The Report of the
Clinical Prevention Policy Review Committee

A Lifetime of Prevention

December 2009

There are a series of technical reports created by H. Krueger & Associates Inc., to be used in conjunction with this final report.

- *Establishing Clinical Prevention Policy in British Columbia:*
    - *Part I. What is Worth Doing?*
    - *Part II. How Best to Implement?*
    - *Promising Systematic Approaches to Planning*
- *Establishing Priorities among Effective Clinical Prevention Services in British Columbia: Summary and Technical Report*
- *Implementation of Selected Cardiovascular Disease Clinical Prevention Services: Literature Review Seeking Best Practices*

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Abbreviations

ASA	acetylsalicylic acid
CE	cost-effective
CPB	clinically preventable burden
CPS	clinical prevention service(s)
CTFPHC	Canadian Task Force on Preventive Health Care
FFS	fee-for-service
GPAC	Guidelines and Protocols Advisory Committee
GPSC	General Practice Services Committee
LPS	Lifetime Prevention Schedule
MHLS	Ministry of Healthy Living and Sport
MoHS	Ministry of Health Services
MSC	Medical Services Commission
MSD	Medical Services Division
PPH	Population and Public Health
STI	sexually transmitted infection
USPSTF	United States Preventive Services Task Force

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    - *Establishing Clinical Prevention Policy in British Columbia: Part I. What is Worth Doing?* (October 9, 2007)
    - *Establishing Clinical Prevention Policy in British Columbia: Part II. How Best to Implement?* (November 20, 2007)
    - *Establishing Priorities among Effective Clinical Prevention Services in British Columbia: Summary and Technical Report.* (November 14, 2008)
    - *Establishing Clinical Prevention Policy in British Columbia: Promising Systematic Approaches to Planning.* (November 20, 2008)
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In preparing this report, we have on occasion used sections of the commissioned reports noted above. For the sake of readability we have done so without placing quotation marks around them or trying in any other ways to attribute the section to the report. Thus this final report is truly the work of all the authors noted above.

Original Terms of Reference – Clinical Prevention Policy Review Committee

Reports to:

- Stephen Brown, Chief Administrative Officer, Ministry of Health Services (MoHS) (formerly Assistant Deputy Minister, Medical Services Division, MoHS)
- Andrew Hazlewood, Assistant Deputy Minister, Population and Public Health, Ministry of Healthy Living and Sport (MHLS) (formerly Assistant Deputy Minister, Population Health and Wellness, MoHS)

Membership:

- Sylvia Robinson, Director of Primary Health Care, Medical Services Branch, MoHS (co-chair)
- Dr. Trevor Hancock, Public Health Consultant, Corporate Support, Policy and Legislation, MHLS (formerly Population Health and Wellness, MoHS) (co-chair)
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    - Health Authorities Division: Leigh Ann Seller
    - Corporate Policy and Research: Elisabeth Wagner and Kevin Samra
    - Pharmacare: Malcolm Maclure
    - Health System Planning, Health System Planning Analysis Branch: Bruce Brady
    - Nursing Directorate: Lucy Wright and Laurianne Jodoin
- Other key stakeholders
    - Dr. Robert Woollard, Department of Family Medicine, University of British Columbia (replaced by Dr. Tracy Monk in Summer 2008)
    - Dr. Jim Thorsteinson, BC College of Family Physicians
    - Dr. Fred Bass, Society for Clinical Preventive Care
    - Dr. Lloyd Oppel, BC Medical Association
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        - VIHA: Shannon Turner, Director of Public Health
        - FHA: Dr. Veronic Ouellette
        - VCHA:Dr. Brian O'Connor
        - IHA: Dr. Jan McIntosh
        - NHA: Dr. Dan Horvat
        - PHSA: Dr. John Millar
    - Sylvie Berube, Regional Director, BC/Yukon Region, Public Health Agency of Canada
    - Dr. David Patrick, Director of Epidemiology, BC Centre for Disease Control
    - Dr. Andy Coldman, Vice President of Population Oncology, BC Cancer Agency
- Expert Reference Group
    - Dr. John Feightner, Past Chair, Canadian Task Force on Preventive Health Care
    - Dr. Bill Hogg, Professor of Family Medicine, University of Ottawa
    - Dr. Ned Calonge, Chair, US Preventive Services Task Force
    - Dr. Vicki Foerster, Consultant to Medical Services Commission
    - Dr. Eric France, Kaiser Permanente

Committee Deliverables:

1. A recommended provincial policy on paying for and supporting effective clinical prevention that would be consistent with and support primary care renewal and broader system reform.
2. Identify those preventive services that should be provided as organized provincial programs.
3. Recommend a mechanism for the ongoing review of evidence and policy with respect to current and proposed clinical prevention and screening interventions.

Specific Tasks:

Q 1: What is worth doing?

1. Review the evidence for effective clinical prevention (including the potential health benefits and economic costs and benefits), the practice and experience in other jurisdictions across Canada and internationally in putting clinical prevention into practice, and the priority clinical prevention interventions that have been identified nationally and internationally.
2. Establish criteria against which current and proposed new clinical prevention and screening interventions can be judged (e.g., the United Kingdom National Screening Committee).
3. Assess preventive interventions against the criteria and determine those that are effective and worth doing—and thus worth paying for—in BC.
    a. Identify those services that are a high priority (in terms of reducing the burden of disease/cost-benefit) and that may benefit from being provided as a provincial program.

Q 2: How best to deliver and fund what is worth doing?

4. Establish criteria for determining the optimal delivery mechanisms.
5. Identify the best ways to deliver and fund preventive services (including those identified as a priority service), in terms of effectiveness, equity and efficiency.
6. Consider the implications of the delivery system options for the health care system from a quality of care and financial perspective, including education, training, information systems and other supports needed to effectively put prevention into practice.

Q 3: How to monitor and improve performance?

7. Recommend a mechanism for:
    a. The ongoing review and evaluation of the evidence with respect to clinical prevention, including implementation.
    b. Reviewing proposals for new or amended clinical prevention manoeuvres, services or programs.
    c. Making recommendations with respect to new or amended preventive manoeuvres, services or programs.
    d. Monitoring and evaluating the implementation of preventive services, including their economic and health status impacts.
    e. Reviewing and evaluating this process/mechanism on a regular basis.
8. Consult with relevant stakeholders.

Executive Summary

As a society, we have an interest in keeping people as healthy as possible, in returning them to good health if possible, or in caring for them if that is not possible. That interest is largely a humanitarian impulse, although there are other benefits in terms of potential economic benefits resulting from a healthier population, including reduced health care costs and increased productivity.

Clinical prevention is one key element of an overall strategy to improve the health of the population. Clinical prevention services are:

> Manoeuvres pertaining to primary and early secondary prevention (i.e., immunization, screening, counselling and preventive medication) offered to persons based on age, sex, and risk factors for disease, and delivered on a one-provider-to-one-client basis, with two qualifications:
>
> (i) the provider could work as a member of a care team, or as part of a system tasked with providing, for instance, a screening service; and
> (ii) the client could belong to a small group (e.g., a family, a group of smokers) that is jointly benefiting from the service.

Improving the health of the population is a priority within the British Columbia health system and across government and society more generally. Both the provincial government's Great Goals and the Ministry of Health Services's goals emphasize healthy living and improved health and wellness. Members of the public participating in the Conversation on Health consistently identified health promotion and disease prevention as being of high importance.

Government has established and funded ActNow BC as a platform to promote healthy living, and has contributed $30 million to the BC Healthy Living Alliance, and a Ministry of Healthy Living and Sport (MHLS) was established. BC's system of public health services is being strengthened and renewed; a new *Public Health Act* was enacted, while the Ministries of Health have been developing and are now implementing core public health programs across BC, in partnership with the health authorities.

Primary care physicians and other health care providers have consistently expressed support for health promotion and disease prevention as important priorities, and the 2007 Primary Health Care Charter identifies clinical prevention, especially for chronic diseases, as a priority. In addition, the 2006 agreement between the Government and the British Columbia Medical Association specifically commits some funding for clinical prevention as part of the package for full-service family practice. The General Practice Services Committee has established a Prevention Committee to address this part of the agreement.

The Guidelines and Protocols Advisory Committee of the Medical Services Commission has published a number of guidelines that relate to prevention and screening, including guidelines on primary prevention of cardiovascular disease, detection of colon cancer in asymptomatic adults, interventions with respect to overweight, obesity and physical inactivity, and a guideline on chronic obstructive pulmonary disease that included a recommendation with respect to smoking cessation.

In addition to the strategic focus areas noted above, many clinical prevention services are currently being provided in British Columbia; for example:[1]

- Childhood and adult immunization as per the BC Immunization Schedule.
- Prenatal care including prenatal genetic screening.
- Newborn screening for "inborn errors of metabolism" and congenital hearing loss.
- Early childhood dental and vision screening.
- Cancer screening: cervical, breast, colon.
- Hypertension and lipid screening.
- Smoking cessation.

However, despite the emergence of prevention as a health system priority, there is no clear, specific provincial policy on clinical prevention, and barriers exist to implementing effective clinical preventive measures that, as part of a system of quality care, could help improve population health, reduce the burden of disease and enhance the health system's sustainability.

In an effort to address these shortfalls, the Assistant Deputy Ministers for the Medical Services Division and Population Health and Wellness approved the development of a proposal for the establishment of a Clinical Prevention Policy Review Committee (Cliff #657591, January 2007). The proposal was accepted and Committee Terms of Reference were approved in September 2007. The Committee has focused on answering three key questions with respect to clinical prevention services:

1. What is worth doing?
2. What is the best way to provide what is worth doing? (at the practice level)
3. What is the best way to organize/plan/manage the system in order to do what is worth doing? (at the system level)

The Committee's resulting recommendations are framed by their "Vision for the Future" and "Guiding Principles for Delivery of Clinical Prevention Services," stressing the importance of clinical prevention services and the need for integration with other key health system components such as primary health care.

[1] The current scope of each of these services is discussed in section 3.1 of the report.

Vision for the Future

Prevention is the social norm in BC. Clinical prevention services are a key aspect of prevention and contribute to reducing the burden of disease.

A "Lifetime Prevention Schedule," which identifies the effective clinical prevention services to be offered in a planned and systematic manner, is integrated with the health system including primary health care delivery. Everyone in BC should be able to access those preventive measures defined by the Lifetime Prevention Schedule that apply to them.

Services are offered to all who need them, with a focus on those most at risk and/or disadvantaged. Everyone has a regular primary health care provider and/or team who can deliver, or facilitate access to, the services.

Informed and activated patients understand the Lifetime Prevention Schedule and the value of clinical prevention services. Patients are invited to actively participate in their own care and have a voice in the design and evaluation of the system.

The delivery of clinical prevention services is supported by a robust infrastructure, including information systems and linkages to the electronic health record, training and support for providers, public education and information, patient recall and provider reminder systems, web-based personal health plans and appropriate funding.

Quality improvement drives the implementation of clinical prevention services and there is a rigorous evidence-based process in place to evaluate proposals for changes to the Lifetime Prevention Schedule.

There is an active and ongoing monitoring and surveillance function along with a comprehensive research program in clinical prevention services.

As a result, BC has achieved levels of preventive services within its Lifetime Prevention Schedule that are the best in the world.

Guiding Principles for Delivery of Clinical Prevention Services

- Effective, evidence-based, patient-centred clinical prevention is a critical component of evidence-based care and a marker of quality care.
- Preventive services and screening tests supported by evidence of clinical effectiveness will be considered for funding. Where capacity or resources are limited, we will invest in those services that are of highest priority in terms of clinically preventable burden of disease and cost-effectiveness.
- The most cost-effective approach to provision of clinical prevention services will be used. This will take into account the need to provide services for those who need them most, because the highest gains may be in the high-need areas.
- Those clinical prevention services that are appropriately provided through primary care should be integrated into primary care.
- Particular attention will be paid to ensuring that services are available to those who are most at-risk, marginalized or hard-to-reach.

Within the context of the vision and principles, the committee has developed recommendations to shape provincial policy in three main areas.

Firstly, the committee is recommending the adoption and continued support of a Lifetime Prevention Schedule, which defines the priority clinical prevention services throughout the life course that would be supported for the general population in British Columbia.

Adoption of a Lifetime Prevention Schedule would convey the continued importance of clinical prevention services and positions those services for equal consideration (given evidence of effectiveness) by established funding and implementation bodies who are mandated through policy and/or legislation (e.g., Treasury Board, health authorities).

Adoption of the Lifetime Prevention Schedule does not remove the need for shared, informed decision making by the patient and provider. These discussions are always important particularly where there is a balance of benefits and harms related to risk and/or where there may be emerging conflicting evidence related to the clinical prevention service.

In determining which clinical prevention services to include in the Lifetime Prevention Schedule, the committee looked for evidence of clinical effectiveness, potential population health impact (as measured by the clinically preventable burden of disease or other suitable measure) and cost-effectiveness. Priorities established through this process, in combination with the scope of existing organized clinical prevention programs in BC, confirmed the initial components of the proposed Lifetime Prevention Schedule.

All of these clinical prevention services are implemented to some extent currently:

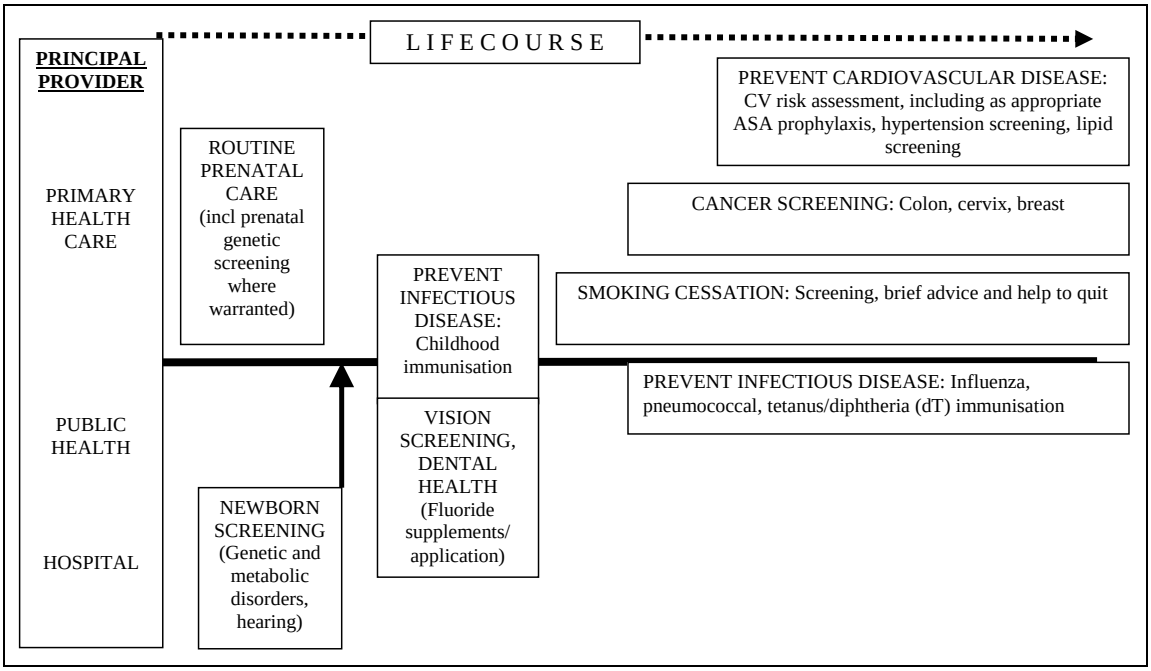
- Prenatal care (as per the BC Perinatal Health Program)
    - Includes prenatal genetic screening
- Newborn screening
    - Genetic, metabolic, hearing
- Childhood immunization (as per the BC Immunization Schedule)
- Childhood screening
    - Vision, dental health
- Cancer screening (as per the BC Cancer Agency)
    - Colon, cervix, breast
- Adult immunization (as per the BC Immunization Schedule)
    - Influenza, pneumococcal, tetanus/diphtheria (dT)
- Cardiovascular disease prevention (as per the Guidelines and Protocols Advisory Committee guideline)
    - Includes acetylsalicylic acid prophylaxis, hypertension and lipid screening
- Smoking cessation screening, brief advice and help to quit (as per the Guidelines and Protocols Advisory Committee guideline)

Specific recommendations: (see full discussion and recommendations in section 4.0 of the report)

1. Adopt a Lifetime Prevention Schedule, which defines the priority clinical prevention services throughout the life course that will be supported for the general population. Selected screening services for high-risk individuals will continue to be covered as they are now.

2. Endorse the priority services to be included in the Lifetime Prevention Schedule as those identified initially by the Clinical Prevention Policy Review (shown in Figure below).

Proposed Lifetime Prevention Schedule



3. Establish a Clinical Prevention System Working Group (accountability structure to be determined) to maintain the Lifetime Prevention Schedule and allocate resources within the Ministry of Health Services and the Ministry of Healthy Living and Sport to support the Working Group.
    - To ensure consistency, the Working Group should include representation from key existing organized preventive services and evidence-review bodies: BC Perinatal Health Program, BC Immunization Policy Committee, BC Cancer Agency, Guidelines and Protocols Advisory Committee, etc., in addition to staff from the ministries and health authorities, practitioners and academics.
    - Continue to involve national and international experts by building on the Expert Reference Group established for the Clinical Prevention Policy Review.

4. Ensure subsequent changes to the Lifetime Prevention Schedule are recommended by the Clinical Prevention System Working Group with representatives from across the system. New services will be identified on the basis of their
    - clinical effectiveness;
    - potential population health impact (as measured by the clinically preventable burden of disease or other suitable measure); and
    - cost-effectiveness.

