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**Evidence Brief:  
Supporting Optimal Screening Approaches in Canada**

17 October 2013

#### McMaster Health Forum

For concerned citizens and influential thinkers and doers, the McMaster Health Forum strives to be a leading hub for improving health outcomes through collective problem solving. Operating at the regional/provincial level and at national levels, the Forum harnesses information, convenes stakeholders, and prepares action-oriented leaders to meet pressing health issues creatively. The Forum acts as an agent of change by empowering stakeholders to set agendas, take well-considered actions, and communicate the rationale for actions effectively.

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## KEY MESSAGES

### What's the problem?

- Efforts to address the challenges associated with supporting optimal screening approaches in Canada will need to consider several features of the problem, including:
  - considerable variation across provinces and territories in the diseases for which population-based screening programs are available;
  - potential pressures for greater variation in screening (e.g., competing authoritative voices about specific screening programs, rapid expansion of screening technologies, and increased enthusiasm/demand for screening among consumers and providers) may lead to disagreements about what citizens would like to be screened for and what is deemed appropriate or feasible, as well as to over-diagnosis and over-treatment;
  - system arrangements that limit efforts to support coordinated screening approaches, including delivery arrangements (e.g., lack of timely access to the full care pathway after the initial screening test; lack of electronic health records, information systems, and data-reporting systems; and limited coordination of delivery across screening programs), financial arrangements (e.g., lack of appropriate remuneration systems and/or resources to support screening programs) and governance arrangements (e.g., limited coordination of decision-making about screening across sectors and/or jurisdictions, and of evidence synthesis to support decisions about screening) in health systems; and
  - inconsistent adherence to screening guidelines and principles.

### What do we know (from systematic reviews) about three elements of a comprehensive approach to address the problem?

- Element 1 – Create a model to coordinate decision-making about screening across sectors and/or jurisdictions
  - We identified only two reviews that found benefits related to this element (and several that provide insight into key components if the element were to be implemented), with one review finding that collaborations between the primary care and public health sectors improved components of health system functioning and how health professionals work, and the second finding benefits for consumer involvement in activities related to the creation of patient-information materials.
- Element 2 – Establish a 'hub' to coordinate evidence synthesis and recommendation development to support optimal screening
  - No systematic reviews were identified that address this element, but we identified several key resources that offer insight into 'best' practices for such an approach, including a series of 16 non-systematic reviews of methods related to the development of guidelines, which had the overall goal of improving the use of research evidence in guideline development.
- Element 3 – Support optimal implementation of screening approaches
  - We found systematic reviews outlining the beneficial impacts of interventions aimed at supporting the implementation of optimal screening approaches by providers (e.g., interventions involving local opinion leaders, distribution of educational materials, educational outreach visits, reminders and prompts, audit and feedback, and multifaceted interventions) and by consumers (e.g., decision aids, involving patients in the planning and development of healthcare plans and in the development of information materials), as well as for quality-improvement strategies.

### What implementation considerations need to be kept in mind?

- Efforts to implement one or more of the elements of a comprehensive approach to support optimal screening approaches in Canada could turn to an existing decision-support guide focused on population-based genetic screening, and/or to existing task forces/groups (e.g., the Canadian Task Force on Preventive Health Care or the National Immunization Strategy) that could provide insight into how a similar sector has moved forward with activities comparable to those outlined in this brief.



## REPORT

Improving screening is an important component of strengthening healthcare in Canada and it straddles several themes in the 2003 First Minister's Accord on Health Care Renewal (1) and the 2004 10-Year Plan to Strengthen Health Care,(2) including disease prevention, health promotion, public health and primary healthcare. Interest in supporting more coordinated approaches to screening, and sharing of best practices across jurisdictions in Canada has emerged due to the discordance among screening policy, programs and practices within and across Canadian provinces and territories.(3) Indeed, the issue has received recent media coverage where the lack of national benchmarks for newborn screening across Canada was highlighted as a key factor explaining the significant disparities in the number of newborn tests administered across the country.(4)

While many provinces, territories and regions offer organized screening programs (e.g., pre-conceptual or pre-natal screening for genetic conditions, screening for hearing or vision loss associated with newborn or childhood conditions, and screening for breast, cervical and colorectal cancers), important differences exist in governance structures and processes, resources and capacity to develop organized population-based programs, the screening guidelines adopted, service delivery (e.g., treatment and follow-up processes), and coverage of care for disorders identified through screening.(5-10)

Given the scientific, social, economic and political complexity involved in screening policy and practice, maximizing benefits and minimizing harms at a population level requires that decisions to implement screening programs should ideally be based on established principles or criteria, and involve an organized series of events, from identifying and informing those to be offered screening, through providing treatment and follow-up for people with abnormalities, and supporting those who develop the disease despite screening.(11)

This evidence brief was designed to support the actions of those involved with supporting optimal screening approaches in Canada. The evidence brief first provides an overview of key features of the problem as it currently exists, which includes variation in screening practices across Canada (and potential

### Box 1: Background to the evidence brief

This evidence brief mobilizes both global and local research evidence about a problem, three elements of a comprehensive approach for addressing the problem, and key implementation considerations. Whenever possible, the evidence brief summarizes research evidence drawn from systematic reviews of the research literature and occasionally from single research studies. A systematic review is a summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select and appraise research studies and to synthesize data from the included studies. The evidence brief does not contain recommendations, which would have required the authors of the brief to make judgments based on their personal values and preferences, and which could pre-empt important deliberations about whose values and preferences matter in making such judgments.

The preparation of the evidence brief involved five steps:

- 1) convening a Steering Committee comprised of representatives from the partner organizations (and/or key stakeholder groups) and the McMaster Health Forum;
- 2) developing and refining the terms of reference for an evidence brief, particularly the framing of the problem and three viable elements of a comprehensive approach for addressing it, in consultation with the Steering Committee and a number of key informants, and with the aid of several conceptual frameworks that organize thinking about ways to approach the issue;
- 3) identifying, selecting, appraising and synthesizing relevant research evidence about the problem, options and implementation considerations;
- 4) drafting the evidence brief in such a way as to present concisely and in accessible language the global and local research evidence; and
- 5) finalizing the evidence brief based on the input of several merit reviewers.

The three elements of a comprehensive approach for addressing the problem were not designed to be mutually exclusive. They could be pursued simultaneously or in a sequenced way, and each element could be given greater or lesser attention relative to the others.

