 for the Dene and 15 per 100,000 for all other ethnic groups, comprised primarily of non-Aboriginal persons.(67)

*Table excerpted from Prescribing Prevention, Health Promotion and Stroke Prevention, Ontario Prevention Clearinghouse, Second Edition, Summer, 2004*

62 *Toward a Healthy Future, Second Report on the Health of Canadians*. Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health, September 1999. [http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward\\_a\\_healthy\\_english.PDF](http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward_a_healthy_english.PDF), Chapters 3,7.

63 *Ibid*, Chapter 3,7.

64 *Toward a Healthy Future, Second Report on the Health of Canadians*. Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health, September 1999. [http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward\\_a\\_healthy\\_english.PDF](http://www.hc-sc.gc.ca/hppb/phdd/pdf/toward/toward_a_healthy_english.PDF), Chapter 2.

65 *Ibid*, Chapter 1.

66 *Ibid*, Chapters 1, 3.

67 *Ibid*, Chapters 1,3.

# APPENDIX C

## RESOURCE LIST – STROKE PREVENTION

## **RESOURCE LIST: STROKE PREVENTION**

### **AB Heart & Stroke Foundation:**

<http://www.heartandstroke.ab.ca>

Blood Pressure Record Wallet Card  
Dietary Fat and Cholesterol  
Do You Know The Five Main Warning Signs of Stroke?  
Know Your Blood Pressure  
Lowering Your Blood Cholesterol the Stroke Help Book  
Second-hand Smoke and Your Heart  
Stroke Book Mark – Be Stroke Smart  
Stroke Fact Sheets: Preventing Stroke, What is Stroke?  
The Active Heart  
Women and Tobacco

### **AB Egg Producers Board:**

<http://www.eggs.ab.ca/>

Bringing Fats into Focus

### **American Stroke Association:**

<http://www.strokeassociation.org>

#### Pamphlets:

Stroke: Are You at Risk?

### **Beef Information Centre:**

<http://www.beefinfo.org/enindex.cfm>

A Matter of Fat

### **Boehringer Ingelheim:**

<http://www.boehringer-ingelheim.com/corporate/home/home.asp>

The Path to Stroke Prevention

### **Bristol-Myers Squibb:**

<http://www.bms.com/landing/data/index.html>

Healthy Living through Controlling High Blood Pressure

### **Canadian Cancer Society:**

[http://www.cancer.ca/ccs/internet/niw\\_splash/0%2C%2C3172%2C00.html](http://www.cancer.ca/ccs/internet/niw_splash/0%2C%2C3172%2C00.html)

For Smokers Who Want to Quit

### **2006 Canadian Hypertension Education Program Recommendations:**

<http://www.cfpc.ca/cfp/2004/Oct/vol50-oct-fpwatch-1.asp>

Recommended Electronic Blood Pressure Monitors for Home Measurement Sheet

### **Canadian Stroke Network, News Release:**

<http://www.canadianstrokenetwork.ca/>

StrokEngine to deliver latest evidence on rehabilitation research

### **Chinook Health Region:**

<http://www.chr.ab.ca/>

Building Healthy Lifestyles: Eating for a Healthy U  
Building Healthy Lifestyles: Vascular Protection Hypertension Clinical Guide  
Building Healthy Lifestyles: Vascular Protection Dyslipidemia Clinical Guide  
Building Healthy Lifestyles: Risk Factor Clinical Guide  
No Added Salt  
Personal Risk Factor Worksheet  
Progress Notes

### **Heart and Stroke Foundation (see AB Heart & Stroke)**

<http://www.heartandstroke.ca>

**National Stroke Association:** (see Free Resources for Members Order Form)

<http://www.stroke.org>

Are You at Risk for Stroke?

Check Your Pulse – Atrial Fibrillation

Reducing Risk & Recognizing Symptoms

**Royal Alexandra Hospital:**

<http://www.capitalhealth.ca/HospitalsandHealthFacilities/Hospitals/RoyalAlexandraHospital/default.htm>

Instruction Tips for Teaching a Patient How to Perform Home BP Monitoring sheet

Taking Your Blood Pressure (BP) at Home sheet

The ABC's of Stroke Risk Reduction sheet

**Self-Help Resource Centre-Empowering Stroke Prevention Project**

[www.selfhelp.on.ca](http://www.selfhelp.on.ca)

*Guides:*

Healthy Ways to Prevent Stroke- A Guide for You

Healthy Ways to Prevent Stroke in Your Community- a Facilitator's Guide

**University of Ottawa Heart Institute:**

<http://www.ottawaheart.ca/UOHI/Welcome.do>

Coping With Cholesterol

**Alberta Healthy Living Network:**

<http://www.ahln.ca>

**Dietitians of Canada:**

<http://www.dietitians.ca>

**Health Canada:**

<http://www.hc-sc.gc.ca>

**Healthy Alberta:**

<http://www.healthyalberta.com>

**Physicians for a Smoke-free Canada:**

<http://www.smoke-free.ca>

**5 to 10 a Day:**

<http://www.5to10aday.com>