5. Assess as a priority, for possible inclusion in the Lifetime Prevention Schedule, four potential new services:
    - Alcohol screening and brief counselling in adults;
    - Screening for sexually transmitted infections in sexually active young adults;
    - Vision screening in adults 65+; and
    - Well-baby care.

6. Assess as a priority, for possible inclusion in the Lifetime Prevention Schedule, services reviewed by the United States Preventive Services Task Force since 2008, the date of the material found in the appendices. Particular attention should also be paid to services reviewed since 2004, since the Health Partners analysis of clinically preventable burden and cost-effectiveness only included items prior to that date. Additionally, as the Canadian Task Force on Preventive Health Care becomes re-established and begins to develop new or updated guidelines and recommendations, their "A" graded guidelines and recommendations will also need to be assessed for inclusion in the Lifetime Prevention Schedule.

Secondly, the committee is recommending the use of systematic approaches for organizing and delivering those services that form the Lifetime Prevention Schedule both initially and in the future. It is important to clarify that this does not necessarily mean a new, separate, provincial program for each clinical prevention service. In most cases it will mean bolstering the efforts of the program and care providers currently delivering a particular service, helping them to better reach their target population and improve service utilization rates. The emphasis here is on organizing and delivering each clinical prevention service in a way that reflects best practice and available evidence.

There is a significant role for family physicians in the development and implementation of any preventive health strategy. This emphasis may be reflected in enhanced partnerships with the General Practice Services Committee regarding the organization and delivery of those services that form the Lifetime Prevention Schedule.

Specific recommendations: (see full discussion and recommendations in section 5.0 of the report)

7. Provide all the services in the Lifetime Prevention Schedule in a systematic way within the province, recognizing that the form of that organization will need to be tailored to the intervention and the existing mechanism for delivery, where one exists.
    - For example, the way in which acetylsalicylic acid prophylaxis might be organized provincially will be very different from how Pap smears or neonatal genetic testing is organized.

8. Ensure all delivery approaches are based upon evidence and best practice, and implemented using a proven quality improvement approach. The guiding principles and criteria in section 5.2 of this report can inform the development of organized provincial services and delivery platforms.

9. Develop an information technology strategy to support the Lifetime Prevention Schedule that may include:
    - Population registries that enable providers and health system managers to identify those who are eligible for a given service.[2]
    - Clinical prevention flow sheets as part of the electronic medical record.
    - Evidence-based patient recall and physician reminder systems for the services included in the LPS.
    - The Lifetime Prevention Schedule and a personal prevention plan in any web-based personal health plans that are developed.
    - Information technology infrastructure within providers' offices.

10. Ensure the optimal delivery of existing clinical prevention services that are part of the Lifetime Prevention Schedule by seeking business cases from the respective organizations regarding their strategy to improve rates and reach those not currently receiving the service.

11. Partner with the General Practice Services Committee to determine the optimal delivery platform and implementation approach for the clinical prevention services related to the primary prevention of cardiovascular disease that are identified in the Lifetime Prevention Schedule. Utilize the results of the General Practice Services Committee's assessment of the implementation of their pilot cardiovascular disease risk assessment fee, and build on the work of the Guidelines and Protocols Advisory Committee in developing the guideline.

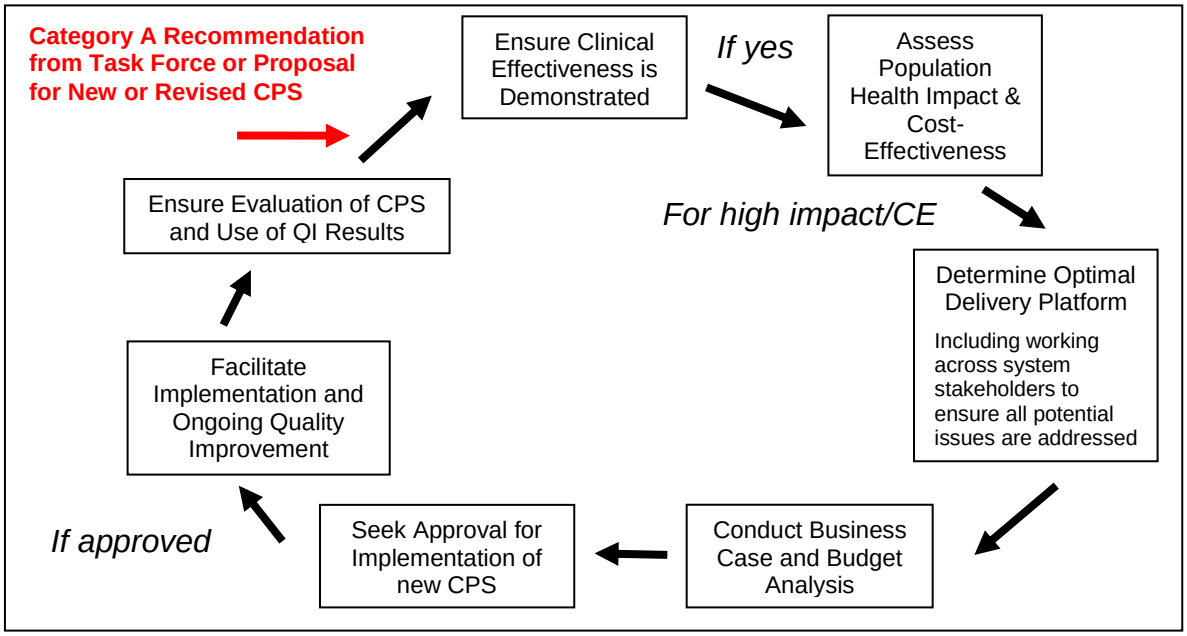
Thirdly, the committee is recommending the creation of an ongoing mechanism for incorporating clinical prevention services evidence reviews and making changes to the Lifetime Prevention Schedule. This is based in part on the results of a series of key informant interviews conducted with high-performing health systems in the United States: Group Health, Kaiser Permanente, and

[2] The Ministry of Health Services and the Working Group will need to seek legal advice regarding potential privacy issues.

Veteran's Affairs. Leaders in three national systems were also interviewed: England (National Institute for Health and Clinical Excellence), Australia (Primary and Ambulatory Care Division, Department of Health and Aging), and New Zealand (Ministry of Health).

Overall there were three key findings with respect to ongoing approaches: the need for accountability, the importance of information systems, and focusing on doing a few things well. Additionally it was clear that there are a series of process and system-level elements that should be integral to any ongoing mechanism. These findings were integrated into a proposed mechanism for the ongoing management of a high-performing system of clinical prevention services in BC. The main functional elements that need to be in place in order to move forward are shown in the Figure below.

Proposed Ongoing Mechanism for British Columbia



Overall accountability for this mechanism would lie with the Clinical Prevention System Working Group established under Recommendation 3.

The Working Group's specific responsibilities would include:

- Recommend any new additions to the Lifetime Prevention Schedule based on
  - Category A recommendations from Canadian and United States Task Forces or recommendations or guidelines from a body such as the BC Cancer Agency, Perinatal Health Program, Immunization Policy Committee or Guidelines and Protocols Advisory Committee; and
  - assessment of population health impact (clinically preventable burden) and cost-effectiveness relative to other clinical prevention services in the Lifetime Prevention Schedule.
- Facilitate review and analysis of optimal delivery platforms and implementation approaches for new preventive services with a focus on empowered primary health care delivery teams that have responsibility for prevention targets for defined populations.

- Facilitate consensus development among agencies where there are overlapping interests (e.g., immunization recommendations included in chronic disease management guidelines).
- Ensure business case and budget analysis is completed.
- Facilitate a quality improvement approach to adoption/implementation of clinical prevention services, including the training and coaching of providers.
- Recommend any changes to clinical prevention services in BC based on ongoing quality improvement and evaluation results.
- Monitor clinical prevention research broadly to maintain currency on results for clinical, operational and cost-effectiveness.

It is important to note that the Clinical Prevention System Working Group would work in conjunction with existing health system decision-making bodies, processes, legislation, etc. The Working Group would make recommendations for changes to the Lifetime Prevention Schedule, but final decisions regarding adoption and funding of clinical prevention services would be made as per established ministry policy.

In order for it to do its work, the Working Group would require staff resources and/or contract support to undertake secondary research and develop implementation strategies and support systems in collaboration with other key ministry units and/or provincial and regional stakeholders.

Specific recommendations: (see full discussion and recommendations in section 6.0 of the report)

12. Require all proposals for new or revised clinical prevention services to be reviewed by the Clinical Prevention System Working Group, which will make recommendations regarding proceeding to regular budget processes (e.g., Treasury Board submissions, Medical Services Commission, etc.).

13. Establish a standard proposal format for new or revised services that come to the Clinical Prevention System Working Group, including a consistent methodology for assessment of population health impact and cost-effectiveness, ensuring that comparisons can be made between the proposed interventions.

14. Provide ongoing quality improvement support including dedicated education, training and coaching for clinical prevention service providers and those students at undergraduate and postgraduate levels who are involved in the delivery of preventive health services.

15. Engage with strategic human resources leaders to identify the impact the review recommendations and policy changes may have on future health human resource requirements and planning.

16. Develop a research and evaluation program in collaboration with health service researchers in BC to support the ongoing monitoring of performance and to develop new knowledge about the effective implementation of effective clinical prevention services.

The committee has articulated an ambitious vision for clinical prevention services in British Columbia, but it is a direction that is both necessary and achievable. Through examination of the current state in BC and a review of best practice and available evidence, the committee has identified the need for, and initial content of, a Lifetime Prevention Schedule; highlighted the requirement for systematic approaches to organizing and delivering the services incorporated within the Lifetime Prevention Schedule; and described an ongoing mechanism for incorporating clinical prevention services evidence reviews and making changes to the Lifetime Prevention Schedule. Adoption of these recommendations would confirm the importance of prevention broadly and clinical prevention specifically and positions BC well for the future.

1.0 Introduction

In January 2007, the Assistant Deputy Ministers for the Medical Services Division and Population Health and Wellness approved the development of a proposal for the establishment of a Clinical Prevention Policy Review Committee (Cliff #657591). The proposal was accepted and Committee Terms of Reference were approved in September 2007.

The committee includes members from across the Ministry of Health Services (MoHS) and the Ministry of Healthy Living and Sport (MHLS) (henceforth referred to as 'the ministries'), health authorities, the BC Medical Association, the Department of Family Medicine, the BC College of Family Physicians, the Society for Clinical Preventive Care, BC Centre for Disease Control (BCCDC) and the BC Cancer Agency (BCCA). The committee includes an Expert Reference Group with representation from the former Chair of the Canadian Task Force on Preventive Health Care, the University of Ottawa, the US Preventive Services Task Force and Kaiser Permanente. Key informants from Group Health (Seattle), Veteran's Affairs (US), NICE (England) and New Zealand and Australia have also contributed to the process.

The committee has focused on answering three key questions:

1. What is worth doing?
2. What is the best way to provide what is worth doing? (at the practice level)
3. What is the best way to organize/plan/manage the system in order to do what is worth doing? (at the system level)

External research and reports have been commissioned as required and the results have helped to shape recommendations that address the Committee deliverables.

This report provides an overview of the work completed during the review process, including recommendations for consideration by the ministries.

2.0 Why Focus on Clinical Prevention Services?

As a society, we have an interest in keeping people as healthy as possible, in returning them to good health if possible, or in caring for them if that is not possible. That interest is largely a humanitarian impulse, although there are other benefits in terms of potential economic benefits resulting from a healthier population, including reduced health care costs and increased productivity.

The health care system is almost entirely focused on treating people if they become ill or injured, and caring for them if they are disabled or dying. The task of keeping people healthy has often received only scant attention. However, there is now a growing interest in this issue, as witnessed by the Conversation on Health and Government's commitment to healthy living, including the creation of a Ministry of Healthy Living and Sport.

Clinical prevention is one key element of an overall strategy to improve the health of the population, which is a prerequisite for reducing the burden of disease and the resulting demand for health care; thus clinical prevention is one of the keys to enhancing the sustainability of the health care system.

2.1 What is Prevention?

There are three key strategies that are used to keep people healthy and improve their health. Classically they are described as the pillars of public health: health promotion, health protection, and disease and injury prevention. They are defined as follows in the *Core Public Health Functions Framework* (Ministry of Health Services, 2005).

- ***Health promotion***, defined as "the process of enabling people to increase control over and improve their health" (World Health Organization, 1986), creates living and working conditions that enable people to make healthy life choices, and then supports them in that choice. The focus should be on groups or communities, rather than on individuals, and on changing the social norms that ultimately shape behaviour. This is accomplished through a set of health promotion strategies focused on communities, groups and individuals.

Health Promotion Strategies
Range from health advocacy for change in public policy or private sector practices, to partnership building and coalition development, to education that helps people develop personal skills for health.

- ***Health protection*** protects people from involuntary risk posed by both natural and human-created hazards that are an actual or potential threat to their health. It does so through government legislation, regulations, taxes, inspections, sanctions and, if need be, punishing those who put the health of their fellow citizens at risk. Again, the focus tends to be both population-wide and focused on protecting identified vulnerable populations that are at high risk.

Health Protection Strategies
Protect people through legislation, regulation, inspection and, if necessary, enforcement and prosecution.

- ***Preventive interventions*** comprise a set of primarily clinical interventions that have been shown to reduce significantly the likelihood that a disease or injury will affect an individual, or to interrupt or slow the progression of that disease. Preventive interventions tend to be provided mainly to individuals or families (although sometimes in group settings), particularly high-risk individuals, and are mainly provided by both public health staff and primary care practitioners.

Preventive Intervention Strategies
Include immunization, counselling, screening and early detection, and preventive treatments.

Prevention has been defined as "actions aimed at eradicating, eliminating, or minimizing the impact of disease and disability, or if none of these is feasible, retarding the progress of disease and disability" (Last, 2001).

There are four levels of prevention:[3]

- ***Primordial prevention*** – "actions and measures that inhibit the emergence and establishment of environmental, economic, social and behavioural conditions, cultural patterns of living, etc., known to increase the risk of disease" (e.g., improving housing availability, reducing child poverty).
- ***Primary prevention*** – "protection of health by personal and communal efforts, such as enhancing nutritional status, immunizing against communicable diseases, and eliminating environmental risks, such as contaminated drinking water supplies."

Both primordial and primary prevention are intended to prevent the onset of the disease or injury in the first place.

- ***Secondary prevention*** – "a set of measures available to individuals and communities for the early detection and prompt intervention to control disease and minimize disability, e.g., by the use of screening programs."
    - Secondary prevention is in general concerned with treatment and management of disease; however, some diseases can be detected early, before they are clinically evident. A good example is cancer of the cervix in women, which can be detected by a Pap smear well before there is any clinical evidence of the disease. This is "early secondary prevention," since onset has not been prevented, and it is accomplished though mass screening or by case-finding.
- ***Tertiary prevention*** – "measures aimed at softening the impact of long-term disease and disability by eliminating or reducing impairment, disability, and handicap; minimizing suffering; and maximizing potential years or useful life" (Last, 2001).

[3] A fifth level, quaternary prevention, has been proposed (Jamoulle, 1986). It is defined in the WONCA Dictionary (Bentzen, 2000) as "Action taken to identify patients at risk of over-medicalisation (and) protect them from new medical invasion . . .or as "measures that relieve without curing the symptoms of terminal disease" (National Specialty Program in Public Health and Community Nutrition, Australia, undated). It is thus concerned with unnecessary and inappropriate diagnostic and therapeutic interventions and excessive and intrusive end-of-life treatment; it can also be thought of as the prevention of an unhealthy death. It is relevant in particular to chronic diseases and conditions.

Last (2001) suggests that these four levels of prevention are, respectively, the task of public health policy and health promotion, public health services, preventive medicine and rehabilitation. While this task definition should not be considered to be rigid, it does serve to make the point that prevention involves more than public health, extending on the one hand to wider segments of society and its governments, and on the other hand to primary care and other health care staff working in the health care system.

2.2 Prevention as a Strategic Priority

Improving the health of the population is an emerging priority within the BC health system and across government and society more generally:

- Both the provincial government's Great Goals and the Ministry of Health Services' goals emphasize healthy living and improved health and wellness.
- The participants in the Conversation on Health consistently identified health promotion and disease prevention as being of high importance (see Text Box #1). In response, the government established a Ministry of Healthy Living and Sport in 2008, in order to focus on this issue.
- Government has established and funded ActNow BC as a platform to promote healthy living, and has contributed $30 million to the BC Healthy Living Alliance.
- The Ministry of Health Services' service plan refers to "Staying Healthy" as one of four overarching health system domains, and the Population Health and Wellness branch (now part of the Ministry of Healthy Living and Sport) identified "increasing prevention in primary care" as one of four key strategic directions for the Staying Healthy domain.[4]
- Government has been strengthening and renewing BC's system of public health services: a new *Public Health Act* was enacted, while the Ministries of Health have been developing and are now implementing core public health programs across BC, in partnership with the health authorities.

Text Box #1
Conversation on Health

British Columbians told us they believe in:

- A strong and sustainable public health care system that delivers services to all British Columbians regardless of where they live, their incomes or their backgrounds and cultures;
- More supports to promote greater responsibility for their own health and well-being, through sound health promotion and disease prevention and commitment to a healthy society and environment. These would provide them with the tools to stay healthy and manage their own and their families' illnesses when they must; . . .