The evidence brief was prepared to inform a stakeholder dialogue at which research evidence is one of many considerations. Participants' views and experiences and the tacit knowledge they bring to the issues at hand are also important inputs to the dialogue. One goal of the stakeholder dialogue is to spark insights – insights that can only come about when all of those who will be involved in or affected by future decisions about the issue can work through it together. A second goal of the stakeholder dialogue is to generate action by those who participate in the dialogue and by those who review the dialogue summary and the video interviews with dialogue participants.



pressures for even greater variation over time), system arrangements that limit efforts to support coordinated screening approaches, and inconsistent adherence to screening guidelines and principles. Second, this brief discusses three elements of what could be a comprehensive approach to address the problem. Finally, this brief concludes with a discussion of the implementation considerations and windows of opportunity related to moving forward with one or more of the elements. Within this scope, the issue brief is focused on the best available research evidence and (as explained in Box 1) does not contain recommendations. In addition, while the issue brief strives to address all people, we highlight equity considerations (as explained in Box 2) for two groups (people living in rural and remote areas, and people of low socioeconomic status and from disadvantaged ethno-cultural communities) that are disproportionately affected by the issue.

This evidence brief draws on several terms and concepts related to screening. At the most fundamental level, screening has been defined as:

- the testing of people without signs or symptoms for a disease or condition, with the aim of reducing their future risk of ill health or of giving them information about their risk;(11)
- a process of identifying apparently healthy people who may be at increased risk of a disease or condition who can then be offered information, further tests and appropriate treatment to reduce their risk and/or any complications arising from the disease or condition;(12) and
- the systematic, population-based application of a test or inquiry to individuals who do not have symptoms of a specific disease or condition in order to identify those who warrant further investigation and/or intervention to achieve better outcomes.(13)

In addition, screening can be made available to whole populations (mass screening) or to high risk groups (selective screening) and can also involve two or more screening tests provided in combination to large populations of people (multiphasic screening).(14)

Screening can also be classified as organized or opportunistic. Organized population-based screening “is where a test is offered systematically to all individuals in the defined target group within a framework of agreed policy, protocols, quality management, monitoring and evaluation.”(15) In addition, “a population-based screening program is an organised integrated process where all activities along the screening pathway are planned, coordinated, monitored and evaluated through a quality improvement framework.”(16) In contrast, opportunistic screening “occurs when a test is offered to an individual without symptoms of the disease when they present to a health care practitioner for reasons unrelated to that disease.”(17)

## Box 2: Equity considerations

A problem may disproportionately affect some groups in society. The benefits, harms and costs of elements of a comprehensive approach to address the problem may vary across groups. Implementation considerations may also vary across groups.

One way to identify groups warranting particular attention is to use “PROGRESS,” which is an acronym formed by the first letters of the following eight ways that can be used to describe groups†:

- place of residence (e.g., rural and remote populations);
- race/ethnicity/culture (e.g., First Nations and Inuit populations, immigrant populations and linguistic minority populations);
- occupation or labour-market experiences more generally (e.g., those in “precarious work” arrangements);
- gender;
- religion;
- educational level (e.g., health literacy);
- socio-economic status (e.g., economically disadvantaged populations); and
- social capital/social exclusion.

The evidence brief strives to address all Canadians, but (where possible) it also gives particular attention to two groups:

- people living in rural and remote areas
- people of low socioeconomic status and people from disadvantaged ethno-cultural communities

Many other groups warrant serious consideration as well, and a similar approach could be adopted for any of them.

† The PROGRESS framework was developed by Tim Evans and Hilary Brown (Evans T, Brown H. Road traffic crashes: operationalizing equity in the context of health sector reform. *Injury Control and Safety Promotion* 2003;10(1-2): 11–12). It is being tested by the Cochrane Collaboration Health Equity Field as a means of evaluating the impact of interventions on health equity.

Other terms often included in the remit of screening include early detection and case finding. Early detection is defined as prompt identification of incipient or early disease and, by implication, intervention to arrest, treat and cure it in a timely manner, and the early detection of environmental, social and behavioral hazards to health.(18) Methods of early detection often include questionnaires, interviews, physical examinations, screening tests, procedures and equipment for environmental monitoring (e.g., for drinking water, indoor air quality, ionizing radiation levels).(18) Case finding is a term used to describe a strategy for targeting resources at individuals or groups who are suspected to be at risk for a particular disease, which involves systematically searching for at-risk people, rather than waiting for them to present with symptoms or signs of active disease.(19)

Key principles that are typically drawn on to guide population-based screening decisions include those developed for the World Health Organization (WHO) by Wilson and Jungner in 1968.(14) This set of principles was updated in 2009 through a systematic review of the literature focused on principles for making decisions about whether to establish a population-based screening program for a disease.(20) This review identified thirty sets of principles for screening and 249 individual principles. The individual principles were consolidated into 12 principles for screening (many of which are very similar to the Wilson and Jungner principles) and are grouped as follows:(14;20)

- **Disease/condition principles**
  1. the disease/condition should constitute an important health problem;
  2. the natural history of disease/condition should be well understood;
  3. the target population for screening should be clearly defined, identifiable and accessible;
- **Intervention principles**
  4. a suitable (in terms of being acceptable to patients, providers and the public) screening test should be available;
  5. appropriate post-screening treatment/intervention/follow-up options should be available and made accessible to patients identified through screening;
  6. a clearly defined target population for post-screening treatment/intervention/follow-up should be agreed upon;
- **Program/system principles**
  7. sufficient program/system capacity should be available to provide access to the full care pathway;
  8. screening program elements (recruitment, referral and follow-up) should be integrated;
  9. all elements of the screening program should be clinically, socially and ethically acceptable to patients, health professionals and the public;
  10. program benefits should outweigh harms;
  11. the screening program should be cost-effective as compared to other healthcare priorities; and
  12. program quality and performance should be monitored and managed using agreed upon standards.

Based on these definitions and principles, the scope of this evidence brief includes efforts to optimize population-based screening approaches in Canada, including organized and opportunistic screening, early detection (i.e., approaches that may not be delivered by highly organized screening programs but still are offered through programs at a national, provincial, regional or municipal level) and case finding (but only where there is the potential for more organized approaches to case finding). However, surveillance, which is defined as the systematic ongoing collection, collation and analysis of data and the timely dissemination of information to those who need to know so that informed action can be taken,(21) is out of scope for the evidence brief.

The following key features of the health policy, population health and health system context in Canada were also taken into account in the preparation of this evidence brief:

- delivery of healthcare is primarily the responsibility of provincial and territorial governments and financing is shared between the federal, provincial and territorial governments;
- the federal government also delivers healthcare services to specific groups (e.g. First Nations, Inuit and Métis populations, military and veterans, and inmates in federal prisons);

- Canada's provincial and territorial health systems are distinguished by a long standing private delivery/public payment agreement between government on the one hand and hospitals and physicians on the other;
- the agreement with physicians has historically meant that most healthcare is delivered by physicians working in private practice with first-dollar (i.e., no deductibles or cost sharing), public (typically fee-for-service at least in part) payment;
- the private practice element of the agreement has typically meant that physicians have been wary of potential infringements on their professional and commercial autonomy (e.g., directives about the nature of the care they deliver or the way in which they organize and deliver that care);
- responsibility for public health in Canada is shared between federal and provincial/territorial governments, and activities at the federal level are coordinated through a central agency (Public Health Agency of Canada), and are focused on promoting health, preventing and controlling chronic diseases, injury and infectious diseases, preparing responses to public-health emergencies, and supporting intergovernmental collaboration;
- the delivery and coordination of public health programs and services is done in collaboration with other parts of the federal health portfolio, with provincial, territorial and municipal governments, as well as with non-governmental and civil society organizations; and
- there is currently no coordinated delivery of screening (in general) across Canadian provinces and territories, but in the cancer sector, the Canadian Partnership Against Cancer is mandated to develop a coordinated national cancer screening approach, which they have made progress towards as part of their role in supporting the implementation of the national cancer control strategy.