In their vision, British Columbians expressed a strong view about health and what it means to us as a province. In this section of the Final Report, you will read some of the ideas and concerns of participants around their vision of a healthy British Columbia, which includes:

- Empowering people to make healthy choices and live healthy lifestyles;
- Supporting a healthy society and environment;
- Keeping people safe in their communities and workplaces; and,
- Focusing on Aboriginal people, seniors and people with disabilities.

From www.bcconversationonhealth.ca/

[4] The other key directions are adopting a population health promotion approach, strengthening and renewing the system of public health services, and enhancing people's capacity for self-care, especially for keeping themselves and their families healthy and safe.

- Physicians—particularly primary care physicians—and other health care providers have consistently expressed support for health promotion and disease prevention as important priorities.
- The 2007 Primary Health Care Charter identifies clinical prevention, especially for chronic diseases, as a priority (see Text Box #2).
- Clinical, evidence-based health promotion and disease and injury prevention is considered a high priority by the family physicians in BC (PQID process). In addition, the 2006 agreement between the Provincial Government and the British Columbia Medical Association (BCMA) specifically commits some funding for clinical prevention as part of the package for full-service family practice. The General Practice Services Committee (GPSC) has established a Prevention Committee to address this part of the agreement.
- The Guidelines and Protocol Advisory Committee (GPAC) of the Medical Services Commission has published a number of guidelines that relate to prevention and screening, including guidelines on primary prevention of cardiovascular disease, detection of colon cancer in asymptomatic adults, interventions with respect to overweight, obesity and physical inactivity and a guideline on chronic obstructive pulmonary disease that includes a recommendation with respect to smoking cessation.

Text Box #2:
Primary Health Care Charter (2007)

Family physicians have long shown a commitment to clinical prevention. . . . The province is committed to increasing effective prevention in primary health care, as evidenced by the new prevention fee allocation and the development of new prevention guidelines. While there is an interest in ensuring that prevention is increased for all ages (e.g., the performance expectation with the health authorities regarding immunization rates), there is a particular interest in the prevention of chronic diseases because prevention is the first step in effective chronic disease management. (p 24)

The long-term goal is that all British Columbians will have access to evidence-based clinical prevention in primary health care where there is sufficient evidence of effectiveness. Indicators and milestones will be established over the coming year to effectively track progress toward this goal. Primary health care has a role to play with the province attaining its broader ActNow BC goals related to: tobacco use, physical activity, eating fruits and vegetables, and prevalence of overweight and obesity. (p 26)

2.3 Prevention Principles

When developing prevention policy it is helpful to reflect on the following principles articulated by the Review Committee:

Prevention is preferable to cure.
Even if a condition is minor and self-limiting, or fully curable, most people would rather avoid the pain, discomfort or inconvenience of being sick or injured.

Prevention is a hallmark of quality care.
Health promotion and preventive care are seen as essential components of care in quality indicator sets developed by the Organisation for Economic Co-operation and Development (OECD) (Marshall et al., 2004) and in the United States (McGlynn et al., 2003). In BC, "Staying healthy" is one of four domains used in the quality matrix developed by the BC Patient Safety and Quality Council.

Primary prevention is preferred.
Prevention of onset of the condition is better than early detection of a condition that has already started and will require some form of intervention.

Prevention is the first step in management.
When it comes to chronic disease management, not only is prevention of the disease in the first place the best option (because it obviates the need for management), but managing people with a chronic disease requires preventing them getting worse by encouraging healthier living, and preventing them getting a second chronic disease, which makes everything worse.

Patient as a partner in prevention.
Prevention is complex and multi-faceted and requires the efforts of many partners, including the patient. This means increasing opportunities for patients to become active participants in their own care planning and self-management.

The full spectrum of primary prevention approaches should be used.
Health problems can be prevented by changing the basic determinants of health beyond the health sector ("upstream" or primordial prevention), through public health programs of health promotion, health protection and preventive services aimed at communities or populations; through clinical prevention services provided mainly by primary care providers, and mainly to individuals; or by helping people acquire and practice healthy ways of living. Usually, all of these strategies need to be used together.

The selection of an approach, or a combination of approaches, is based on a combination of the available evidence of effectiveness and cost-effectiveness, and on the characteristics of the community or group involved.

2.4 Scope of Clinical Prevention Services

This policy review is concerned with clinical prevention, which is taken to include both primary and early secondary prevention, as discussed earlier. The US Preventive Services Task Force (see Appendix A for information about both the US and Canadian Task Forces) identifies four categories of clinical prevention services (Agency for Healthcare Research and Quality, n.d.):

- immunization;
- screening;
- counselling;[5] and
- preventive medication.

For the purposes of this report, preventive medication is understood as medication provided to apparently healthy individuals in order to prevent or delay the onset of a disease or condition for which they may be at increased risk (e.g., ASA prophylaxis). It does not include prophylactic medication provided to contacts of a person with an infectious disease, which is seen as an aspect of outbreak control (e.g., meningococcal meningitis or tuberculosis). Nor does it include medication for treatment of a diagnosed condition, even when that may prevent other conditions (e.g., anti-hypertensive medication to prevent stroke or anti-depressive medication to prevent

[5] Including brief advice.

suicide, or lipid reduction medication to prevent cardiovascular events); in these cases, the initial detection through screening is part of clinical prevention, but once diagnosed, the medication is offered as part of a potential treatment plan.

Similarly, immunizations, gamma globulin, tetanus or rabies anti-toxins given to exposed individuals are considered part of outbreak or case management, and are not included here.

Counselling refers here to systematic advice on preventive actions that individuals may take, linked to a specific evidence-based behavioural intervention, and includes extended counselling where appropriate, as well as brief advice and brief intervention.[6]

Based on a review of the literature undertaken for this policy review (H. Krueger & Associates, 2007a), we have adopted the following definition of clinical prevention:

> **Maneuvers pertaining to primary and early secondary prevention (i.e., immunization, screening, counselling and preventive medication as defined above) offered to persons based on age, sex, and risk factors for disease, and delivered on a one-provider-to-one-client basis, with two qualifications:**
>
> **(i) the provider could work as a member of a care team, or as part of a system tasked with providing, for instance, a screening service; and**
> **(ii) the client could belong to a small group (e.g., a family, a group of smokers) that is jointly benefiting from the service.**

Overall, the scope of the review and the resulting recommendations address clinical prevention services for the general population. We are not addressing the needs of high-risk sub-populations but recognize that this is an area requiring further investigation and work.

[6] This is different than the definition of counselling found in the Medical Services Commission payment schedule (current at April 1, 2009): "Counselling is defined as the discussion with the patient, caregiver, spouse or relative about a medical condition which is recognized as difficult by the medical profession or over which the patient is having significant emotional distress. Counselling, to be claimed as such, must not be delegated and must last at least 20 minutes. Counselling is not to be claimed for advice that is a normal component of any visit or as a substitute for the usual patient examination fee, whether or not the visit is prolonged. For example, the counselling codes must not be used simply because the assessment and/or treatment may take 20 minutes or longer, such as in the case of multiple complaints. The counselling codes are also not intended for activities related to attempting to persuade a patient to alter diet or other lifestyle behavioural patterns. Nor are the counselling codes generally applicable to the explanation of the results of diagnostic tests." See full definition at: http://www.health.gov.bc.ca/msp/infoprac/physbilling/payschedule/pdf/1.%20preamble.pdf.

2.5 The Committee's Vision for the Future

Vision for the Future

Prevention is the social norm in BC. Clinical prevention services are a key aspect of prevention and contribute to reducing the burden of disease.

A "Lifetime Prevention Schedule," which identifies the effective clinical prevention services to be offered in a planned and systematic manner, is integrated with the health system including primary health care delivery. Everyone in BC should be able to access those preventive measures defined by the Lifetime Prevention Schedule that apply to them.

Services are offered to all who need them, with a focus on those most at risk and/or disadvantaged. Everyone has a regular primary health care provider and/or team who can deliver, or facilitate access to, the services.

Informed and activated patients understand the Lifetime Prevention Schedule and the value of clinical prevention services. Patients are invited to actively participate in their own care and have a voice in the design and evaluation of the system.

The delivery of clinical prevention services is supported by a robust infrastructure, including information systems and linkages to the electronic health record, training and support for providers, public education and information, patient recall and provider reminder systems, web-based personal health plans and appropriate funding.

Quality improvement drives the implementation of clinical prevention services and there is a rigorous evidence-based process in place to evaluate proposals for changes to the Lifetime Prevention Schedule.

There is an active and ongoing monitoring and surveillance function along with a comprehensive research program in clinical prevention services.

As a result, BC has achieved levels of preventive services within its Lifetime Prevention Schedule that are the best in the world.

3.0 What is the Current Situation in BC?

It can be argued that "Effective clinical prevention is an integral and fundamental component of health care," (Foerster, Feightner & Verhulst, 2007) that clinical prevention is a hallmark of quality clinical care, and that "prevention is the first step in effective . . . disease management" (Ministry of Health, 2007, p. 24). Yet in spite of the clear evidence of interest in and support for prevention in BC, there is concern that BC's system of clinical prevention is not as effective as it might be.

3.1 Delivery of Clinical Prevention Services

Immunization

The current BC Immunization Schedule (updated February 2009) is shown in Appendix B. These immunizations are covered through the Medical Services Plan (MSP) routine examination fee for family physicians or are provided by public health nursing services, through workplaces or other community settings. Multiple providers can make surveillance a challenge.

Childhood immunization: Childhood immunization has been covered for many years, partly through fee-for-service (FFS) as part of the routine examination, and partly through public health nursing services. More recently in 2007, new billing codes were added to MSP to support family physicians providing immunization to newborns and to children up to 18 years of age (inclusive). This was undertaken to recognize the important contribution physicians make to childhood immunization and to efficiently enhance the accurate and timely reporting of immunizations administered by physicians in BC. There are some issues around coordination between physicians and public health and sharing of data.

Adult immunization: A dT (tetanus and diphtheria) immunization is recommended for adults every 10 years, and is provided free of charge, but there is no organized provincial program to support this.

Annual influenza vaccination is recommended for people at high risk of serious illness from influenza and/or people able to transmit or spread influenza to those at high risk of serious illness from influenza. In BC, the influenza vaccine is provided free to the following groups of people, either by their physician or through public health clinics or other settings (HealthLink BC, 2009):

- Children 6-23 months of age.
- Pregnant women who will be in their third trimester during the influenza season.
- Seniors 65 years and older.
- Residents of any age living in residential care, assisted living or other group facilities.
- Children and teenagers taking Aspirin or ASA for long periods of time.
- Children and adults with certain medical conditions, including:
    - Heart or lung disorders that require regular medical care, including asthma, chronic obstructive pulmonary disease, cystic fibrosis.
    - Kidney disease, diabetes, cancer, anemia or weakened immune systems.
    - Those with health concerns causing difficulty breathing, swallowing, or a risk of choking on food or fluids (including persons with severe brain damage, spinal cord injury, seizures or neuromuscular disorders).

- Doctors, nurses and other care providers who work in hospitals, residential care, assisted living or other group facilities.
- Household contacts, caregivers and day care staff of children under 24 months of age.
- Household contacts of people at high risk.
- Individuals who live or work in confined settings such as correctional facilities.
- Those who provide care or service to people at high risk in potential outbreak settings such as cruise ships.

Others:

- Essential services, such as police officers, firefighters and paramedics.
- Individuals who work with live chickens or pigs.

However, there is no organized provincial program to support this for all the groups mentioned, although there is for some (e.g., residents of residential care and similar facilities, health care workers, some occupational settings).

The vaccine is also recommended, but is not provided free, for healthy people 2 to 64 years of age, although private insurance may cover it. Anyone not eligible for a free influenza vaccine can purchase it at public health clinics, doctors' offices, pharmacies and clinics. Some employers also provide free vaccine to employees.

Pneumococcal 23 immunization is recommended once and is provided free for the following groups of people (HealthLink BC, 2008):

- Seniors 65 years and older.
- Residents of any age living in residential care, assisted living or other group facilities.
- The vaccine is also provided free to persons 2 years of age and older with certain medical conditions; some of the latter should receive a second dose of vaccine several years after the first dose.

There is no organized provincial program to support this for all the groups mentioned above, although there is for some (e.g., residents of residential care and similar facilities). In addition, children under 2 years receive pneumococcal conjugate as part of the childhood immunization schedule.

Screening

Prenatal genetic screening: The Ministry of Health Services approved an improved program of prenatal genetic screening in February 2008, and the BC Perinatal Health Program is now in the process of establishing the BC Prenatal Genetic Screening Program, with a gradual phase-in of new tests. The program will:

- Implement safer and more sensitive screening tests.
- Provide effective education for providers and patients.
- Evaluate performance and outcomes of the tests.

Newborn screening: A set of six blood tests for "inborn errors of metabolism" have been provided for many years as part of routine neonatal care; the number of tests has recently been expanded to 19, based on the recommendation from the Newborn Screening Advisory Committee, established by the Provincial Health Services Authority (PHSA). One of the positive outcomes that resulted from the review process was a strategy to minimize the recall rate or false positive rate. This will be achieved by a two-tier screening approach. BC will be one of the first jurisdictions in Canada to implement a suite of second tier screening tests aimed at minimizing false positive rates.

The implementation phase will build additional capacity, integrate a new software system and ensure testing facilities are in place. This will include the co-ordination of regional services, including sample collection, transportation, parent education and follow-up.

Newborn hearing screening: The BC Early Hearing Program (BCEHP) provides universal hearing screening to all babies born in BC. The first phase of the program, early hearing screening in all neonatal intensive care units, has been implemented. Phased roll-out to postpartum (i.e., well-baby) units began in September 2007 and is fully implemented in four of the five regional health authorities (implementation in Northern Health is continuing) and BC Women's Hospital (Ministry of Healthy Living and Sport [MHLS], Women's Healthy Living Secretariat [WHLS], 2009).

The program provides coordinated, equitable, accessible and efficient early identification and intervention services for hard-of-hearing and deaf babies and their families and includes

- Birth screening for congenital hearing loss for babies born in the hospital or in their homes;
- Ongoing surveillance for later onset hearing loss;
- Medical and audiological assessment for confirmation of hearing status;
- Amplification for optimal use of available hearing;
- Early intervention to provide communication development and optimal social-emotional development;
- Public education to increase awareness of the importance of early identification;
- Training of service providers; and
- Evaluation, including tracking of program outcomes, user evaluation, cost analysis and program development.

Planning and coordination for services is the responsibility of the PHSA's Provincial Coordinator in collaboration with regional health authorities. Regions are responsible for the delivery of screening within their area using the protocols established by the provincial coordinating body.

Early childhood dental screening: The goal of the Early Childhood Dental Health initiative is to provide programs that offer the best opportunity to improve the dental health and well-being of infants and children. The Early Childhood Dental Health initiative has several components that address the issue of early childhood caries and reduce the rate of early childhood dental disease. While many of these components were in place in some health authorities, initiatives are being enhanced to ensure that all children, from birth to five years, and in particular, children who are at high risk of developing dental caries, have access to these programs (MHLS, WHLS, 2009).

Components include:

- Provision of increased public health dental health services through registered dental hygienists and certified dental assistants, which allows health authorities to increase prevention of early childhood caries and improve identification of higher risk, more vulnerable segments of the population. Services include health education and prevention activities, dental assessments, and supporting families in accessing treatment services.
- Tracking of dental public health data on BC children. A provincial dental survey is planned for the 2009/2010 school year to assess the dental health status of kindergarten-aged children.
- Increased access to dental treatment, especially for low-income families.
- Broad, multi-component strategies are being used to provide education on preventing oral disease, particularly early childhood caries.

Early childhood vision screening: This provincial vision initiative recognizes that excellent sight and eye health are important to a child's development. The initiative ensures that parents and other caregivers have important information on children's eye health and vision and those children with vision impairment receive early intervention and treatment, and consequently, optimize their capacity to adapt and learn throughout childhood (MHLS, WHLS, 2009).

Vision screening is being implemented through a three-pronged approach:

- Case finding for vision concerns, using recognized public health practitioners, physicians and other early childhood practitioners in established programs and services, with referral to vision specialists for diagnostic testing and follow-up.
- Pilot public health vision screening for three-year-olds that would provide early identification and management of amblyopia and strabismus and reach a maximum number of children and in particular, those at highest risk of having vision problems.
- Until the screening of three-year-olds is entrenched, re-establish vision screening of children in kindergarten by public health staff.

Health authorities implemented kindergarten vision screening program during the 2007/2008 school year. Vision screening pilot programs for three-year-old children began during the spring of 2008 with expanded pilots initiated in January 2009. Preschool vision screening is planned to replace kindergarten screening once screening this earlier age group is deemed successful. Regions are responsible for the delivery of screening, client follow-up, client education and outcome evaluation using established protocols.

Cancer screening: The BC Cancer Agency has for a long time provided organized screening programs for women for both cervical and breast cancer.

While there is a GPAC Guideline for colon cancer screening, there is no organized program to support implementation of this throughout the province. However, British Columbians with a high risk factor currently have access to colorectal cancer screening through their physicians' offices, and this screening is paid for by MSP, as is the fecal occult blood test for any person for whom a physician requests it. The initial phase of an organized Colorectal Cancer Screening Program for both men and women ages 50–74 was announced in January 2009; a three-year, $3.8-million pilot

colorectal cancer screening program in Penticton (and a second community yet to be selected) will test the effectiveness of a new fecal occult blood screening test in the early detection of colorectal cancer (Ministry of Health Services, 2009).

Screening for HIV, chlamydia and gonorrhea in young adults: Screening for chlamydia is recommended for all females less than 25 years of age or in pregnancy, and targeted screening of young adults at risk of chlamydia, gonorrhea and HIV is also recommended.[7]

HIV screening is available free of charge for all who are at increased risk or who request it, and perhaps due to the seriousness of the condition and the wide public awareness, screening rates appear to be quite high. However, there is not a single coordinated and proactive province-wide screening program in the general population or among risk populations.

Chlamydia and gonorrhea screening is available free of charge for those who request it or are identified as being at increased risk, but there is not a single coordinated and proactive province-wide screening program in the general population or among risk populations, except perhaps the reproductive care program, which constitutes a provincially funded screening program for chlamydia infection during pregnancy.

Screening interventions have demonstrated effectiveness at improving case detection, treatment and notification of partners. In BC these recommendations are in place; however, coverage is incomplete. A province-wide, organized and monitored screening program for these sexually transmitted infections (STIs) can be expected to significantly contribute to decreasing incidence of infection and complications.

Hypertension screening: Hypertension screening is covered by long-standing and recently updated GPAC Guidelines, is included as part of a new GPAC Guideline on primary prevention of cardiovascular disease (Ministry of Health Services, GPAC, 2008) and is included in the prevention fee administered through the GPSC, which is devoted to cardiovascular risk assessment based on the GPAC Guideline; however, this fee is limited to 30 patients per physician per calendar year and there is no organized provincial program to support this intervention.

Lipid screening: Lipid screening is included as part of a new GPAC Guideline on primary prevention of cardiovascular disease and is included in the prevention fee administered through the GPSC, which is devoted to cardiovascular risk assessment based on the GPAC Guideline; however, this fee is limited to 30 patients per physician per calendar year and there is no organized provincial program to support this intervention.

Counselling

Smoking cessation is included as part of a new GPAC Guideline on primary prevention of cardiovascular disease, and is included in the prevention fee administered through the GPSC, which is devoted to cardiovascular risk assessment based on the GPAC Guideline. The service was initially limited to men 40–49 and women 50–59, but the GPSC Prevention Committee recommended in January 2009 that coverage be increased to any adult under 70 years of age when clinically indicated.

[7] BC follows the Canadian guidelines on sexually transmitted infections. See http://www.phac-aspc.gc.ca/std-mts/sti_2006/sti_intro2006-eng.php.

This was made effective June 1, 2009; however, this fee is limited to 30 patients per physician per calendar year. It is expected that general practitioners currently offer brief advice on smoking cessation in the context of regular office visits; however, this is not tracked.

In addition, there is a provincial smoking cessation program that uses QuitNow BC, a free telephone and web-based cessation support service. In 2008/2009, MHLS gave BC Lung Association a grant of $1.681 million to run QuitNow Services (both the toll-free telephone service and the website). In 2009/2010, it also included some funding for QuitNow and Win. In 2008/2009, foster homes and vehicles became smoke-free. QuitNow Services were promoted to foster families, with support for nicotine replacement therapies (NRTs) in the first months of the new policy.

Preventive Medication

Advice on the use of ASA prophylaxis is included as part of a new GPAC Guideline on primary prevention of cardiovascular disease, and is included in the prevention fee administered through the GPSC, which is devoted to cardiovascular risk assessment based on the GPAC Guideline; however, this fee is limited to 30 patients per physician per calendar year and there is no organized provincial program to support this intervention. In addition, this advice may also be provided during a regular GP office visit (0100) for some patients.

In general terms, NRTs are available both as over-the-counter products and as prescription products such as Champix and Zyban. Some health authorities have provisions for patients and clients, as well as for staff. The Public Service Agency provides NRTs through the benefit plan for eligible provincial staff.[8]

The Ministry of Health Services (through the Pharmaceutical Services Division) is undertaking a smoking cessation product review. The review will include various elements, such as an assessment of the comparative clinical effectiveness and cost-effectiveness of the pharmacologic agents varenicline and bupropion and nicotine replacement therapy with or without behavioural support programs in various smoking target patient populations. The Pharmaceutical Services Division is working in collaboration with the Health Technology Assessment branch of the Canadian Agency for Drugs and Technologies in Health for parts of the review. The Ministry of Health Services anticipates that the review of smoking cessation medications will be completed in the spring of 2010.

Other Services

Prenatal care: As the Primary Health Care Charter notes,

> In many ways, maternity care is a health-promotion and disease-prevention service with the objective of having a healthy mother and child, and preventing complications during pregnancy and delivery (Ministry of Health, 2007, p. 22).

[8] http://www.quittintime.gov.bc.ca/index.htm

Prenatal care is covered by MSP. The BC Perinatal Health Program[9] is working towards optimizing maternal, neonatal and fetal health in the province through educational support to care providers, outcome analysis, networks and multidisciplinary perinatal guidelines. It works with hospitals, health authorities, community agencies, academic institutions and private practitioners to effectively link perinatal health care data and research to education and professional needs of care providers across BC.

3.2 Current Policy Shortfalls

The background material that led to the establishment of the review noted that

> Despite the emergence of prevention as a health system priority, there is no clear, specific provincial policy on clinical prevention, and barriers exist to implementing effective clinical preventive measures that, as part of a system of quality care, could help improve population health, reduce the burden of disease and enhance the health system's sustainability.

BC's position on funding for clinical prevention is ambiguous; currently the published policy of MSP states that "preventive services and screening tests not supported by evidence of medical effectiveness (for example, routine annual 'complete' physical examinations, whole body CT scans, prostate specific antigen [PSA] tests)" are not covered by the plan (Ministry of Health Services, 2008), implying, but importantly not stating, that preventive services supported by evidence of medical effectiveness are covered by the Plan.

Similarly, a recent review of the periodic health exam (PHE) and the implementation of preventive care for the MSC (Feightner et al, 2007), noted that "BC's MSP does not specifically fund (or prohibit) the performance of a PHE"—as distinct from an annual physical exam. However, MSP's position on "annual physicals" is clear and was described in a 2004 MSP physicians' newsletter as follows:

> In BC, a routine annual complete physical examination has never been an insured benefit when performed without a valid medical requirement...the *Medicare Protection Act* and Regulations require that coverage is available only for those services that are considered to be medically necessary. BC bases its policy of not insuring routine annual physical examinations on the findings of the CTFPHE. Annual complete physicals have not been found to improve health outcomes through early detection to the extent that they would be a prudent use of public funds. Targeted early detection strategies are encouraged in the context of medical office visits. For example, the BC Cancer Agency recommends periodic Pap smears as appropriate care for women in specific age groups, and MSP provides coverage for these and other screening tests that have been identified as medically beneficial. Patients are free to request their physicians perform annual physical examinations. MSP, however, can only provide coverage when the examination is medically required for the management of health issues. Therefore, if a patient attends a physician with specific symptoms or for monitoring of a known medical condition under treatment, MSP will pay for the visit (Medical Services Plan, 2004).

[9] http://www.bcphp.ca/.

MSP policy is silent on the use of the PHE specifically as a strategy for providing effective clinical preventive maneuvers (H. Krueger & Associates, 2007a). Yet in practice, BC does fund and support a wide range of clinical prevention services, through a variety of funding mechanisms, as noted earlier, albeit not always in a systematic way. Thus the recent review of screening for the MSC (Foerster, 2006) found that

> BC seems to be ahead of its peers in some areas where screening costs are funded through non-FFS mechanisms, e.g., radiologist fees for screening mammograms, tertiary funding for HIV testing, and BC Cancer Agency interpretation of Pap smears. There are also innovations such as additional physician funding for management of hypertension and diabetes according to practice guidelines. The Guidelines and Protocols initiative strives to manage screening in areas such as bone densitometry and mammography. The system also allows FFS billing for those manoeuvres addressed in government-issued guidelines and protocols, e.g., tri-annual fasting blood sugar for ages 40+ and annual fecal occult blood testing for ages 50 to 75 years. These initiatives appear to be unique to BC.

3.3 Lack of Supportive Infrastructure

In common with other jurisdictions in Canada, and in many other parts of the world, BC's primary care providers are not systematically supported to provide as comprehensive, focused, planned and well-organized a system of clinical prevention services as would be ideal, although many elements of the system are in place for individual programs or preventive services. Specifically, there is:

- no recommended overall prevention schedule (although there is one for prenatal care, for immunization and for screening for cervical, breast and colon cancer);
- no flowsheet or other standard tool to assist physicians in managing preventive services other than in prenatal care[10] and immunization;[11]
- no concerted attempt to increase public awareness of the value of preventive services and the services they should seek and utilize (and the ones that are not effective and not worth seeking), although there are annual public education campaigns for breast cancer screening;
- no mechanism for reminding patients or their physicians when it is time for their recommended preventive services;
- no overall registries that enable us to tell who has and who has not had a preventive service;
- no standard mechanism for recalling patients when necessary (although these mechanisms exist to a varying extent for individual programs such as newborn hearing screening and genetic testing, immunization, childhood vision screening and cancer screening);
- no overall monitoring or evaluation, although there are mechanisms for monitoring performance or evaluating outcomes in some individual programs;
- no quality improvement infrastructure for clinical prevention;
- no comprehensive and coordinated approach to training and development for clinical prevention, or provision of information technology or other supports for incorporating prevention routinely, uniformly and easily into primary care practice; and
- no significant program of health services research on clinical prevention services, either in BC or in Canada.

[10] http://www.bcphp.ca/Perinatal%20Forms.htm
[11] http://www.health.gov.bc.ca/msp/infoprac/physbilling/new_vaccine_codes.html

Finally, and to complicate the analysis of infrastructure issues, there may be adequate infrastructure for individuals living in more populated areas of the province for some services such as breast cancer screening, but problems/barriers may exist in accessing the same services for marginalized populations or those living in more rural/remote areas of the province.

It is important to note that these problems are not unique to BC but apply throughout Canada and many other countries, as noted in the next section. By acknowledging and systematically addressing these issues, BC can lead the world in developing and implementing for its population a planned and proactive system of effective clinical prevention services.

3.4 Other Potential Barriers

This section is taken directly from a research report prepared for this review (Feightner et al, 2008).

A number of studies published over the past 15 years have explored barriers to the delivery of preventive services; the barriers identified were similar across many of the studies and included barriers related to patients, physicians, the system and interventions. Many of these barriers exist to varying degrees in BC as well.

- Patient-related barriers (Beaulieu, Talbot, Jadad, & Xhignesse, 2000; Hudon, Beaulieu, & Roberge, 2004; Hutchison, Abelson, Woodward, , & Norman, 1996):
    - Failure of healthy patients to visit a physician's office.
    - Lack of patient interest.
    - Refusal or non-compliance with prevention services.
    - Patient circumstances (e.g., poverty).
- Physician-related barriers (Ayres & Griffith, 2007; Beaulieu et al., 2000; ; Hudon et al., 2004; Hulscher, van Drenth, Mokkink, van der Wouden, & Grol, 1997; Hutchison et al., 1996; Mirand, Beehler, Kuo, & Mahoney, 2003;):
    - Failure to remember to offer prevention services.
    - Belief that prevention guidelines are too complex and/or inconsistent.
    - Belief that prevention is not a physician's responsibility.
    - Belief that offering prevention advice is unacceptable to patients.
    - Belief that practices lack the means to carry out prevention.
    - Lack of training.
    - Lack of reward and satisfaction as a diagnostician.
- Patient- and physician-related barriers (Beaulieu et al., 2000; Hudon et al., 2004; Hutchison et al., 1996; Mirand et al., 2003):
    - Tendency to prioritize the problem the patient presents with, over prevention services.
    - Lack of continuity of care.
- System-related barriers (Ayres & Griffith, 2007; Beaulieu et al., 2000; Hudon et al., 2004; Hutchison et al., 1996; Mirand et al., 2003):
    - Lack of an effective process to remind patients.
    - Lack of an effective process to remind physicians.
    - Insufficient time during the patient encounter.

- Intervention-related barriers (Ayres & Griffith, 2007; Beaulieu et al., 2000; Hudon et al., 2004; Hutchison et al., 1996; Mirand et al., 2003):
    - Lack of clear evidence of effectiveness.
    - Discomfort/inconvenience.
    - Expense.
    - Inadequate or lack of reimbursement for physicians.
- Yarnall et al. (2003) identified an additional barrier: lack of time. They took the list of recommended preventive services (both A and B recommendations) from the U.S. Preventive Services Task Force's *Guide to Clinical Preventive Services*, estimated times to provide those services from the literature, and applied this to a representative practice population of 2500 people distributed according to the age and sex distribution of the U.S. population. They concluded the following:
    - It would take 1773 hours of a physician's time annually (or 7. 4 hours per working day) to provide all these services to children, adults and pregnant women. Clearly this would leave no time to practice other aspects of primary care such as diagnosis and treatment.
    - If only the category A recommendations were followed, it would still require 525 hours a year (2. 2 hours per working day).
    - Just doing the top priority preventive services identified by Coffield et al. (2001) (7 or above on a scale a 10) would require one hour per day.[12]

[12] Top priority preventive services: tobacco cessation counselling for adults; screening older adults for undetected vision impairment; offering adolescents an anti-tobacco message or advice to quit; counselling adolescents on alcohol and drug abstinence; screening adults for colorectal cancer; screening adults for problem drinking; screening cervical cancer among sexually active women aged 18 and over; screening for hypertension among all persons; and screening for high blood cholesterol among men aged 35 to 65 years and women aged 45 to 65 years (Coffield et al., 2001).

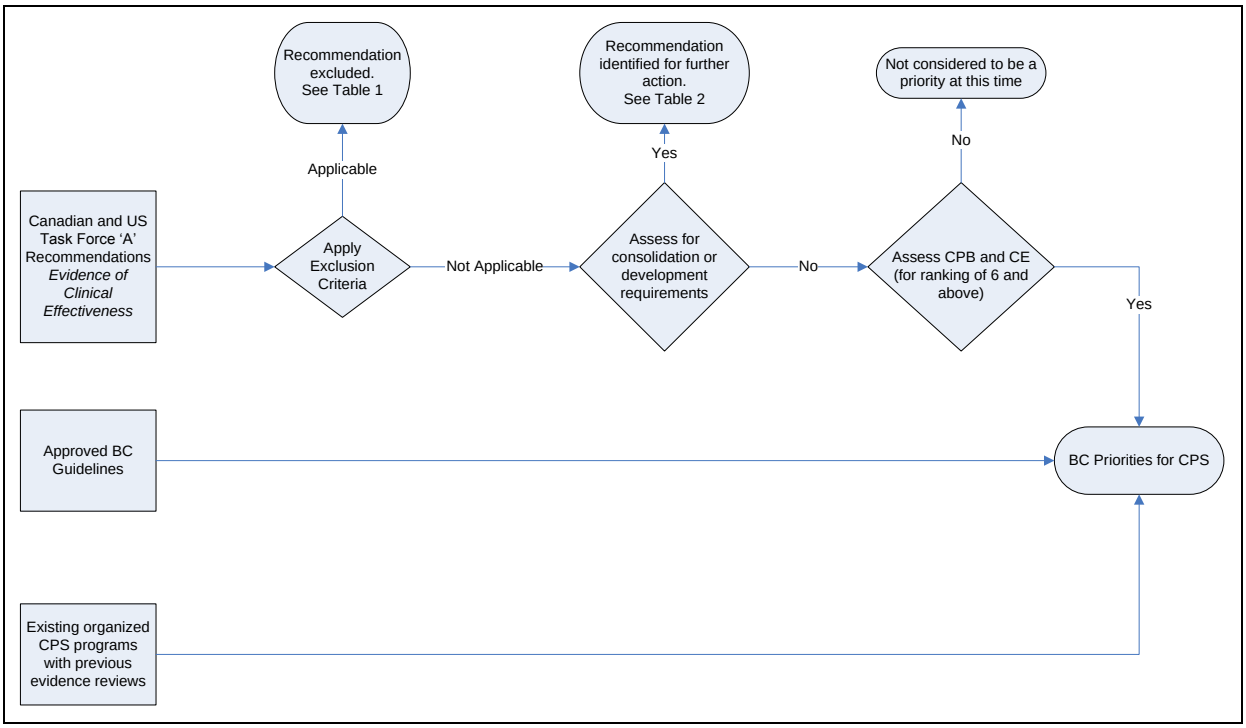
4.0 What is Worth Doing?

Notwithstanding what is currently happening in BC, the committee needed to understand which clinical prevention services are actually worth doing by considering:

- What preventive services have been demonstrated to be clinically effective?
- What preventive services are likely to have the greatest impact on population health?
- What preventive services are most cost-effective?

To answer the questions above, the review process combined two approaches to prioritization in order to arrive at a prioritized list of clinical prevention services for BC. The overall approach is shown in Figure 1. Each of the steps in the process is described in more detail in this section of the report.

Figure 1 – Overall Approach to Prioritization



4.1 Evidence of Clinical Effectiveness

In terms of clinical effectiveness, the committee focused on Category A recommendations from the Canadian and US Task Forces (see Appendix C for a description of the grades of recommendations and a listing of manoeuvres receiving a "double A", "A and B" and "single A").

In developing this list, we excluded items that are not usually considered clinical prevention services because they are:

- A population health intervention (e.g., legislation, restraint use and control of drinking and driving to prevent motor vehicle accident injuries, or public education/legislation on poison

control, both of which are Canadian "A" recommendations) or a community intervention (e.g., day care or preschool programs for disadvantaged children, or home visitation by nurses during the perinatal period through infancy among high-risk children to prevent child maltreatment, or noise control and hearing protection to prevent hearing impairment, all of which are Canadian "A" recommendations).