## **THE PROBLEM**

Efforts to address the challenges associated with supporting optimal screening approaches in Canada will need to consider three key features of the problem: 1) screening practices vary in Canada; 2) current system arrangements limit efforts to support coordinated screening approaches; and 3) screening guidelines and principles are inconsistently adhered to.

### **Screening practices vary across Canada**

#### *Variation in practice*

There is considerable variation across provinces and territories in the diseases for which population-based screening programs are available. Examples of conditions include:

- genetic conditions identified through preconception or antenatal screening (e.g., for congenital disorders such as Down syndrome, trisomy 18, and open neural tube defects);
- HIV (e.g., routine prenatal screening);
- newborn or early childhood conditions identified through bloodspot screening (e.g., for inherited metabolic and other disorders) or point-of-care testing (e.g., hearing or vision screening);
- cancer (e.g., breast, cervical and colorectal); and
- chronic diseases (e.g., depression, diabetes, dyslipidemia, osteoporosis, etc.)

For each of these disease groupings, we reviewed websites from each province and territory in Canada to determine where organized screening programs exist and where there has been an informal programmatic response. The results from this scoping exercise are presented in Table 1. As can be seen from the table, there is relative uniformity in the availability of organized screening programs for breast, cervical and colorectal cancer in Canada, with Quebec being the only province not to have programs for all three. Across the other areas of screening, there is relative consistency in the availability of programs for preconception or antenatal screening for genetic conditions (although the specific diseases screened for and approaches used may vary), for HIV, and for newborn and early childhood screening. However, based on our scan of websites, the availability of programs is limited in some of the smaller provinces (e.g., New Brunswick and Prince Edward Island) and in the territories, except where there are interprovincial networks in place to support screening, such as for newborn screening where such agreements ensure universal availability of programs across the country.

#### **Box 3: Mobilizing research evidence about the problem**

The available research evidence about the problem was sought from a range of published and “grey” research literature sources. Published literature that provided a comparative dimension to an understanding of the problem was sought using three health services research “hedges” in MedLine, namely those for appropriateness, processes and outcomes of care (which increase the chances of us identifying administrative database studies and community surveys). Published literature that provided insights into alternative ways of framing the problem was sought using a fourth hedge in MedLine, namely the one for qualitative research. Grey literature was sought by reviewing the websites of a number of Canadian and international organizations, such as the Canadian Institute for Health Information, Canadian Partnership Against Cancer, Canadian Task Force on Preventive Health Care, Health Council of Canada, European Observatory on Health Systems and Policies, Health Evidence Network, Health Policy Monitor, and Organization for Economic Co-operation and Development.

Priority was given to research evidence that was published more recently, that was locally applicable (in the sense of having been conducted in Canada), and that took equity considerations into account.

**Table 1: Overview of screening programs in Canada**

Province/territory	Preconception or antenatal screening for genetic conditions	Newborn/early childhood screening or point-of-care testing	HIV	Cancer (breast, cervical and colorectal)*	Chronic diseases
British Columbia	<a href="#">BC prenatal genetic screening program</a>  <a href="#">Preconception/prenatal screening of high risk groups for genetic and congenital disorders</a>	<a href="#">Newborn screening for phenylketonuria or sickle cell anemia</a>  <a href="#">Early childhood hearing and vision screening program</a>	<a href="#">Provincial point of care (POC) “rapid” HIV testing program and anonymous HIV testing pilot</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Complex chronic diseases program</a>
Alberta	<a href="#">Alberta perinatal health program</a>	<a href="#">Alberta’s newborn metabolic screening program</a>  <a href="#">Newborn jaundice screening program</a>  <a href="#">Universal newborn hearing screening</a>	<a href="#">Rapid human immunodeficiency virus (HIV) antibody test implementation</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Mobile diabetes screening initiative</a>
Saskatchewan	<a href="#">Prenatal maternal serum screening</a>	<a href="#">Maternal and infant health program (newborn hearing screening)</a>	<a href="#">Standard testing, HIV point-of-care testing</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Urban low income diabetes risk assessment and the Regina Food Bank diabetes strategy</a>
Manitoba	<a href="#">Prenatal genetic screening and diagnosis service</a>  <a href="#">Manitoba maternal serum screening program</a>	<a href="#">Early hearing detection and intervention program</a>  <a href="#">Newborn screening (metabolic and endocrine disorders)</a>	<a href="#">Manitoba HIV program (offers testing through partnerships with community agencies)</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Manitoba diabetes integration project (mobile diabetes screening program)</a>  <a href="#">Manitoba retinal screening vision program (RSVP) (to prevent vision problems for people with diabetes)</a>
Ontario	<a href="#">Ontario prenatal screening (multiple marker screening program)</a>	<a href="#">Newborn screening Ontario (screening for 29 treatable conditions)</a>	<a href="#">Ontario's HIV screening and testing program (includes several targeted programs such as the anonymous testing program, point-of-care testing and prenatal screening and testing)</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Pre-diabetes detection and physical activity intervention delivery program</a>  <a href="#">Fracture clinic osteoporosis screening program</a>
Quebec	<a href="#">Trisomy 21 prenatal screening program of Quebec</a>	<a href="#">Newborn urine screening program</a>  <a href="#">Newborn blood screening program (for type 1 tyrosinemia, phenylketonuria and congenital hypothyroidism)</a>	None identified	<a href="#">Breast</a>	None identified
New Brunswick	None identified	<a href="#">Universal newborn and infant hearing screening program</a>	<a href="#">Anonymous HIV testing services</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	None identified