- Communicable disease outbreak management and case management (e.g., neuraminidase inhibitor prophylaxis to prevent the spread of influenza during an outbreak, a Canadian "A" recommendation).
- A routine care service in a hospital or community care facility (e.g., ocular prophylaxis for newborns to prevent ophthalmia neonatorum [Canadian "A"], or mouth rinses in nursing homes for dental hygiene).
- A treatment (e.g., medical therapy in the treatment of diagnosed depression to prevent suicide).
- A general recommendation for people that was not appraised as a service provided by a provider (e.g., being physically active is good for health).

Application of these exclusion criteria meant that some of the Canadian "A" recommendations were set aside, as shown in Table 1.

Table 1: Canadian "A" Recommendations Excluded from Further Consideration as Not Meeting the Definition of Clinical Prevention Services for the General Population

Excluded Item	Reason
Fluoride (various forms) for preventing dental caries: • water fluoridation for preventing coronal and root caries; • fluoride supplements in low fluoride areas with careful adherence to low dosage schedules; • professional topical fluoride applications and self-administered fluoride mouth rinses for those with very active decay or at high future risk for dental caries; • fluoride dentifrices, with special supervision and the use of small amounts for young children; • professionally-applied fissure sealants for selective use on permanent molar teeth soon after their eruption	 Public health measure General recommendation Public health or private dental service – the latter is not covered by MSP General recommendation Public health or private dental service – the latter is not covered by MSP
Use medical therapy in the treatment of diagnosed depression	Treatment
Screen postmenopausal women with low bone mineral density to reduce their risk of osteoporotic fractures	Case management, as they are already identified as having low bone density
A period of close observation for newborns with clinically detected developmental dysplasia of the hip	Case management of an identified problem
Neuraminidase inhibitor prophylaxis in the household contacts within 36 to 48 hours of symptom onset of the household index case of influenza	Case/outbreak management with prophylactic medication
Early daily administration of amantadine to high-risk persons and to unvaccinated persons exposed to influenza A virus during an outbreak of influenza reduces the spread of the infection	Case/outbreak management with prophylactic medication
Isoniazid prophylaxis for twelve months for household contacts of active cases of tuberculosis and for persons with positive tuberculin skin tests who have documented skin test conversion or HIV infection; prophylactic therapy is not recommended for persons with positive tuberculin skin tests over the age of 35 years unless they have a medical condition associated with an increased risk of reactivation where prophylaxis is recommended	Case/outbreak management with prophylactic medication
Dipstick screening for proteinuria in the prevention of end-stage renal disease for insulin dependent diabetes mellitus patients	Case management of an identified disease

Excluded Item	Reason
When caregivers or informants describe cognitive decline in an individual, cognitive assessment and careful follow-up are indicated	Case management of an identified condition
Refer elderly patients to multidisciplinary post-fall assessment teams, where such a service is available	Case management of an identified problem
Offer tuberculosis screening to persons in Canada at high risk of infection with the tubercle bacillus	Service targeted at a high-risk population. Beyond the scope of this review therefore dropped from further consideration as a priority at this time.

An additional five Canadian "A" recommendations shown in the list in Appendix C were excluded as requiring further action. These recommendations included isolated interventions that are regularly bundled into either broader perinatal care recommendations or well-baby or child recommendations. Therefore, these interventions are recommended for further review before being included into the Lifetime Prevention Schedule. These services are shown in Table 2. The remaining list of "A" recommendations went on to the next level of analysis—assessing population level impacts and costs.

Table 2: Canadian "A" Recommendations Excluded from Further Consideration as Requiring Follow-up Consolidation and Alignment with More Recent Evidence Reviews

Item Not Considered	Comments
Folic acid supplementation in women capable of becoming pregnant to prevent neural tube defects	Largely accomplished through fortification of flour, or as part of routine prenatal care. Prenatal care as a whole is part of the recommended Lifetime Prevention Schedule (LPS).
Counselling on breast feeding and/or peripartum interventions to increase frequency of breast feeding in pregnant women (or peripartum period) to prevent gastrointestinal and respiratory infection in the newborn	Part of routine prenatal and post-partum care. Prenatal care as a whole is part of the recommended LPS. Follow-up with the Perinatal Health Program should be done to determine if the LPS should include perinatal vs prenatal care to include items such as this.
Repeated examination of hips and hearing (using parental questioning and the clap test)	A new universal infant hearing screening program has been introduced in BC, more sophisticated than the clap test. Examination of hips requires further investigation with respect to population impact and cost, but is part of routine well baby care. Follow-up with the PHP is required to determine whether the hip exam is more logically grouped as part of perinatal care or well-baby care.
Repeat examination of the eyes for strabismus during well-baby visits, especially during the first six months	This recommendation requires further investigation with respect to population impact and cost, but is part of routine well-baby care.
Anticipatory guidance particularly with regard to night-time crying beyond the expected age during all well-baby visits	This recommendation requires further investigation with respect to population impact and cost, but is part of routine well-baby care.

4.2 Assessing Population-Level Impacts and Costs

To better understand the potential population-level impacts and costs of the remaining potential clinical prevention services, the committee examined research conducted by Partnership for Prevention and HealthPartners Research Foundation in the United States. This was the only research found that attempted to further prioritize clinical prevention services that had been demonstrated to be clinically effective.

Their research ranked 25 evidence-based clinical prevention services. In their review, they chose clinical prevention services that were recommended by

- The United States Preventive Services Task Force (USPSTF) for the general population (both category A and some B).
- The Advisory Committee on Immunization Practices (ACIP) for the general population.
- The USPSTF for persons at high risk for cardiovascular disease (both category A and some B).

Clinical prevention services were excluded by HealthPartners if:

- The USPSTF recommended against providing the service or they found insufficient evidence to recommend the service.
- The clinical prevention services had not been reviewed by the USPSTF prior to December 2004.
- The service was a community (or population-based) preventive service or program.

For each of the 25 clinical prevention services evaluated by HealthPartners, the associated clinically preventable burden (CPB) and cost-effectiveness (CE) was estimated. CPB is defined as the total quality-adjusted life years (QALYs) that could be gained in a typical practice if the clinical prevention service were delivered at recommended intervals to a US birth cohort of 4 million individuals over the years of life that a service is recommended (scored out of 5, where 5 is more than 360,000 QALYs gained in a population of 4 million). CE is defined as the average net cost per QALY gained in a typical practice by offering the clinical prevention service at recommended intervals to a US birth cohort over the recommended age range (also scored out of 5, where 5 is cost saving).

In the models developed to estimate CPB and CE for each service, the level of adherence to the recommended treatment was taken into account. Thus, for example, despite substantial burden of disease, obesity screening and diet counselling received low scores due to poor adherence with recommendations to change behaviours.

Clinically preventable burden measured the total potential health benefits from the service among both those who have received the service and those who have not yet received it. For a service with high utilization rates and high effectiveness, such as childhood immunizations, the remaining burden of disease in the US population may be relatively small. Using total health benefits rather than just the benefit gained from increasing the use of the service leads to a more accurate reflection of the overall importance of each service.

As shown in Table 3, 15 of the 25 services received a combined score of 6 or higher out of a maximum score of 10.

Table 3 – Ranking of CPS

Rankings of Preventive Services for the US Population			
Clinical Prevention Service	**CPB**	**CE**	**Total**
Discuss daily aspirin use – men 40+, women 50+	5	5	10
Childhood immunizations	5	5	
Smoking cessation advice and help to quit – adults	5	5	
Alcohol screening and brief counselling – adults	4	5	9
Colorectal cancer screening – adults 50+	4	4	8
Hypertension screening and treatment – adults 18+	5	3	
Influenza immunization – adults 50+	4	4	
Vision screening – adults 65+	3	5	
Cervical cancer screening – women 20–75	4	3	7
Cholesterol screening and treatment – men 35+, women 45+	5	2	
Pneumococcal immunizations – adults 65+	3	4	
Breast cancer screening – women 40+	4	2	6
Chlamydia screening – sexually active women under 25	2	4	
Discuss calcium supplementation – women	3	3	
Vision screening – preschool children	2	4	
Discuss folic acid use – women of childbearing age	2	3	5
Obesity screening – adults	3	2	
Depression screening – adults	3	1	4
Hearing screening – adults 65+	2	2	
Injury prevention counselling – parents of children ages 0-4	1	3	
Osteoporosis screening – women 65+	2	2	
Cholesterol screening – men < 35, women < 45 at high risk	1	1	2
Diabetes screening – adults at risk	1	1	
Diet counselling – adults at risk	1	1	
Tetanus-diphtheria booster – adults	1	1	

For those scoring 6 and higher, Table 4 shows their original USPSTF evidence grade and, where available, their Canadian Task Force on Preventive Health Care (CTFPHC) evidence grade.

Table 4 – USPSTF and CTFPHC Grading of Recommendations Scoring 6 and Above

Clinical Prevention Services	**USPSTF Recommendation**	**CTFPHC Evidence Grade (and year)**	**US Ranking**		
			CPB	**CE**	**Total**
Discuss daily aspirin use – men 40+, women 50+	A	C (1994)	5	5	10
Childhood immunizations	A	A (1994)	5	5	
Smoking cessation advice and help to quit – adults	A	A (1994)	5	5	
Alcohol screening and brief counselling – adults	B	n/a	4	5	9
Colorectal cancer screening – adults 50+	A	A (2001)	4	4	8
Hypertension screening and treatment – adults 18+	A	B to case find in 21-64, A to treat in 21-64 (1994)	5	3	
Influenza immunization – adults 50+	A (65+)	A (2004)	4	4	
Vision screening – adults 65+	B	B* (1995)	3	5	
Cervical cancer screening – women 20–75	A	B (1994)	4	3	7
Cholesterol screening and treatment – men 35+, women 45+	A	C (1994)	5	2	
Pneumococcal immunizations – adults 65+	A	A** (1994)	3	4	

Clinical Prevention Services	USPSTF Recommendation	CTFPHC Evidence Grade (and year)	US Ranking		
			CPB	CE	Total
Breast cancer screening – women 40+	B	A (50-69, 1998), C (40-59, 2001)	4	2	6
Chlamydia screening – sexually active women under 25	A	B (high-risk groups, 1996)	2	4	
Discuss calcium supplementation – women	***	n/a	3	3	
Vision screening – preschool children	B	B (1994)	2	4	

Notes:
n/a = not available
* Snellen sight chart.
** But only for immunocompetent patients aged 55 years or more in institutions.
*** Osteoporosis preventive medication (calcium supplementation) is under review and does not appear in the 2008 USPSTF Guide.

4.3 Determining Validity in British Columbia

The next step was to determine if these US rankings were generally valid in BC. H. Krueger & Associates applied US models for 10 of the 15 highest ranked services to a BC birth cohort of 40,000 individuals (only 10 models were available from US team) (H. Krueger & Associates, 2008). This produced very similar results for CPB and CE and resulted in no real differences in ranking (see Tables 5 and 6), providing a considerable degree of confidence that the estimates from the US are applicable in Canada, in particular in BC, meaning that it is reasonable to include all 15 of the high-ranking US services assessed by HealthPartners, even if a BC-specific assessment has not (yet) been done.

Table 5 – Comparison of US and BC Rankings Based on Clinically Preventable Burden

Priorities among Effective Clinical Prevention Services Rankings Based on Clinically Preventable Burden (CPB)					
Rankings of Clinical Prevention Services	Value	US Rank	1% of US	BC	
				Value	Rank
Smoking cessation advice and help to quit – adults	2,471,000	1	24,710	20,372	1
Discuss daily aspirin use – men 40+, women 50+	1,479,000	2	14,790	12,489	2
Hypertension screening and treatment – adults 18+	656,000	3	6.560	5,641	3
Cholesterol screening and treatment – men 35+, women 45+	365,000	4	3,650	3,052	7
Breast cancer screening – women 40+	356,000	5	3,560	3,885	4
Colorectal cancer screening – adults 50+	338,000	6	3,380	3,851	5
Influenza immunization – adults 50+	275,000	7	2,750	3,270	6
Cervical cancer screening – women 20–75	228,000	8	2,280	1,532	9
Alcohol screening and brief counselling – adults	176,000	9	1,760	1,822	8
Pneumococcal immunizations – adults 65+	36,000	10	360	327	10

Note: The BC cohort is 1 percent of the US cohort, so the CPB for BC would be expected to be 1 percent of the US total (shown in column 4).

In Table 5, the shaded row indicates where there is a difference in ranking greater than 1 place. Cholesterol screening and treatment ranked lower in BC as mortality and morbidity for cardiovascular disease are lower than in the US; mortality due to heart disease is 8 percent lower in BC and morbidity due to heart disease is 25 percent lower.

Table 6 – Comparison of US and BC Rankings based on Cost-Effectiveness

Priorities among Effective Clinical Prevention Services US versus BC, Rankings Based on Cost-Effectiveness ($/QALY)				
Rankings of Clinical Prevention Services	**US**		**BC**	
	Value	**Rank**	**Value**	**Rank**
Alcohol screening and brief counselling – adults	-$21,300	1	-$24,400	1
Discuss daily aspirin use – men 40+, women 50+	-$7,700	2	-$5,500	2
Smoking cessation advice and help to quit – adults	-$2,000	3	-$800	4
Pneumococcal immunizations – adults 65+	-$1,900	4	-$2,000	3
Influenza immunization – adults 50+	$5,800	5	$11,900	6
Colorectal cancer screening – adults 50+	$11,900	6	$11,100	5
Cervical cancer screening – women 20–75	$17,600	7	$14,800	7
Hypertension screening and treatment – adults 18+	$31,500	8	$24,400	8
Cholesterol screening and treatment – men 35+, women 45+	$38,300	9	$43,200	10
Breast cancer screening – women 40+	$47,900	10	$29,400	9

In Table 6, the shaded rows indicate areas where there may be cost savings.

4.4 Identifying BC Priorities

The results of the prioritization process, **in combination with the scope of existing organized clinical prevention services programs in BC, as described in Section 3,** resulted in the committee identifying the following broad priorities for British Columbia.

Renewed Focus on Existing Clinical Prevention Services

These are existing programs in BC, where the focus should be on increasing their uptake to reach levels that are as good as or better than the best in the world.

- Prenatal care (as per the BC Perinatal Health Program)
  - Includes prenatal genetic screening
- Newborn screening
  - Genetic, metabolic, hearing
- Childhood immunization (as per the BC Immunization Schedule)
- Childhood screening
  - Vision, dental health
- Cancer screening (as per the BC Cancer Agency)
  - Colon, cervix, breast
- Adult immunization (as per the BC Immunization Schedule)
  - Influenza, pneumococcal, tetanus/diphtheria (dT)

New Priorities for Immediate Action

Two new priorities are identified for immediate action:

- Cardiovascular disease (CVD) prevention (includes ASA prophylaxis, hypertension and lipid screening).
- Smoking cessation screening, brief advice and help to quit.

That is because for all four of the components in these two priorities there is strong evidence of clinical effectiveness, positive impact on population health and cost-effectiveness. There is also an existing GPAC clinical guideline for BC and a GPSC fee for a limited number of CVD risk assessments per physician (maximum of 30 patients per physician per calendar year), but there is as yet no organized program or approach to implementation (such as recall or reminder systems).

Potential New Priority Services to Investigate Further

Several new services should be given priority consideration for inclusion in the Lifetime Prevention Schedule (LPS). However, they currently lack either a guideline or an existing program to build on, so are not included in this first round.

Alcohol screening and brief counselling in adults	Ranks very high for both CPB and CE, but only a B for clinical effectiveness in the USPSTF (and not examined by the CTFPHC), and there is no guideline or existing program.
Screening for STIs in sexually active young adults (chlamydia, gonorrhea, HIV)	The Prevention Partners analysis was confined to chlamydia screening. However, gonorrhea screening in high-risk populations[13] is an "A" recommendation in the CTFPHC and a "B" in the USTFPHS, while HIV screening for high-risk groups[14] is a Canadian and US "A" recommendation. There are Canadian Guidelines on STIs that specify recommendations on screening.[15] There is no organized province-wide program or approach, but it may make sense to screen for all these conditions together in high-risk groups.
Vision screening in adults 65+	There is level B evidence from both Task Forces, but no guidelines or organized programs/approaches. This intervention ranked 8 out of 10 in the Health Partners analysis for combined cost effectiveness and impact on clinically preventable burden.
Well-baby care – including hip exams, repeat examination of the eyes for strabismus and anticipatory guidance particularly with regard to night-time crying beyond the expected age.	There is some evidence regarding clinical effectiveness (the three elements are Canadian category "A" recommendations) but not for clinically preventable burden or cost-effectiveness. Also, these separate interventions may be more appropriately captured as part of well-baby care. The Rourke Baby Record contains evidence-based guidelines and information for comprehensive well-baby care and is endorsed by the College of Family Physicians of Canada and the Canadian Paediatric Society.[16] While there is no standard, organized and universal approach to well-baby care in BC, it is provided by both family physicians (many of who presumably use the Rourke charts, but this is not known) and public health nurses, who visit nearly all newborn infants of first-time mothers and conduct a number of infant, family and home assessments based on a standard assessment approach. What is currently lacking, and should be considered, are the merits of a standard, organized, universal and evidence-based assessment of child development (and relevant family and home conditions for all children 0–6 years old).