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Nova Scotia	<a href="#">Antenatal laboratory screening</a>	<a href="#">Nova Scotia newborn screening service</a> (identifies babies with certain rare disorders of body chemistry that are treatable)	<a href="#">Halifax sexual health centre and anonymous HIV testing program</a>	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Nova Scotia prediabetes project</a> (screening and community intervention for prediabetes and undiagnosed Type 2 diabetes)
PEI	None identified	<a href="#">Newborn screening service</a> (in collaboration with Nova Scotia)	None identified	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	<a href="#">Chronic disease prevention and management</a> (e.g., provincial diabetes program, organized stroke care)
Newfoundland and Labrador	None identified	<a href="#">Newborn screening for disorders and abnormalities coordinated through the Health Sciences Centre in St. John's</a>	None identified	<a href="#">Breast</a> <a href="#">Cervical</a> <a href="#">Colorectal</a>	None identified
Yukon	None identified	Provided through B.C. (hearing screening provided in Whitehorse only)	None identified	Provided through B.C.	None identified
Northwest Territories	None identified	Provided through Alberta	None identified	Provided through Alberta	None identified
Nunavut	None identified	Provided through Alberta	None identified	None identified	None identified

\*Content for this column was extracted from:

[http://www.cancerview.ca/cv/portal/Home/PreventionAndScreening/PSPatientsAndFamilies/ScreeningAndEarlyDiagnosis/ScreeningProgramsAcrossCanada?\\_afLoop=4903145559043000&\\_afWindowMode=0&\\_adf.ctrl-state=1a0c7yaeri\\_4](http://www.cancerview.ca/cv/portal/Home/PreventionAndScreening/PSPatientsAndFamilies/ScreeningAndEarlyDiagnosis/ScreeningProgramsAcrossCanada?_afLoop=4903145559043000&_afWindowMode=0&_adf.ctrl-state=1a0c7yaeri_4)

However, even when there is relative congruence in the availability of screening programs in broad domains like those listed in Table 1, there may still be a lack of uniformity between provinces and territories in terms of the specific conditions for which screening tests are offered within the programs. For example, while newborn screening is universally available across Canadian provinces and territories, programs differ significantly with respect to the number and types of conditions that are screened for.<sup>(8)</sup> Specifically, based on data collected by the Canadian Organization for Rare Disorders about newborn screening tests offered in Canada, the number of conditions for which screening is universally offered in each province breaks down as follows:<sup>(22)</sup>

- British Columbia: 30 conditions;
- Alberta: 19 conditions;
- Saskatchewan: 37 conditions;
- Manitoba: 49 conditions;
- Ontario: 30 conditions;
- Quebec: 17 conditions (includes bloodspot and urine screening programs);
- New Brunswick: 15 conditions;
- Nova Scotia: 15 conditions (although an expansion has been announced but not yet implemented);
- PEI: 15 conditions;
- Newfoundland and Labrador: 19 conditions;
- Yukon: 29 conditions (provided through the newborn screening lab in B.C. and with hearing tests only available in Whitehorse);
- Northwest Territories: 18 conditions (provided through the newborn screening lab in Alberta); and
- Nunavut: 18 in Kitimeot region (provided through the newborn screening lab in Alberta), 24 in Kivilliq region (provided through the newborn screening lab in Manitoba) and 16 in Baffin region (provided through the newborn screening lab in Quebec, which also supports urine screening).

In addition to variability in the conditions screened for, there is also variation in rates of screening uptake that can't be readily explained or justified. For example, while cancer is one of the most prevalent diseases in Canada and the cancer sector arguably has the most organized system of screening across Canadian provinces and territories, the percentage of Canadians who have received cancer screening within an organized screening program still varies by province and type of cancer.<sup>(23)</sup> Specifically, the 2012 Cancer System Performance Report indicates that while screening rates for cervical cancer are relatively consistent across provinces (ranging from 64% in Saskatchewan to 72% in Alberta) and coverage is high (as compared to historical levels), screening rates for breast cancer and colorectal cancer are more variable across the country.<sup>(23)</sup>

For breast cancer, participation in organized screening programs ranges from 6% in Alberta to 56% in Manitoba, Quebec and New Brunswick. It should be noted, however, that the rate in Alberta reflects only those women screened through the Screen Test Program, which conducts only 10-12% of screening in the province and largely through mobile outreach units (to help reach those in rural and remote areas).<sup>(24)</sup> The percentage in Alberta increases to 57.3% when screening contributions from the Alberta Society of Radiologists are included. Regardless, the rates of breast screening are still lower than the target of 70%. However, as noted in a recent system performance report about breast cancer screening in Canada, approximately 30% of women receive screening outside of organized programs.<sup>(24)</sup> When self-reported screening rates (i.e., women receiving screening outside of organized programs) are combined with the rates of screening in programs, 72% of eligible Canadian women aged 50-69 have received a screening mammogram in the last two years, and the range across provinces increases to 58% in Prince Edward Island (at the low end) and 75% in New Brunswick (at the high end). It should be noted that interpreting the rates of uptake for screening is less than straightforward. The target screening rate of 70% reflects the notion that the balance of benefits, harms and preferences does not allow for 100% uptake. However, the true goal of screening may be to ensure that 100% of those eligible are offered screening, and that individuals can receive screening if they want it, but these types of indicators are not currently measured.

For colorectal cancer, the number of Canadians who were up to date for screening (based on self-reports in the 2009 and 2011 Colon Cancer Screening in Canada surveys) ranged from 22% in Newfoundland and Labrador to 64% in Manitoba.(23) In addition, an analysis of adherence to colorectal screening guidelines in Canada (based on respondents to the 2003 Canadian Community Health Survey) found that of the 17,498 respondents, 70% were not adherent to screening guidelines.(25)

Conversely, there are also instances where either guidelines exist with recommendations supporting routine screening (at least for some populations) but no formal programs exist, or where there is a lack of or unclear evidence and divergent recommendations for screening for a particular disease, but screening is routinely offered in organized programs. As an example of the former, the Canadian Task Force for Preventive Health Care (CTFPHC) has issued screening guidelines supporting routine screening for hypertension in primary care,(26) and routine diabetes screening every 3-5 years for adults at high risk and every year for adults at very high risk.(27) The lack of organized programs may be appropriate given that screening is largely conducted in primary care settings, but without the infrastructure of organized programs (or at least a coordinating or governance model) there is likely to be a gap in quality assurance. This makes the monitoring of data about how many people receive screening and how much of it is appropriate, difficult or impossible to track over time and between jurisdictions (a subject to which we return to this later in the section about governance arrangements).