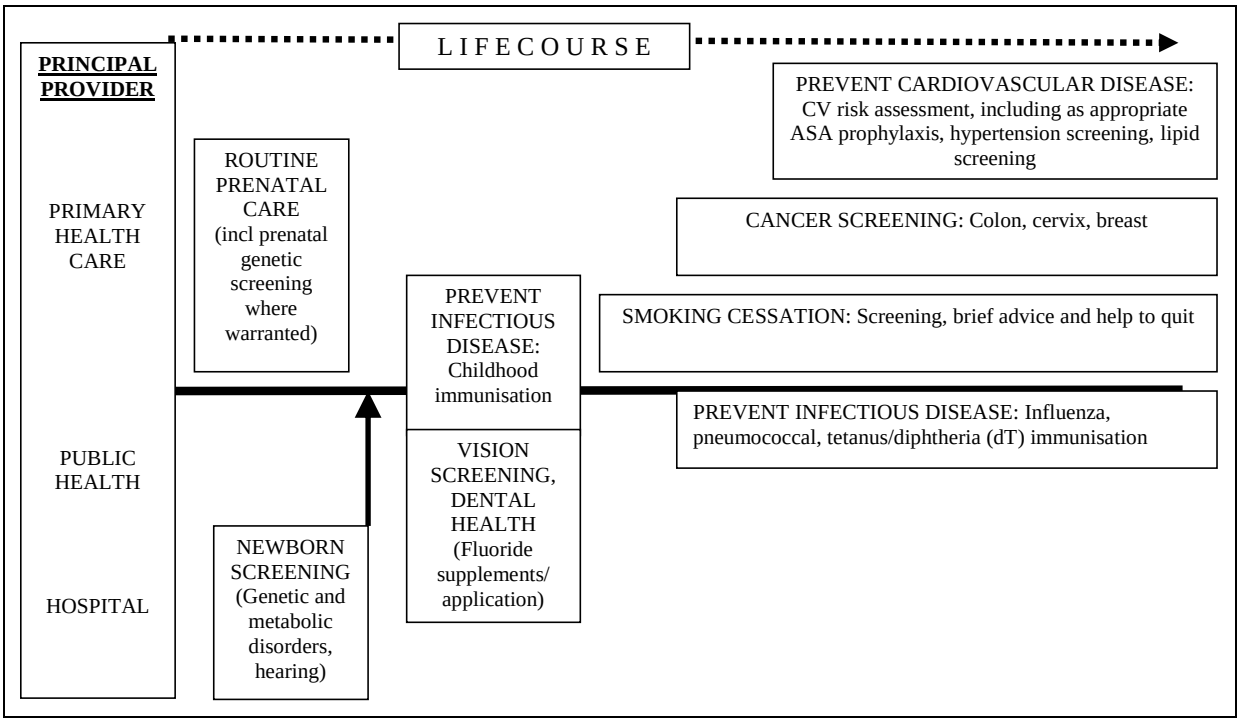
[13] Individuals under age 30 years with at least 2 sexual partners in the previous year or age ≤ 16 years at first intercourse, prostitutes, sexual contacts of individuals known to have a sexually transmitted disease (Beagan & Wang, 1994).
[14] Homosexual and bisexual men, prostitutes, injection drug users, people with sexually transmitted diseases, people receiving blood products between 1978 and 1985, sexual contacts of HIV-positive people and people from countries with a high prevalence rate of HIV infection (Wang, 1994).
[15] http://www.phac-aspc.gc.ca/std-mts/sti_2006/sti_intro2006-eng.php.
[16] http://www.rourkebabyrecord.ca/.

4.5 Recommendations for Change

As a result of examining what is worth doing, the committee is making the following recommendations.

1. Adopt a Lifetime Prevention Schedule (LPS), which defines the priority clinical prevention services throughout the life course that will be supported for the general population. Selected screening services for high-risk individuals will continue to be covered as they are now.
2. Endorse the priority services to be included in the LPS as those identified initially by the Clinical Prevention Policy Review (shown in Figure 2).

Figure 2 - Proposed Lifetime Prevention Schedule for BC



3. Establish a Clinical Prevention System Working Group (accountability structure to be determined) to maintain the LPS and allocate resources within the Ministry of Health Services and the Ministry of Healthy Living and Sport to support the Working Group.
   - To ensure consistency, the Working Group should include representation from key existing organized preventive services and evidence-review bodies: BC Perinatal Health Program, BC Immunization Policy Committee, BC Cancer Agency, GPAC, etc., in addition to staff from the ministries and health authorities, practitioners and academics.
   - Continue to involve national and international experts by building on the Expert Reference Group established for the Clinical Prevention Policy Review.

4. Ensure subsequent changes to the LPS are recommended by the Clinical Prevention System Working Group with representatives from across the system. New services will be identified on the basis of their:
   - clinical effectiveness;
   - potential population health impact (as measured by the clinically preventable burden of disease or other suitable measure); and
   - cost-effectiveness.

5. Assess as a priority, for possible inclusion in the LPS, four potential new services:
   - Alcohol screening and brief counselling in adults;
   - Screening for STIs in sexually active young adults;
   - Vision screening in adults 65+; and
   - Well-baby care.

6. Assess as a priority, for possible inclusion in the LPS, services reviewed by the USPSTF since 2008, the date of the material found in the appendices. Particular attention should also be paid to services reviewed since 2004, since the HealthPartners analysis of clinically preventable burden and cost-effectiveness only included items prior to that date. Additionally, as the Canadian Task Force on Preventive Health Care becomes re-established and begins to develop new or updated guidelines and recommendations, their "A" graded guidelines and recommendations will also need to be assessed for inclusion in the LPS.

5.0 What is the Best Way to Provide What is Worth Doing? (Practice Level)

The next task for the committee was to understand any gaps between current and optimal practice in BC with respect to the services in the proposed Lifetime Prevention Schedule (LPS) and identify any evidence that could guide the optimal delivery of clinical prevention services going forward.

5.1 Service Gap

There are service gaps. Not all the priority services identified in the LPS are offered in an organized way, and some depend on "random acts of prevention". There are also some gaps in utilization, as not all those who should receive the service do receive it (and often, it is those who are most at-risk and/or most vulnerable who do not get the service).

The Organization Gap

Of the services identified in the LPS, a number currently have some aspect of a planned, organized, systematic approach to delivery. In the case of these programs, the challenge is how to improve their performance, so that they achieve the highest levels of participation anywhere in the world, and/or achieve the target implicit in the work of the Partnership for Prevention, namely 90 percent of those eligible for the service use it.

These services are listed here. The organization identified in brackets provides leadership:

- Prenatal care (Perinatal Health Program, PHSA)
    - Including prenatal genetic screening (Perinatal Health Program, PHSA)
- Neonatal screening for genetic and neonatal disorders (Neonatal Screening Program, PHSA)
- Newborn hearing screening (PHSA)
- Childhood immunization (BC Centre for Disease Control, PHSA)
- Child vision screening (MHLS/health authorities)
- Dental screening and health (MHLS/health authorities)
- Cancer screening (BC Cancer Agency, PHSA)
- Adult immunization (BC Centre for Disease Control, PHSA)

The weakest area is primary prevention of cardiovascular disease (CVD). Yet this cluster

- Includes two of the three interventions rated as a 10 by HealthPartners Research Foundation: one (smoking cessation) is rated as "A" by both Task Forces, while the other (Aspirin prophylaxis) was rated "A" by the US Task Force but has not yet been considered by the Canadian Task Force.
- Has been the focus of a new GPAC guideline.
- Has been identified by the GPSC's Prevention Committee as the priority focus, and the Prevention Committee has invested the $5 million in prevention funding established in the 2006 Government/BCMA Agreement towards this focus.
- Could be thought of as the "missing" clinical prevention piece of ActNow BC.

The existence of the GPAC guideline does not of itself constitute a provincial program. There needs to be an organized effort to implement or support the implementation of the service throughout the province.

Table 7 summarizes the extent to which there is supportive infrastructure/organization in place to ensure the CPS covers the population.

Table 7 – Extent of Supportive Infrastructure

CPS	Service explicitly organized to reach intended targets	
	Yes	No
Routine prenatal care (including prenatal genetic screening)	✓	
Newborn screening (genetic, metabolic and hearing)	✓	
Childhood immunizations	✓	
Childhood vision screening	✓	
Childhood dental health	✓	
Breast cancer screening	✓	
Cervix cancer screening	✓	
Colon cancer screening		✓
Tetanus/diphtheria (dT)		✓
Influenza and pneumococcal vaccine		✓
Smoking cessation		✓
ASA prophylaxis		✓
Hypertension screening		✓
Lipid screening		✓

The Utilization Gap

How well are we doing in BC with respect to delivering the services identified in the LPS? Information on utilization of some services was collected during the review process. This allows for a comparison between the proportion of the population receiving selected CPS in BC and utilization in other jurisdictions, including the location exhibiting "best in the world" rates that the team could find during its research.

These data were compiled and used in the analysis documented in *Establishing Priorities among Effective Clinical Prevention Services in British Columbia: Summary and Technical Report* (H. Krueger & Associates, 2008). In each case, the rate is an estimate derived from a particular study or survey as shown in the notes to Table 8 (found in Appendix D) and explained in more detail in the original report.

Although the shaded boxes show there is significant room for improvement in the delivery of some CPS in BC, these comparisons should be made with some caution. Each jurisdiction may define eligibility for a service differently (e.g., the age range for which mammograms are available for women varies from country to country), and the jurisdictions may define and count services differently.

Table 8 – Comparison of Estimated Utilization Rates (where data available)

CPS	BC Research	US Research	Best in World Research
Breast cancer screening – women 40+	38% ages 40–49 50% ages 50-69	57% ages 40–49 63% ages 55+	85-95% ages 40–74 (Finland)
Cervical cancer screening – women 20-75	73.3%	77.5%	90% ages 30–60 (over 5 years in Finland)
Colorectal cancer screening – adults 50+	16.3%	17.6%	71% (Finland)
Influenza immunization – adults 50+	33.4% ages 50–64 64% ages 65+	34.2% ages 50–64 57.4% ages 65+	79.1% ages 65+ (Australia
Pneumococcal immunization – adults 65+	38.2%	62%	
Smoking cessation advice and help to quit – adults	34.9%	35%	Advice 47.5% Aids 26.1%
Discuss daily aspirin use – men 40+, women 50+	15.7%	24.5%	33%
Hypertension screening and treatment – adults 18+	39%	58.4%	66% (Ont.)
Cholesterol screening and treatment – men 35+, women 45+	33.5% men 38% women	70.8%	

Source: H. Krueger & Associates. (2008, November). *Establishing Priorities among Effective Clinical Prevention Services in British Columbia: Summary and Technical Report*.

5.2 Evidence and Best Practice

The committee commissioned two literature and best practice reviews with respect to delivery of CPS broadly and CVD prevention specifically. Their key considerations:

- What is the most cost-effective delivery platform and what needs to be changed in order to move in that direction?
- Within the selected delivery platform, what is the best way to maximize the quality of the service?
- What do we need to measure and for how long in order to be assured that the changes have been successful?

Both reviews found a paucity of evidence with respect to delivery of CPS; it seems that little research has been done on this topic. These reviews led, in part, to the committee articulating the following guiding principles for the delivery of CPS.

Guiding Principles for Delivery of Clinical Prevention Services

- Effective, evidence-based, patient-centred clinical prevention is a critical component of evidence-based care and a marker of quality care.
- Preventive services and screening tests supported by evidence of clinical effectiveness will be considered for funding. Where capacity or resources are limited, we will invest in those services that are of highest priority in terms of clinically preventable burden of disease and cost-effectiveness.
- The most cost-effective approach to provision of clinical prevention services will be used. This will take into account the need to provide services for those who need them most, because the highest gains may be in the high-need areas.
- Those clinical prevention services that are appropriately provided through primary care should be integrated into primary care.
- Particular attention will be paid to ensuring that services are available to those who are most at-risk, marginalized or hard-to-reach.

H. Krueger & Associates (2007b) also identified the following criteria to guide the selection of an optimal delivery platform:

- ***Investment*** – long-term and immediate resources should match the disease burden and clinically preventable burden related to a particular CPS.
- ***Consistency*** – reflecting and influencing the guidelines and regulations of other relevant authorities.
- ***Leveraging*** – taking advantage of, and calling for, community and policy supports that will help to maximize the success of any CPS.
- ***Evaluation-centred*** – selection of measures and means of monitoring that will ensure pilot projects and delivery platforms are an appropriate and beneficial strategy.
- ***Mobilization*** – the degree of utilization of the best platforms (as estimated from current or newly developed evidence).
- ***Flow*** – assessment of and response to bottlenecks in any multi-step and/or multi-platform system.
- ***Enhancement*** – the extent of application of the sometimes rich understanding about how a particular platform may generate optimal coverage and quality of prevention.
- ***Transparency*** – a clear protocol for providers and client to follow, possibly tied to a life course model.
- ***Information access*** – the degree that any implementation facilitates and incorporates real-time client information that can be used for invitations, reminders and research and evaluation.
- ***Population-based*** – do the delivery and monitoring mechanisms advance the cause of population coverage, including among currently under-served or otherwise at risk groups.

Additionally, information from the USPSTF highlights the importance of practice supports such as client reminder and recall systems, and provider assessment and feedback for the delivery of immunization programs and cancer screening (see Appendix E).

5.3 Recommendations for Change

As a result of examining "what is the best way to provide what is worth doing," the committee is making the following recommendations.

1. Provide all the services in the LPS in a systematic way within the province, recognizing that the form of that organization will need to be tailored to the intervention and the existing mechanism for delivery, where one exists.
    - For example, the way in which ASA prophylaxis might be organized provincially will be very different from how Pap smears or neonatal genetic testing is organized.

2. Ensure all delivery approaches are based upon evidence and best practice, and implemented using a proven quality improvement approach. The guiding principles and criteria in section 5.2 of this report can inform the development of organized provincial services and delivery platforms.

3. Develop an information technology strategy to support the Lifetime Prevention Schedule that may include:
    - Population registries that enable providers and health system managers to identify those who are eligible for a given service.[17]
    - Clinical prevention flow sheets as part of the electronic medical record.
    - Evidence-based patient recall and physician reminder systems for the services included in the LPS.
    - The LPS and a personal prevention plan in any web-based personal health plans that are developed.
    - Information technology infrastructure within providers' offices.

4. Ensure the optimal delivery of existing clinical prevention services that are part of the LPS by seeking business cases from the respective organizations regarding their strategy to improve rates and reach those not currently receiving the service.

5. Partner with GPSC to determine the optimal delivery platform and implementation approach for the clinical prevention services related to the primary prevention of cardiovascular disease that are identified in the LPS. Utilize the results of GPSC's assessment of the implementation of their pilot CVD risk assessment fee, and build on the work of GPAC in developing the guideline.

[17] The Ministry of Health Services and the Working Group will need to seek legal advice regarding potential privacy issues.

6.0 What is the Best Way to Organize/Plan/Manage the System in Order to Do What is Worth Doing?

The final task before the committee was to identify the systemic changes and supports at the provincial level required to optimize CPS and achieve the stated vision.

6.1 Guidance from High Performers

Williams, Krueger and Black (2008) conducted key informant interviews with high performing health systems in the US: Group Health, Kaiser Permanente, and Veteran's Affairs. They also interviewed leaders in three national systems: England (National Institute for Health and Clinical Excellence), Australia (Primary and Ambulatory Care Division, Department of Health and Aging), and New Zealand (Ministry of Health).

The purpose was to inform the creation of a mechanism for:

- The ongoing review and evaluation of the evidence with respect to clinical prevention, including implementation.
- Reviewing proposals for new or amended clinical prevention manoeuvres, services or programs.
- Making recommendations with respect to new or amended preventive manoeuvres, services or programs.
- Monitoring and evaluating the implementation of preventive services, including their economic and health status impacts.
- Reviewing and evaluating this process/mechanism on a regular basis.

Overall there were three key findings: the need for accountability, the importance of information systems, and focusing on doing a few things well. Their review concluded with a series of process and system-level elements that should be integral to any ongoing mechanism.

Process Elements

- Commit to rigorous processes for reviewing evidence on effectiveness and efficiency.
- Focus on a few high-impact areas and interventions.
- Select delivery platforms using formal review processes.
- Pursue measures to maximize effectiveness and efficiency.
- Provide target-oriented performance feedback to CPS providers.
- Institute mechanisms of program evaluation.