Prostate-specific antigen (PSA) testing is a notable example of where there are inconsistent recommendations across guidelines, but where screening is common.(28) The CTFPHC is currently developing guidance about PSA testing,(28) but the U.S. Preventive Services Task Force recommends that PSA tests not be used for prostate cancer screening,(29) and a similar approach has been adopted in Ontario where the policy is that “PSA determination should not be used as a population-wide mass screening test for the early detection of prostate cancer in asymptomatic males”.(30) In contrast, the recent guideline from the Canadian Urological Association (31) recommends providing screening every one to two years for all men 50 years of age and older with a life expectancy of at least 10 years. Similarly, the guideline from the Towards Optimized Practice program in Alberta recommends discussing screening with certain groups of asymptomatic individuals (most men over 50 years of age, men at higher risk and men who express concern about prostate cancer).(32) As the CTFPHC notes, several other guidelines with conflicting advice are available, yet all of them were developed with largely the same evidence.(28) Despite the lack of clarity, PSA testing is routinely offered to many asymptomatic men, and nearly half of Canadian men 50 years or older report having at least one PSA test in their lifetimes.(28;33) The risks of using PSA tests for population-level screening have been argued to be substantial and include high rates of over-diagnosis,(34;35) which can result in detection of cancer that never results in symptoms or death, thereby leading to over-treatment (and a range of side effects associated with treatment).(36)

*Potential pressures for even greater variation in practice*

Competing authoritative voices about specific screening programs may impede the development of coordinated and effective screening policy and programs. For example, advocacy groups or providers promoting opinions that differ from what the available research evidence suggests can undermine efforts to support effective screening policy and practice. Such concerns are particularly worrisome with groups and providers who are supported by companies with a financial interest in promoting a specific opinion, and with providers who receive compensation or incentives for providing specific screening services. Political promises (e.g., during election campaigns) to implement large-scale screening programs that are not supported by the available research evidence can also undermine efforts to support effective screening policy and practice. Specifically investigating this issue, a recent study examined the links between expanded disease definitions in guidelines, and the ties between the expert panels that produced the guidelines and the industry that stood to win or lose by their recommendations.(37) The analysis found that the “majority of panels proposed changes to disease definitions that increased the number of individuals considered to have the disease, none reported rigorous assessment of potential harms of that widening, and most had a majority of members disclosing financial ties to pharmaceutical companies.”(37) In other words, the expert panels making decisions that



expand disease definitions that could be used as part of screening processes are often dominated by members with financial ties to companies that have a direct interest in the topic area addressed by the panel.

An increasingly important factor related to these potential pressures on screening is the widening gap between technical and practical feasibility in screening. Specifically, the rapid expansion of technologies available for screening (particularly for genetic screening) often leads to pressure from advocacy groups, consumer groups and providers to introduce or expand screening programs before adequate safeguards and regulatory frameworks have been established.(38;39) Subsequently, this may place additional pressure on provincial and territorial health systems and result in more variation in screening practice. In addition, a culture of enthusiasm for screening exists, which has been found in the cancer sector to not be dampened by the potential for false-positive tests and the resulting possibility of unnecessary treatment.(40) When this level of enthusiasm is combined with new technologies that garner significant attention, it may lead to added enthusiasm for screening among citizens and some providers, and then to disagreements about what citizens would like to screen for and what is recommended or deemed appropriate or feasible by most providers and policymakers. As Schwartz et al. note in the context of cancer, high levels of public enthusiasm for screening “...creates an environment ripe for the premature diffusion of technologies such as total-body computed tomographic scanning, placing the public at risk of over testing and over treatment.”(40)

The consequences of increased (and potentially inappropriate) screening include over-diagnosis and over-treatment (and the associated side effects that otherwise healthy individuals would endure as a result of over-treatment), undue stress and anxiety for patients with false positive tests, feelings of relative ‘safety’ for people with false negative tests, and inappropriate and inefficient allocation of healthcare resources. For example, a recent systematic review of the psychological consequences of false-positive screening mammograms found negative psychological distress lasting up to three years, and reduced likelihood that women would return for their next round of mammography screening.(41) In addition, a qualitative study of women’s experiences with ovarian cancer screening found that while participants noted having the benefit of reassurance about their health (e.g., by being proactive and detecting cancer at early stages), it was also found that negative consequences included worry about the test and results, false reassurance from the test, and general disappointment with ineffective screening.(42)

### **Current system arrangements limit efforts to support coordinated screening approaches**

Existing health system arrangements limit efforts to support coordinated screening approaches. While there is limited empirical evidence about the relative importance of these arrangements in limiting efforts, we outline below the key delivery, financial and governance arrangements that may be contributing to the problem.

#### *Delivery arrangements*

In addition to the inconsistencies in screening approaches across provinces and territories that were outlined earlier (e.g., varying access to newborn screening for specific conditions), screening programs do not always adequately reach specific populations. For example, as outlined in more detail in the section about equity considerations below, people living in rural, remote and/or northern areas often face difficulties with accessing screening programs given that the distance required to travel to access a screening test can often be substantial.(43;44) In addition, the uptake of screening (e.g., for cervical cancer) among immigrants, refugees and/or members of ethnocultural communities is often significantly lower than that of the general population.(45-48) Considerable barriers for access to and retention in screening programs also exist for First Nations, Inuit and Metis populations in Canada.(49-51)

Timely access to care after a positive screening test is also an important concern. A lack of timely access could occur as a result of long wait lists for care,(52;53) rapid progression of the disease (e.g., aggressive cancers that advance too quickly to be treated at an early stage), limited resources (e.g., trained experts and resources for social and psychological development issues identified through screening), or because of a lack of timely diagnosis after screening identified an abnormality requiring further work-up.(54;55) While each of these

situations can lead to delays in access to appropriate care pathways after screening, each also raises ethical concerns about whether screening was appropriate in the first place given that some of the key principles outlined earlier are not met.

Lack of access to screening for certain populations and/or timely access to care after screening may be driven by a number of factors. First, the limited number or availability of primary care and/or specialist providers in some settings (e.g., rural and remote), sectors and jurisdictions to deliver screening programs and ensure appropriate monitoring, follow-up and (if necessary) treatment, limits the ability of many to get access to screening. In addition, the ability to effectively coordinate screening is limited by the lack of electronic health records, information systems and data-reporting systems that support recall for monitoring and follow-up from screening programs, identification of duplication of screening tests, and timely and accurate collection and monitoring of screening data. Similarly, there is currently limited or no coordination across screening initiatives (i.e., across diseases) even when targeted at a similar population at a similar time (e.g., fetal anomaly and HIV screening prenatally, metabolic and hearing screening for newborns). Lastly, efforts toward ongoing quality improvement are limited by the lack of monitoring systems to ensure adherence to a minimum level of quality (e.g., adherence to screening protocols), and for ongoing monitoring and evaluation of program performance.