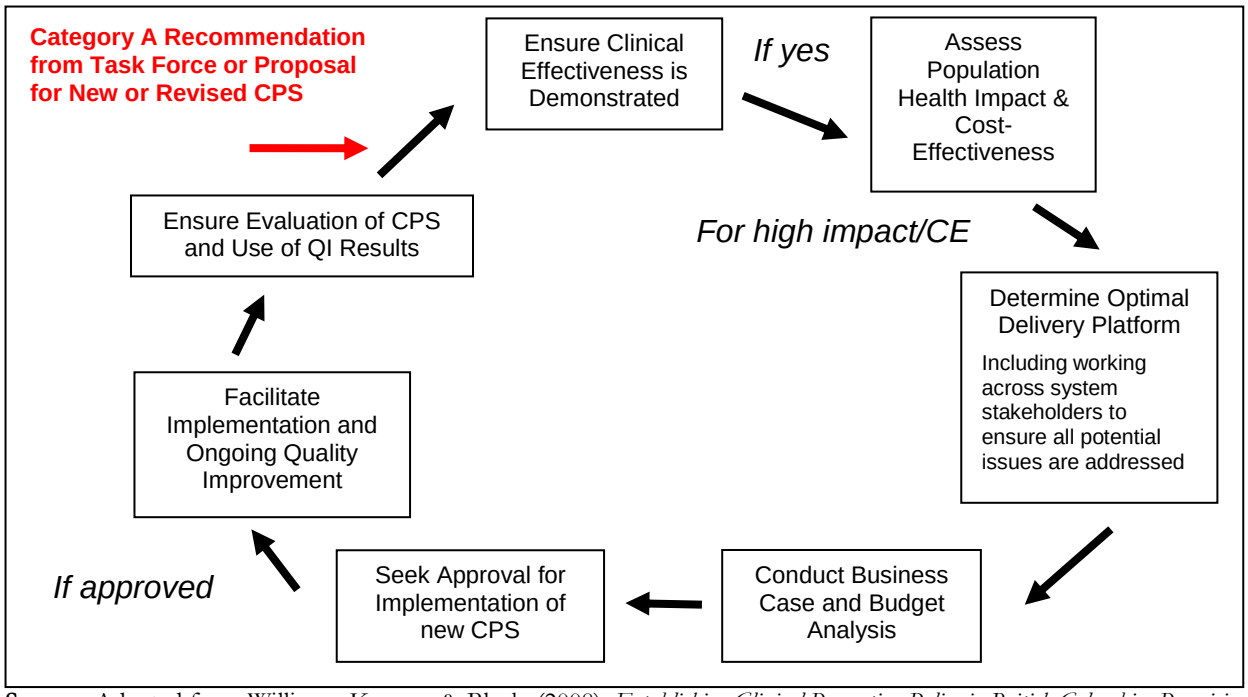
System-Level Elements

- Form a BC clinical prevention policy group.
- Develop strategies for team-based delivery of CPS.
- Strengthen approaches that promote continuous quality improvement related to CPS.
- Support provincial initiatives to create a more effective information system especially registries, practitioner reminders, patient recall, etc.

- Ensure education and training of providers.
- Provide education for the public including web-based tools.
- Develop outreach/targeted strategies for the "hard to reach".

Williams et al. (2008) integrated their findings into a proposed mechanism for the ongoing management of a high performing system of CPS in BC. The main functional elements that need to be in place in order to move forward, based on their report, are shown in Figure 3.

Figure 3 - Proposed Ongoing Mechanism for BC



Source: Adapted from Williams, Krueger & Black. (2008). *Establishing Clinical Prevention Policy in British Columbia: Promising Systematic Approaches to Planning.*

Overall accountability for this mechanism would lie with the Clinical Prevention System Working Group established under Recommendation 3. The Working Group's specific responsibilities would include:

- Recommend any new additions to the Lifetime Prevention Schedule based on
  - Category A recommendations from Canadian and US Task Forces or recommendations or guidelines from a body such as the BC Cancer Agency, Perinatal Health Program, Immunization Policy Committee or GPAC; and
  - assessment of population health impact (clinically preventable burden) and cost-effectiveness relative to other clinical prevention services in the Lifetime Prevention Schedule.
- Facilitate review and analysis of optimal delivery platforms and implementation approaches for new preventive services with a focus on empowered primary health care delivery teams that have responsibility for prevention targets for defined populations
- Facilitate consensus development among agencies where there are overlapping interests (e.g., immunization recommendations included in chronic disease management guidelines).

- Ensure business case and budget analysis is completed.
- Facilitate a quality improvement approach to adoption/implementation of clinical prevention services, including the training and coaching of providers.
- Recommend any changes to clinical prevention services in BC based on ongoing quality improvement and evaluation results.
- Monitor clinical prevention research broadly to maintain currency on results for clinical, operational and cost-effectiveness.

The Working Group will require staff resources and/or contract support responsible for:

- Determining budget implications of adopting LPS, both existing and new services.
- Working with GPAC to develop Clinical Guidelines for all services in the LPS for which suitable BC or Canadian Guidelines do not currently exist.
- Supporting information management/technology development
    - Ensuring policy alignment with other eHealth initiatives.
    - Working to resolve any outstanding privacy concerns.
    - Representing CPS in all discussions regarding eHealth.
- Developing public awareness and education strategies to inform people of the value of using the services in the LPS, and to encourage them to adopt the LPS.
- Developing outreach strategies to reach and bring in those who are hard to reach.
- Working with the Practice Support Program to support the development of a prevention module.
- Working with the Ministry of Advanced Education and the university and college programs training health professionals to ensure clinical prevention is a core component in the education of medical students, family practice residents and other relevant health science students, and in the continuing education of practitioners.
- Working with the professional Colleges and other certifying bodies to ensure that competency in clinical prevention is required for maintenance of certification where appropriate.
- Establishing linkages with health human resources planning.
- Establishing linkages with key stakeholders within the ministries.

6.2 Recommendations for Change

As a result of examining "what is the best way to organize/plan/manage the system in order to do what is worth doing." the committee is making the following recommendations:

1. Require all proposals for new or revised clinical prevention services to be reviewed by the Clinical Prevention System Working Group, which will make recommendations regarding proceeding to regular budget processes (e.g., Treasury Board submissions, MSC, etc.).

2. Establish a standard proposal format for new or revised services that come to the Clinical Prevention System Working Group, including a consistent methodology for assessment of population health impact and cost-effectiveness, ensuring that comparisons can be made between the proposed interventions.

3. Provide ongoing quality improvement support including dedicated education, training and coaching for clinical prevention service providers and those students at undergraduate and postgraduate levels who are involved in the delivery of preventive health services.

4. Engage with strategic human resources leaders to identify the impact the review recommendations and policy changes may have on future health human resource requirements and planning.

5. Develop a research and evaluation program in collaboration with health service researchers in BC to support the ongoing monitoring of performance and to develop new knowledge about the effective implementation of effective clinical prevention services.

7.0 Conclusion

Despite the emergence of prevention as a health system priority, there is no clear, specific provincial policy on clinical prevention, and barriers exist to implementing effective clinical preventive measures that, as part of a system of quality care, could help improve population health, reduce the burden of disease and enhance the health system's sustainability.

To address these shortfalls, the Clinical Prevention Policy Review focused on answering three key questions with respect to clinical prevention services:

1. What is worth doing?
2. What is the best way to provide what is worth doing? (at the practice level)
3. What is the best way to organize/plan/manage the system in order to do what is worth doing? (at the system level)

Through examination of the current state in BC and a review of best practice and available evidence, the Review Committee has identified the need for, and initial content of, a Lifetime Prevention Schedule; highlighted the requirement for systematic approaches to organizing and delivering the services incorporated within the Lifetime Prevention Schedule; and described an ongoing mechanism for incorporating clinical prevention services evidence reviews and making changes to the Lifetime Prevention Schedule.

The 16 recommendations outlined in this report are framed by the Committee's Vision for the Future and Guiding Principles for Delivery of Clinical Prevention Services, stressing the importance of clinical prevention services and the need for integration with other key health system components such as primary health care.

The committee has articulated an ambitious vision for clinical prevention services in British Columbia, but it is a direction that is both necessary and achievable. Adoption of these recommendations would confirm the importance of prevention broadly and clinical prevention specifically and positions BC well for the future.

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Appendix A – Information about the Canadian and US Task Forces

About the Canadian Task Force on Preventive Health Care

The "gold standard" for reviewing the literature on clinical prevention and making recommendations was first established in Canada. The Canadian Task Force on the Periodic Health Exam was created in 1976, and later re-named the Canadian Task Force on Preventive Health Care. The US Preventive Services Task Force was significantly influenced by the Canadian Task Force, particularly in its development of its methods manual. Other national efforts, such as the "Red Book" produced by the Australian Royal College of General Practitioners, have been based to a significant extent on the work of the Canadian and US Task Forces.

The Public Health Agency of Canada is establishing a renewed Canadian Task Force on Preventive Health Care as part of its mandate for disease prevention and health promotion. The renewed Task Force will build on the previous Task Force's success and international recognition with its 25-year history of pioneering the development of evidence-based guidelines for primary care.

While the previous Task Force's reviews still stand, depending on the manoeuvre, new research may have dated the recommendation. On its reconstitution in Fall 2009, the new Task Force will undertake a topic prioritization and selection process to identify new guideline topics and update previous guidelines.

About the US Preventive Services Task Force

The US Preventive Services Task Force (USPSTF), first convened by the US Public Health Service in 1984, and since 1998 sponsored by the Agency for Healthcare Research and Quality, is the leading independent panel of private-sector experts in prevention and primary care. The USPSTF conducts rigorous, impartial assessments of the scientific evidence for the effectiveness of a broad range of clinical prevention services, including screening, counselling and preventive medications. Its recommendations are considered the "gold standard" for clinical prevention services.

The mission of the USPSTF is to evaluate the benefits of individual services based on age, gender and risk factors for disease; make recommendations about which preventive services should be incorporated routinely into primary medical care and for which populations; and identify a research agenda for clinical preventive care.

The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices publishes recommendations on immunizations for children and adults.

Appendix B – BC Immunization Schedule (February 2009)

Routine Immunization Schedule												
Age Group ⇨ / Vaccine ⇩	**2 Months**	**4 Months**	**6 Months**	**12 Months**	**18 Months**	**4-6 Years**	**Grade 6**	**Grade 9**	**Grade 12**	**Adult**	**65 Years and Over**	**High Risk Program***
Diphtheria, Tetanus, Pertussis, Hepatitis B, Polio, and *Haemophilus influenzae* type b (DTaP-HB-IPV-Hib) Vaccine	✓	✓	✓									
Diphtheria, Tetanus, Pertussis, Polio, Haemophilus influenza Type b (DTaP-IPV-Hib) Vaccine					✓							
Pneumococcal Conjugate (PCV 7) Vaccine	✓	✓		✓								✓*
Hepatitis B Vaccine							✓ If not previously immunized					✓*
Measles, Mumps, Rubella (MMR) Vaccine **a**				✓	✓					✓		
Meningococcal C Conjugate (Men-C) Vaccine	✓			✓			✓ If not previously immunized					✓*
Chickenpox (Varicella) Vaccine **b**				✓		✓ If susceptible	✓ If susceptible					✓*
Human Papillomavirus (HPV) Vaccine							✓	✓ If not previously immunized				
Diphtheria, Tetanus, Pertussis, Polio (DTaP-IPV) Vaccine						✓						
Tetanus, Diphtheria, Pertussis (Tdap) Vaccine								✓				✓*
Tetanus and Diphtheria (Td) Vaccine **c**										✓ every 10 years	✓ every 10 years	
Influenza (Flu) Vaccine **d**			✓ annually for infants 6 to 23 months	✓ annually for infants 6 to 23 months	✓ annually for infants 6 to 23 months						✓ annually	✓* annually
Pneumococcal Polysaccharide Vaccine											✓ 1 time only	✓*

a Children under 18 years of age and women of childbearing age who are susceptible to rubella are eligible for two doses, if not previously immunized. Adults 18 years of age and older born after 1956 are eligible for one dose free of charge. For health and childcare workers (including students in these fields) born after 1956, a second dose is provided free.

b Provided free to children, adolescents, and adults who are susceptible (have not had chickenpox) when they visit public health clinics or family physician offices for other reasons.

Children from 12 months to 12 years of age get one dose of the vaccine. People 13 years of age or older get two doses. The second dose is given four weeks after the first dose.

c A person with a deep dirty wound or bite may need additional tetanus protection after 5 years.

d Annual influenza vaccination is recommended for people at high risk of serious illness from influenza and people able to transmit or spread influenza to those at high risk of serious illness from influenza. For a complete list, see BC HealthFile #12d Influenza (Flu) Vaccine.

***** High-Risk Program: British Columbia has a number of high-risk programs that provide vaccines free of charge for specific groups within the population, such as people with chronic illness or weakened immune systems. For more information about high-risk programs, call your public health unit, doctor, or call **8-1-1**.

Note: The vaccine schedule can change. Talk to your public health nurse, doctor, or call 8-1-1 if you have questions.
Immunization table developed and reviewed by HealthLink BC, the BC Ministry of Healthy Living and Sport, and the BC Centre for Disease Control.

(http://www.healthlinkbc.ca/Routine_Immunization_Schedule.pdf)

Appendix C – Task Force Recommendations

Grades of Recommendations used by the Canadian Task Force on Preventive Health Care and the US Preventive Services Task Force (USPSTF)

Grade of Recommendation	Canadian Task Force	US Task Force (Before May 2007)	US Task Force (Since May 2007)
A	Strong evidence to include in a periodic health examination	**Strongly Recommended**: The USPSTF strongly recommends that clinicians provide [the service] to eligible patients.	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.
B	Fair evidence to include in a periodic health examination	**Recommended**: The USPSTF recommends that clinicians provide [the service] to eligible patients.	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.
C	Conflicting evidence – no recommendation	**No Recommendation**: The USPSTF makes no recommendation for or against routine provision of [the service]	The USPSTF recommends against routinely providing the service. There may be considerations that support providing the service in an individual patient. There is at least moderate certainty that the net benefit is small.
I	Insufficient evidence to make a recommendation (used since 2003)	**Insufficient Evidence to Make a Recommendation**: The USPSTF concludes that the evidence is insufficient to recommend for or against routinely providing [the service]	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be determined.
D	Fair evidence to exclude from a periodic health examination	**Not Recommended**: The USPSTF recommends against routinely providing [the service] to asymptomatic patients.	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.
E	Strong evidence to exclude from a periodic health examination		

Category A Recommendations made by the Canadian Task Force on Preventive Health Care (CTFPHC) and the US Preventive Services Task Force (USPSTF) that meet Clinical Prevention Policy Review criteria

The specific manoeuvres or more general recommendation categories that received either "A" or "B" level support by the two national organizations are shown below. The summary is organized in order of priority, from "double A" to "A and B" to "single A", and chronologically from pregnancy to the elderly.

Double A

Pregnancy	CTFPHC	USPSTF
Smoking cessation intervention including advice, multiple component programs and/or behavioural strategies for pregnant women who smoke. (1993) ********** The USPSTF recommends that clinicians ask all pregnant women about tobacco use and provide augmented, pregnancy-tailored counselling for those who smoke. (2003 and 2009)	A	A
Screening once by culture method for asymptomatic bacteriuria at 12-16 weeks of pregnancy. (1993) ********** The USPSTF recommends screening for asymptomatic bacteriuria with urine culture for pregnant women at 12 to 16 weeks' gestation or at the first prenatal visit, if later. (2008)	A	A
ABO and D (formerly Rh) blood group antibody screening at the first prenatal visit. (1993) ********** The USPSTF strongly recommends Rh (D) blood typing and antibody testing for all pregnant women during their first visit for pregnancy-related care. (2004)	A	A
Advise all women capable of becoming pregnant to increase their consumption of folic acid to 0.4 mg/day. (1990) ********** The USPSTF recommends that all women planning or capable of pregnancy take a daily supplement containing 0.4 to 0.8 mg (400 to 800 μg) of folic acid. (2009)	A	A

Newborn infants	CTFPHC	USPSTF
Universal ocular prophylaxis within 1 hour after birth with 1% silver nitrate solution, 1% tetracycline ointment or 0.5% erythromycin ointment. (1990) ********** The USPSTF strongly recommends prophylactic ocular topical medication for all newborns against gonococcal ophthalmia neonatorum. (2005)	A	A
Newborn screening for PKU. (1993) ********** The USPSTF recommends screening for phenylketonuria (PKU) in newborns. (2008)	A	A
Screen for sickle cell disease in all high –risk (African ancestry) newborns. (1994) ********** The U. S. Preventive Services Task Force (USPSTF) recommends screening for sickle cell disease in newborns. (2007)	A	A
Routine TSH testing among all neonates. (1994) ********** The USPSTF recommends screening for congenital hypothyroidism (CH) in newborns. (2008)	A	A

Children - Immunization (all shown, including those that are not Double A)	CTFPHC	US ACIP (2009)
Hepatitis B*	A (1994)	Recommended
Diphtheria-tetanus-pertussis*	A (1994)	Recommended
Inactivated polio vaccine or oral polio vaccine*	A (1994)	Recommended
Measles-mumps-rubella*	A (1994)	Recommended
Hemophilus influenzae Type b	A (1994)	Recommended
Varicella zoster virus vaccine *	A (1999)	Recommended
Influenza vaccination*	A (2004)	Recommended
Meningococcal*	-	Recommended
Pneumococcal*	E (1998)	Recommended
Rotavirus	-	Recommended
Hepatitis A	-	Recommended

* Included in BC immunization schedule. See Appendix B for details.

Note: The USPSTF used to rate immunizations but no longer does so, to avoid duplication; it has not updated its 1996 recommendations. The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) publishes recommendations on immunization for children and adults.