#### *Financial arrangements*

An important component of ensuring the coordinated delivery of appropriate screening across sectors and/or jurisdictions is having remuneration systems that are aligned with current screening recommendations. However, there is a general lack of clarity about which remuneration systems are most conducive to supporting optimal screening approaches. Financial incentives, pay-for-performance approaches and blended payment models are ways that have been identified to either support providers to follow recommended screening approaches and/or enable multidisciplinary teams to work together (e.g., by allowing nurses to take the lead in screening). However, there is often insufficient research evidence available to support decisions about whether to adopt a particular approach to remuneration. For instance, a recent systematic review about financial incentives for primary care providers found that six of seven studies showed positive but modest effects on improving quality of care (with two studies focused on screening for several diseases including breast and cervical cancer, cardiovascular disease, chlamydia and diabetes), but concluded that there is insufficient evidence to support their use.<sup>(56)</sup> Similarly, a review about pay-for-performance found a wide spectrum of possible effects on the provision of effective clinical care (“from absent or negligible to strongly beneficial”).<sup>(57)</sup>

Supporting optimal screening also requires sufficient resources and capacity in provinces and territories as well as for organizations and providers involved with delivering screening programs. However, some provinces and territories have insufficient capacity and resources to offer organized population-based programs and/or to sustain or expand existing programs to meet increasing demand. In some cases, this difficulty has been addressed by providing screening programs through inter-provincial/territorial networks (e.g., for cancer between British Columbia/Yukon and Alberta/Northwest Territories and for newborn screening between Nova Scotia/PEI). Funding models are also often not conducive to helping providers develop the infrastructure needed to implement organized screening programs in their practice and/or organizations, which further limits their ability to meet increasing demand. Laboratories and other parts of the system that support the processing and analysis of screening tests are also facing increasingly strained budgets with expenditures continually growing,<sup>(58)</sup> which can result in delays in the care pathway between screening, diagnosis and treatment.

At the level of making decisions about what to screen for, there is difficulty in determining whether particular screening approaches are cost-effective (e.g., due to a lack of agreement on cost-effectiveness thresholds), and how to weigh the economic considerations against benefits, harms and broader social considerations. This issue is accentuated for rare diseases given that there is often insufficient data due to the limited number of

patients with the disease, the uncertainty about which interventions to use in treating it, and that interventions are typically very expensive.(59)

#### *Governance arrangements*

There is limited coordination in approaches to decision-making about screening across some sectors and/or jurisdictions (including for the consideration of candidate conditions, as well as for the oversight of programs) and in approaches to evidence synthesis to support assessments of the benefits, harms and costs of population-based screening approaches (or for determining areas for disinvestment). In general, the lack of coordination could be attributable to several factors, including:

- screening being ‘lost’ in a gap between medical care and public health policy, which limits the amount of attention and resources allocated to it as compared to other healthcare interventions;
- a lack of infrastructure and essential expertise at the provincial and territorial and/or regional level to develop and run programs;
- limited capacity to leverage screening expertise across different disease sectors;
- limited understanding of the similarities and differences in structures and processes for evidence synthesis in other sectors (e.g., the Common Drug Review) that could be used to identify how to tailor similar approaches for screening, and/or to draw on existing infrastructure; and
- lack of clarity about the goals of screening approaches (e.g., 100% uptake vs. 100% informed consent vs. 100% offer as the intended goal).

The notable exception is for cancer screening, which has extensive networks that share information, examine and synthesize evidence, provide summary data regarding program recommendations from all provinces (e.g., [www.cancerview.ca](http://www.cancerview.ca)), and undertake system evaluations (e.g., the Cancer System Performance Report).

With respect to screening being ‘lost’ in a gap between medical care and public health policy, it is somewhat analogous to immunization policy and programs, given that immunization is a public-health intervention embedded within medical care practice in many instances and aimed at preventing several different diseases, but with inconsistencies in access to and delivery of immunizations across jurisdictions. Indeed, similar calls have been made for greater coordination in immunizations across jurisdictions and for a renewed national immunization strategy (e.g., by creating a registry and harmonized vaccination schedules).(60) Efforts have been made to map out future directions in immunization, which we further highlight in the section about implementation considerations.

The limited coordination in approaches to decision-making about screening across sectors and/or jurisdictions or to evidence synthesis may also be attributable to a lack of a coherent governance model. Without a governance model, coordination across sectors, diseases and jurisdictions and a systematic and transparent approach to evidence-informed decision-making will remain challenging. A governance framework could support several components of coordinated action in approaches to screening, including: 1) requirements for adherence to protocols; 2) cross-jurisdictional reviews of what is being done (both within Canada and internationally) to identify strengths and key areas requiring intervention; 3) processes for stakeholder engagement; 4) information management over the life of a program; and 5) consideration of wider collective investments being made in preventive services (e.g., through the CTFPHC). While on the surface a governance model would seem germane only for organized screening programs, it could also be important for conditions such as diabetes and hypertension (as noted earlier in the section about variations in screening practices) where screening is largely conducted only in primary care settings (i.e., through opportunistic screening). Most notably, a coordinated governance model could contribute to quality monitoring over time and across jurisdictions to identify where there may be limited uptake, and how much of the screening that is being conducted is aligned with what is recommended in the best available guidelines (e.g., only screening for diabetes among high-risk and very-high-risk individuals). Without such models, we will remain unable to determine whether screening in these areas is over- or under-used.

## **Screening guidelines and principles are inconsistently adhered to**

There is inconsistent adherence to screening guidelines, which can result in either under- or over-screening, and subsequently lead to some people being under- and over-treated. For example, the CTFPHC (61) recommended in 2011 to not routinely screen women between the ages of 40-49 for breast cancer using mammography (unless they are at high risk). The recommendation encountered substantial resistance (e.g., from the Breast Cancer Foundation of Canada). Adherence to the recommendation has proven inconsistent across the country, which can be explained (at least in part) by two factors. First, in all provinces except Ontario and Saskatchewan, women between the ages of 40-49 can receive screening within a program if they choose to (or with a referral) even though the provincial programs only actively target women aged 50 and older.(24) Second, a physician in any province is able to order mammography outside of a program for a woman of any age.(62)

At the system level, there is inconsistent adherence to screening principles, in part because of the competing influences on policymaking and program development (e.g., the interaction of research evidence, values, available resources and other factors). Applying these principles requires an analytical approach (i.e., one that does not simply use the principles as a checklist) that balances the benefits, harms and costs of screening.

## **Additional equity-related observations about the problem**

We found two systematic reviews investigating equitable access to cancer screening as well as data about breast cancer screening from the Canadian Partnership Against Cancer. The first review examined the literature about inequity in access to cancer health services in Canada along the continuum of care.(43) In general, the review found that “evidence of inequity is most convincing in access to screening, radiotherapy, and end-of-life services” and that provision of these services is influenced by income, age and geographic location.(43) With respect to socioeconomic status, the review found inequitable access to cancer screening and diagnosis (as well as systemic therapy and end-of-life care) that was attributable to income and education levels. Specifically, individuals with lower income were found to be less likely to access services and more likely to face longer wait times. Similarly, breast cancer patients with lower education had less access to screening and longer wait times for physician referrals and initiation of radiotherapy, as compared to those with higher education.(43)

The second review evaluated the equity of participation in colorectal cancer screening programs that includes fecal occult blood testing as well as barriers and facilitators to equitable screening.(63) Findings revealed that geographic location (those from more deprived areas) and those with lower socioeconomic status, income and education were less likely to accept an invitation for screening, express interest in having the test or undertake the test. The review also assessed disparities in access that are attributable to ethnocultural status, and found that the majority of studies that evaluated this relationship found significantly lower participation in screening programs among minority groups. However, one of the studies found that ethnocultural disparities were no longer significant after taking into account socioeconomic status, and suggested that socioeconomic status is the driving factor behind low uptake for specific ethnic groups.(64) In contrast, another study from the United Kingdom found that socioeconomic status does not fully explain lower rates of participation in colorectal screening programs for people of Asian background.(65) These findings seem to point to the take-home message being that socioeconomic status, ethnicity and geographic location are collectively important yet intertwined factors affecting equitable access to screening.