Adults - General	CTFPHC	USPSTF
Smoking cessation counselling and follow-up visits; nicotine replacement therapy may be offered as an adjunct. (1994) ********** The USPSTF recommends that clinicians ask all adults about tobacco use and provide tobacco cessation interventions for those who use tobacco products. (2003 and 2009)	A	A
Include annual or biennial fecal occult blood testing for colorectal cancer screening in the PHEs of asymptomatic individuals over age 50 years. (2001) [NB: Sigmoidoscopy "B", colonoscopy "C"] ********** The USPSTF recommends screening for colorectal cancer (CRC) using fecal occult blood testing, sigmoidoscopy, or colonoscopy, in adults, beginning at age 50 years and continuing until age 75 years. The risks and benefits of these screening methods vary. (2008)	A	A

Adults - Specific Populations	CTFPHC	USPSTF
Good evidence to include offer of screening for HIV in PHE of asymptomatic people at high risk. (1991) ********** The USPSTF strongly recommends that clinicians screen for human immunodeficiency virus (HIV) all adolescents and adults at increased risk for HIV infection. (2005)	A	A

One A, one B

Pregnancy	CTFPHC	USPSTF
Screen high-risk groups for N. gonorrheae (High-risk groups include: individuals under age 30 years with at least 2 sexual partners in the previous year or age < 16 years at first intercourse, prostitutes, sexual contacts of individuals known to have a sexually transmitted disease). (1994) ********** The USPSTF recommends that clinicians screen all sexually active women, including those who are pregnant, for gonorrhea infection if they are at increased risk for infection (that is, if they are young or have other individual or population risk factors). (2005)	A	B

Infants (Newborns and Well-Baby Care in the First 2 Years of Life)	CTFPHC	USPSTF
Counsel women regarding breast feeding and implement peripartum interventions that promote breast feeding. (1994)	A	
**********		
The USPSTF recommends interventions during pregnancy and after birth to promote and support breastfeeding. (2008)		B
Repeated examination of hips, eyes and hearing, especially in the first year of life. (1994) (But note revised recommendation re hips, below)	A	
Serial clinical examination of the hips by a trained clinician in the periodic health examination (PHE) of all infants until they are walking independently. (1999)	B	
**********		
The USPSTF recommends screening for hearing loss in all newborn infants. (2008)		B
**********		
The USPSTF recommends screening to detect amblyopia, strabismus, and defects in visual acuity in children younger than age 5 years. (2004)		B
**********		
Evidence is insufficient to recommend routine screening for developmental dysplasia of the hip in infants as a means to prevent adverse outcomes (there is a lack of evidence that screening for a condition with a poorly defined natural history would improve health outcomes, while there is evidence that interventions cause known harms). (2006)		I

Children	CTFPHC	USPSTF
Fluoride supplements in low fluoride areas with careful adherence to low dosage schedules. (1993)	A	
**********		
Oral fluoride supplementation at currently recommended doses to preschool children older than 6 months of age whose primary water source is deficient in fluoride. (2004)		B

Adults - General	CTFPHC	USPSTF
Measurement of blood pressure (BP) level used to identify hypertensive individuals in those aged 21–64 and 65–84. (1994) [Evidence to treat is "A"]	B	
**********		
The U.S. Preventive Services Task Force (USPSTF) recommends screening for high blood pressure in adults aged 18 and older. (2007)		A
There is good evidence for screening women aged 50–69 years by clinical examination and mammography. The best available data support screening every 1-2 years. (1998)	A	
Current evidence does not support the recommendation that screening mammography be included in or excluded from the periodic health examination of women aged 40–49 at average risk of breast cancer. (1999)	C	
**********		
Screening mammography, with or without clinical breast examination (CBE), every 1-2 years for women aged 40 and older (2002)		B
Screening for cervical cancer in women who have been sexually active and have a cervix. (2003)	B	A

Adults - Specific Populations	CTFPHC	USPSTF
Perform gonorrhoea screening in: • individuals under 30 years, particularly adolescents, with at least 2 sexual partners in the previous year; • prostitutes; • sexual contacts of individuals known to have a sexually transmitted disease; • age ≤16 years at first intercourse. (1994) ********** Screen all sexually active women, including those who are pregnant, for gonorrhoea infection if they are at increased risk for infection (that is, if they are young or have other individual or population risk factors). (2005)	A	B
Screening of high-risk groups for chlamydia.* (1992) ********** The USPSTF recommends screening for chlamydial infection for all sexually active non-pregnant young women aged 24 and younger and for older non-pregnant women who are at increased risk. (2007)	B	A

* High-risk groups are: sexually active females less than 25 years old, or women with new or multiple partners in the preceding year, who use non-barrier contraception, or who have cervical friability, mucopurulent discharge or intermenstrual bleeding.

Postmenopausal Women	CTFPHC	USPSTF
Prevention of Osteoporosis and Osteoporotic Fractures in Postmenopausal Women. (2002)		
Overall - Screen all postmenopausal women for low bone mineral density (BMD) who have a history of previous fracture, or who are 65 years or older, or have a ORAI score of 9 or a SCORE score of 6	B	
• Screening using the SCORE or ORAI to predict low BMD	A	
• using history of previous fracture for the prediction of osteoporotic fractures	B	
• screening using BMD to predict fractures	B	
In women without documented osteoporosis, there is fair evidence to recommend calcium and vitamin D to prevent fragility fractures	B	
For postmenopausal women with osteoporosis but no prevalent fractures, there is good evidence to recommend alendronate; and	A	
fair evidence to recommend risedronate or raloxifene for the secondary prevention of vertebral fractures.	B	
There is fair evidence to recommend alendronate or risedronate for secondary prevention of hip and nonvertebral fractures.	B	
********** The USPSTF recommends that women aged 65 and older be screened routinely for osteoporosis. The USPSTF recommends that routine screening begin at age 60 for women at increased risk for osteoporotic fractures.(2002)		B

Note: This is, overall, a "double B" recommendation, but two specific elements—screening using SCORE or ORAI to predict low BMD and the use of alendronate—are given an "A" by the CTFPHC.

Single A

Pregnancy	CTFPHC	USPSTF
The USPSTF recommends that clinicians screen all pregnant women for syphilis infection. (2009)		A
The USPSTF strongly recommends screening for hepatitis B virus (HBV) infection in pregnant women at their first prenatal visit. (2004 and 2009)		A

Infants (Well-Baby Care in the First 2 Years of Life)	CTFPHC	USPSTF
Families counselled about reducing risk factors for accidental injury in the home.	A	
Anticipatory guidance particularly with regard to night-time crying beyond the expected age during all well-baby visits.	A	

Children	CTFPHC	USPSTF
Dental health		
• Professional topical fluoride applications and self-administered fluoride mouth rinses for those with very active decay or at high future risk for dental caries.	A	
• Fluoride dentifrices, with special supervision and the use of small amounts for young children.	A	
• Professionally-applied fissure sealants for selective use on permanent molar teeth soon after their eruption.	A	

Adults	CTFPHC	USPSTF
The USPSTF recommends the use of aspirin for men age 45 to 79 years when the potential benefit due to a reduction in myocardial infarctions outweighs the potential harm due to an increase in gastrointestinal hemorrhage. (2009)		A
The USPSTF recommends the use of aspirin for women age 55 to 79 years when the potential benefit of a reduction in ischemic strokes outweighs the potential harm of an increase in gastrointestinal hemorrhage. (2009)		A
The USPSTF strongly recommends screening men aged 35 and older for lipid disorders. (2008)		A
The USPSTF strongly recommends screening women aged 45 and older for lipid disorders if they are at increased risk for coronary heart disease. (2008)		A
Influenza vaccination/treatment:		
• Immunization with injectable inactivated influenza vaccine or nasally administered live attenuated influenza vaccine in healthy adults or children before each winter respiratory virus season. (2004)	A	
• Introduce outreach strategies to significantly increase influenza vaccination rate in non-institutionalized high-risk patients. (1993)	A	

Adults - Specific Populations	CTFPHC	USPSTF
The USPSTF strongly recommends that clinicians screen persons at increased risk for syphilis infection. (2004)		A
Single dose of 23-valent pneumococcal vaccine in people with sickle cell anemia and those having undergone splenectomy, and in immunocompetent patients >age 55 years in institutions. (1998, 2001)	A	
Offer tuberculosis screening to persons in Canada at high risk of infection with the tubercle bacillus, including immigrants from endemic areas, Canadian-born aboriginals, close contacts of active cases, persons with abnormal chest radiographs consistent with healed tuberculosis, and persons with underlying medical conditions which increase their likelihood of reactivation of tuberculosis if infected, including those with HIV infection, silicosis, hemodialysis patients, those with immunosuppressive conditions or therapy, intravenous drug users, diabetes, gastrectomy patients or those with gastrointestinal bypass surgery, and the nutritionally deficient.	A	

Appendix D – Comparing Utilization of Clinical Prevention Services

All information in the table is from: *Establishing Priorities among Effective Clinical Prevention Services in British Columbia, Summary and Technical Report* (H. Krueger & Associates, 2008). Page numbers shown are from the aforementioned report.

Intervention	Estimated Utilization		Best in the World
	BC	US	
Breast cancer screening – women 40+	38% 40-49 50% 50-69 Page 2 Screening rates within last two years in 2005 & 2006.	57% 40-49 63% 55+ Page 2 Screening rates within last two years in 1995.	85-95% ages 40-74 (Sweden and Finland) Page 104 In Finland, a nationwide mammography screening program for women aged 50-59 years was established in 1987. The compliance rate for screening was 89% for the first 10 years of the program. The mammography screening program in Sweden – also long-established – is for women aged 40-74 years, with a compliance rate ranging from 85-95%.
Cervical cancer screening – women 20–75	73.3% Page 2 % of women ages 20-69 who received a screening test between July 2004 and December 2006.	77.5% Page 2 % of women ages 20-75 who received a screening test within the last three years in 1995.	90% ages 30-60 (over five years in Finland) Page 80 Cervical cancer incidence rates in BC are among the best in the world, at 6.0 per 100,000 women in 2003. The best rates are likely observed in Finland, at 4.0 per 100,000 women in 2003. An organized screening program was piloted in Finland in 1963. In 1992, municipal bylaws required that cervical cancer screening be offered to women age 30-60 with a five year screening interval. Screening rates in the organized program were 72% in 2004. If opportunistic smears are taken into account, then approximately 90% of Finnish women between the ages of 30-60 receive at least one Pap smear every five years. Virtually all (98%) women receive at least one Pap smear in their lifetime.
Colorectal cancer screening – adults 50+	16.3% Page 2 % of adults age 50+ who have received either a fecal occult blood test within the last two years or a sigmoidsoscopy / colonoscopy within the last 10 years in 2003.	17.6% Page 2 "17.6% of the US population greater than 50 years of age received some sort of screening for colorectal cancer in 1992".	71% (Finland) Page 54 Although Germany has provided colorectal cancer screening since 1971, its uptake rate is low and has been declining in this decade. The UK has recently been rolling out its national colorectal screening program, targeting those aged 60-69 and allowing those over age 70 to opt in. As of March 2007, with over 500,000 test kits sent out, a response rate of approximately 53% was achieved. In 2004 Finland launched a colorectal cancer screening program for ages 60-69 to be phased in and expanded over 6 years. In 2006, approximately 53,000 test kits had been sent out and a response rate of 71% overall was achieved. This is the highest response rate that has been reported for colorectal cancer screening, although it should be noted that the program is on a much smaller scale than that of the UK.

Intervention	Estimated Utilization		Best in the World
	BC	US	
Influenza immunization – adults 50+	33.4% 50-64 64% 65+ Page 2 % who received a flu shot within the last year in 2003 (CCHS data)	34.2% 50-64 57.4% 65+ Page 2 Average immunization rates in the US.	79.1% ages 65+ (Australia) Page 71 The 2004 Adult Vaccination Survey in Australia gives an estimated coverage for the influenza vaccine of 79.1% in the target population (age 65 and over). Approximately 7,500 Australians aged 18 and over participated in the survey. This rate is significantly higher than in the US, which reported a 63% coverage rate for this age group in 2005.
Pneumococcal immunizations – adults 65+	38.2% Page 2 Based on the 2006 Canadian Adult National Immunization Coverage Survey for pneumococcal vaccine coverage amongst those 65 and older and those 18-64 with a chronic condition other than asthma.	62% Page 2 Based on the 2001 Behavioural Risk Factor Surveillance System survey for adults 65 and older.	
Smoking cessation advice and help to quit - adults	34.9% Page 2 Based on 2003 CCHS data from Ontario, Saskatchewan and Alberta.* Percent of smokers who were offered specific help or information, not just advised to quit. *This question was not asked in BC in 2003. It is assumed that these numbers will be approximately the same in BC.	35% Page 2 Based on % quoted in Maciosek et al. AJPM 2006; 31(1): 52-61.	Advice 47.5% Aids 26.1% Page 32 According to results from the 2005 Canadian Tobacco Use Monitoring Survey (CTUMS), 88% of current smokers reported visiting a health-care provider in the preceding 12 months and 54% were advised to reduce or quit smoking. Those who reported receiving such advice were asked if they were provided with information on smoking-cessation aids; 55% confirmed that they had. Based on this information, an estimated 47.5% of individuals who are current smokers received advice to quit and 26.1% were provided with advice on smoking-cessation aids. While the US counselling rate is similar at 48% of smokers (Behavioural Risk Factor Surveillance System data), only 28% reported that healthcare professionals offered them help to quit. Based on the results of the 2003 CCHS and the 2005 CTUMS, an estimated 50-60% of Canadian patients who smoke are advised by a health-care provider during a given 12 month period to quit and approximately one-third (28-35%) of patients who smoke are offered specific help or information by their health-care provider.

Intervention	Estimated Utilization		Best in the World
	BC	US	
Discuss daily aspirin use – men 40+, women 50+	15.7% Page 15 Calculated % - see text for details.	24.5% Page 2 Based on the 1999 Behavioural Risk Factor Surveillance System Survey for adults 40+ who use aspirin daily or every other day.	33% (US) Page 15 In a 2004 U.S. national survey of adults aged 40 or older, 41% of respondents reported regular aspirin use for the prevention of heart attack or stroke.15 Note that this percentage has increased from 24.5% in 1999, the percentage used in the HealthPartners research. Among those with no history of cardiovascular disease (CVD), 36% reported regular aspirin use. One third of all respondents reported discussing aspirin use with his or her provider. Results from this survey and data from the Behavioral Risk Factor Surveillance System have shown that the prevalence of aspirin use increases with increasing numbers of CVD risk factors such as smoking, high blood pressure, obesity, and high cholesterol. Although the extent to which clinicians are currently counselling patients on the benefits and harms of aspirin use is unknown, the US national survey discussed above found that one-third of respondents reported discussing aspirin use with his or her provider.
Hypertension screening and treatment – adults 18+	39% Page 2 Calculated % based on values from the 1997 Canadian Health Survey.	58.4% Page 2 Percent of patients with hypertension taking medication for their hypertension.	66% (Ontario) Page 61 The hypertension treatment and control rate in Ontario is 66%, according to results from the 2006 Ontario Survey on Prevalence and Control of Hypertension (ON-BP). This is well above the rate in any other population-based survey, with the next highest from a province in Cuba where the rate was reported at 40%. Although it is an Ontario survey, analyses indicate that it is highly representative of the rest of Canada. There have been large increases in the diagnosis of hypertension and the prescription of antihypertensive drugs in Canada between 1994 and 2003, most notably after the introduction of the Canadian Hypertension Education Program for health professionals in 1999.
Cholesterol screening and treatment – men 35+, women 45+	33.5% men 38% women Page 2 Based on receipt of relevant MSP tests in 2006/07.	70.8% Page 2 Based on the 1999 Behavioural Risk Factor Surveillance System survey for men 35= and women 45+ who received a cholesterol screening test.	

Appendix E – Clinical Prevention Interventions. US Community Guide: Summary

Vaccinations for Preventable Diseases: Universally Recommended Vaccines

Enhancing Access to Vaccination Services	
Expanded access in healthcare settings when used alone	Insufficient Evidence
Home visits to increase vaccination coverage	Recommended
Multicomponent interventions for expanding access in healthcare settings	Recommended
Reducing client out-of-pocket costs	Recommended
Vaccination programs in childcare settings	Insufficient Evidence
Vaccination programs in schools	Recommended
Vaccination programs in WIC settings	Recommended
Increasing Community Demand for Vaccinations	
Client or family incentives	Insufficient Evidence
Client reminder and recall systems	Recommended
Client-held medical records	Insufficient Evidence
Clinic-based education when used alone	Insufficient Evidence
Community-wide education when used alone	Insufficient Evidence
Multicomponent interventions that include education	Recommended
Vaccination requirements for child care, school and college attendance	Recommended
Provider- or System-based Interventions	
Provider assessment and feedback when used alone	Recommended

Provider education when used alone	Insufficient Evidence
Provider reminder systems when used alone	Recommended
Standing orders when used alone	Recommended

Vaccinations for Preventable Diseases: Targeted Coverage

Enhancing Access to Vaccination Services	
Expanded access in healthcare settings when used alone	Insufficient Evidence
Reducing client out-of-pocket costs when used alone	Insufficient Evidence
Increasing Community Demand for Vaccinations	
Client or family incentives when used alone	Insufficient Evidence
Client reminder and recall systems when used alone	Insufficient Evidence
Clinic-based client education when used alone	Insufficient Evidence
Community-wide education when used alone	Insufficient Evidence
Vaccination requirements when used alone	Insufficient Evidence
Interventions Implemented in Combination	
Multiple interventions implemented in combination	Recommended
Provider- or System-based Interventions	
Provider assessment and feedback when used alone	Insufficient Evidence
Provider education when used alone	Insufficient Evidence
Provider reminder systems when used alone	Recommended
Standing orders when used alone	Insufficient Evidence

Cancer Prevention & Control

1. Client-oriented Screening Interventions

Interventions	Breast Cancer	Cervical Cancer	Colorectal Cancer
Client reminders	Recommended	Recommended	Recommended
Client incentives	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence
Small media	Recommended	Recommended	Recommended
Mass media	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence
Group education	Insufficient Evidence	Insufficient Evidence	Insufficient Evidence
One-on-one education	Recommended	Recommended	Insufficient Evidence
Reducing structural barriers	Recommended	Insufficient Evidence	Recommended
Reducing out-of-pocket costs	Recommended	Insufficient Evidence	Insufficient Evidence

2. Provider-oriented Screening Interventions

Provider assessment and feedback	Recommended
Provider incentives	Insufficient Evidence
Provider reminders and recall	Recommended