The review of data from the Canadian Partnership Against Cancer found that breast screening rates (based on self-report) are lower for those with lower income and education as well as for recent immigrants, but that rates are consistent across urban and rural/remote areas.(24) Specifically, the report found that self-reported mammography use was 16% higher for women in the highest (77%) versus the lowest income brackets (61%). Similarly, use of mammography screening was 10% higher among women with the highest education (75%) versus those with the lowest levels of education (65%). In addition, stark differences in

mammography screening rates exist between recent immigrants (living in Canada less than 10 years) and longer-term residents, with only 42% of recent female immigrants aged 50 to 69 reporting a screening test within the last two years, as compared to 70% of women who have resided in Canada for more than 10 years, and 74% for non-immigrant women. Lastly, while there were no discernible differences in screening rates among women aged 50-69 living in urban, rural, remote and very remote areas, self-reported screening rates were higher in urban areas (39%) for women between the ages of 40 and 49, as compared to those living in rural or very remote areas (33%). The report attributes this finding to the presence of mobile screening as part of organized programs, which is not available to women between the ages of 40 and 49.

### **THREE ELEMENTS OF A COMPREHENSIVE APPROACH FOR ADDRESSING THE PROBLEM**

Many approaches could be selected as a starting point for deliberations about an approach for supporting optimal screening approaches in Canada. To promote discussion about the pros and cons of potentially viable approaches, we have selected three elements of a larger, more comprehensive approach to supporting optimal screening approaches. The three elements were developed and refined through consultation with the Steering Committee and key informants who we interviewed during the development of this evidence brief. The elements are:

- 1) create a model to coordinate decision-making about screening across sectors and/or jurisdictions;
- 2) establish a 'hub' to coordinate evidence synthesis and recommendation development to support optimal screening; and
- 3) support optimal implementation of screening approaches.

The elements could be pursued simultaneously or sequentially, or components could be drawn from each element to create a new (fourth) element. They are presented separately to foster deliberations about their respective components, the relative importance or priority of each, their interconnectedness and potential of or need for sequencing, and their feasibility.

The principal focus in this section is on what is known about these elements based on findings from systematic reviews. We present the findings from systematic reviews along with an appraisal of whether their methodological quality (using the AMSTAR tool)(78) is high (scores of 8 or higher out of a possible 11), medium (scores of 4-7) or low (scores less than 4) (see the appendix for more details about the quality-appraisal process). We also highlight whether they were conducted recently, which we define as the search being conducted within the last five years. In the next section the focus turns to the barriers to adopting and implementing these elements and to possible implementation strategies to address the barriers.

#### **Box 4: Mobilizing research evidence about elements of a comprehensive approach for addressing the problem**

The available research evidence about elements of a comprehensive approach for addressing the problem was sought primarily from Health Systems Evidence ([www.healthsystemsevidence.org](http://www.healthsystemsevidence.org)), which is a continuously updated database containing more than 3,000 systematic reviews and more than 1,600 economic evaluations of delivery, financial and governance arrangements within health systems. The reviews and economic evaluations were identified by searching the database for reviews addressing features of each of the approach elements and sub-elements.

The authors' conclusions were extracted from the reviews whenever possible. Some reviews contained no studies despite an exhaustive search (i.e., they were "empty" reviews), while others concluded that there was substantial uncertainty about the elements based on the identified studies. Where relevant, caveats were introduced about these authors' conclusions based on assessments of the reviews' quality, the local applicability of the reviews' findings, equity considerations, and relevance to the issue. (See the appendices for a complete description of these assessments.)

Being aware of what is not known can be as important as being aware of what is known. When faced with an empty review, substantial uncertainty, or concerns about quality and local applicability or lack of attention to equity considerations, primary research could be commissioned, or an element could be pursued and a monitoring and evaluation plan designed as part of its implementation. When faced with a review that was published many years ago, an updating of the review could be commissioned if time allows.

No additional research evidence was sought beyond what was included in the systematic review. Those interested in pursuing a particular element may want to search for a more detailed description of the element or for additional research evidence about the element.

## **Element 1 – Create a model to coordinate decision-making about screening across sectors and/or jurisdictions**

Sub-elements of this element might include:

- establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems;
- establishing a process to set priorities for evidence syntheses to be completed as part of a pan-Canadian coordinating ‘hub’ (see element 2);
- establishing a panel to coordinate decision-making about what screening programs should be introduced, adapted, scaled up or discontinued in provincial and territorial health systems;
- developing criteria to guide the panel’s decision-making;
- conducting periodic cross-jurisdictional reviews to identify strengths and key areas where the panel could support improvements; and
- establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel’s decision-making.

### *Overview and context*

This element is the most comprehensive of the three and involves sub-elements that could collectively contribute to a robust and transparent governance model for screening in Canada (e.g., through greater coordination between sectors and jurisdictions for setting priorities, conducting syntheses, supporting decision-making and engaging consumers and stakeholders). As a result, this element could include many activities related to establishing a ‘hub’ to coordinate evidence synthesis (element 2) and supporting the implementation of screening guidelines (element 3). We present this element first and separate from the other two given that it is the most comprehensive in scope and likely the most difficult to build consensus on, and ultimately implement. In doing so we hope to spur dialogue participants to consider the feasibility of this element and whether there is a need to consider sequencing it in relation to the other two elements. For example, if a model to coordinate decision-making is deemed to be a long-run solution requiring a great deal of preparatory work, then short- to medium-term efforts could be undertaken to enhance coordination for evidence synthesis and recommendation development, and to enhance support for the optimal implementation of screening approaches.

### *What we found*

We found two systematic reviews (66;67) outlining benefits related to this element. One recent medium-quality review found benefits related to the first sub-element (establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems).(66) Specifically, the review assessed the available literature (primary studies, literature reviews and descriptive accounts) about collaborations between the primary care and public health sectors and found beneficial outcomes at the level of health systems (e.g., improvements in the delivery of health services) and health professionals (e.g., improved partnerships and team functioning). The second review, which was older but of high quality, reported benefits from consumer involvement in activities related to the creation of patient-information materials, but found a lack of research to reliably assess the impact of consumer involvement on healthcare policy development.(67)

While the evidence related to benefits of this element is limited, several reviews provide insight into key components that might be included in activities related to the four sub-elements outlined below.

*Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems:* One recent medium-quality review addressing the first sub-element identified several facilitators (e.g., fit between government and local needs, effective information sharing practices and role

clarity between partners) and barriers (e.g, funding, power/control within the collaboration and conflicting attitudes and beliefs between partners) for collaboration between primary care and public health.(66)

*Establishing a process to set priorities for evidence syntheses to be completed as part of a pan-Canadian coordinating ‘hub’:* An older medium-quality review found that the majority of priority-setting frameworks used an interdisciplinary panel or committee of funders, health professionals and researchers to provide advice.(68) The same review also found that some priority-setting models drew on advice from a board of directors and used a rating system (along with input from a panel or committee) to inform priorities.(68)

*Developing criteria to guide the panel’s decision-making:* Two medium-quality reviews addressed criteria for healthcare decision-making. One review (69) provides a list of criteria for resource allocation and healthcare decision-making (the full list is presented in table 2 as part of the row identifying key elements of the policy element if it was tried elsewhere), and the other review (70) found that clinical evidence about benefits and costs were the main criteria used in decision-making processes for including and/or excluding drugs from reimbursement lists. The same review also found that values were an important part of decision-making criteria given that the available research evidence often does not provide a firm foundation on which to make a decision.(70)

*Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel’s decision-making:* Two medium-quality reviews provide insight into approaches that can be used for public engagement, and another medium-quality review focused on training to support consumer involvement. With respect to the latter, the review found that training of patients and healthcare professionals is an important component for successfully involving cancer patients in research, policy, planning and practice.(71) For public engagement, one review reported on the array of methods that can be used for eliciting public values to inform decisions about resource allocation, and found (based on key-informant interviews with local decision-makers) that the most common approach used by regional health authorities to engage the public has been through advisory groups.(72) However, the same review noted that no approach can be defined as the gold standard and suggested that instead, selection of an approach should be done after considering population-specific factors. This was echoed by another review that indicated that the mechanisms used for public engagement need to be adapted according to the context of policy development around the issue.(73)

A summary of the key findings from the synthesized research evidence is provided in Table 2. For those who want to know more about the systematic reviews contained in Table 2 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 1.

**Table 2: Summary of key findings from systematic reviews relevant to Element 1 – Create a model to coordinate decision-making about screening across sectors and/or jurisdictions**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• <b>Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems</b> <ul style="list-style-type: none"> <li>○ <i>Inter-sectoral collaboration:</i> One recent medium-quality review of collaborations between primary care and public health found beneficial outcomes of such collaborations (as reported in primary studies, literature reviews and descriptive accounts) at the level of health systems (improved population health and public-health approaches, funding and resource enhancements, health service delivery improvements, improved health service delivery processes and new/innovative program development) and health professionals (improved partnerships and team functioning, professional development and improvements to education).(66)</li> </ul> </li> <li>• <b>Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel’s decision-making</b> <ul style="list-style-type: none"> <li>○ <i>Consumer involvement:</i> <ul style="list-style-type: none"> <li>▪ An older medium-quality review found several benefits related to the involvement of patients in the planning and development of healthcare, which include: improved self-esteem for patients; rewarding experience for healthcare staff; production of updated/improved patient-information resources; simplified appointment procedures; more efficient transportation between treatment sites; improved</li> </ul> </li> </ul> </li> </ul>



	<p>access for people with disabilities; and organizational attitudes that are supportive to patient involvement.(74)</p> <ul style="list-style-type: none"> <li>▪ An older high-quality review found that the benefits of consumer involvement (as compared to no involvement) were greatest in activities related to the creation of patient-information materials.(67)</li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>• <b>Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems</b> <ul style="list-style-type: none"> <li>○ <i>Inter-sectoral collaboration:</i> One recent medium-quality review of collaborations between primary care and public health identified negative outcomes related to such collaborations which included anxiety related to the skill mix required for nursing (e.g., fear of being marginalized in integrated teams), limited gains in reductions of behavioural risk factors, limited opportunity for case discussion between nurses and physicians, and insufficient public-health expertise that could be drawn on.(66)</li> </ul> </li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>• <b>Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems</b> <ul style="list-style-type: none"> <li>○ <i>Inter-sectoral collaboration:</i> One recent medium-quality review found that one of the possible risks of collaboration between primary care and public health was the added expense of supporting the collaboration.(66)</li> </ul> </li> <li>• <b>Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel's decision-making</b> <ul style="list-style-type: none"> <li>○ <i>Consumer involvement:</i> While not explicitly providing information about costs, an older medium-quality review noted that, in general, effective patient involvement requires both personnel and financial commitments.(71)</li> <li>○ <i>Public engagement:</i> An older low-quality review found that costs related to public engagement activities are rarely reported, but noted that well-structured processes range from tens of thousands of dollars to \$1 million or more.(75)</li> </ul> </li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the element were pursued)	<ul style="list-style-type: none"> <li>• Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> <li>○ <b>Establishing a panel to coordinate decision-making about what screening programs should be introduced, adapted, scaled up or discontinued in provincial and territorial health systems</b></li> <li>○ <b>Conducting periodic cross-jurisdictional reviews to identify strengths and key areas where the panel could support improvements</b></li> </ul> </li> <li>• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> <li>○ Not applicable (no 'empty' reviews were found)</li> </ul> </li> <li>• No clear message from studies included in a systematic review <ul style="list-style-type: none"> <li>○ <b>Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems</b> <ul style="list-style-type: none"> <li>▪ <i>Organizational partnerships:</i> One recent medium-quality review found insufficient evidence that organizational partnerships improved public health outcomes in England from 1997-2008.(76)</li> </ul> </li> <li>○ <b>Establishing a process to set priorities for evidence syntheses to be completed as part of a pan-Canadian coordinating 'hub'</b> <ul style="list-style-type: none"> <li>▪ <i>Priority-setting processes:</i> One older medium-quality review identified and compared priority-setting approaches for health technology assessment,(68) and another older but low-quality review described priority-setting processes for healthcare,(77) but neither evaluated the benefits, harms and costs of these processes given that both were focused on key characteristics of models that have been used (see the section below about key elements of the policy option for more information).</li> </ul> </li> <li>○ <b>Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel's decision-making</b> <ul style="list-style-type: none"> <li>▪ <i>Consumer involvement:</i> A high-quality but older review found a lack of research to reliably assess the impact of consumer involvement on healthcare policy development.(67)</li> <li>▪ <i>Public engagement:</i> An older low-quality review noted that public engagement exercises are typically not formally evaluated, but that, despite the lack of evaluation, results of engagement processes are typically viewed as a success and claimed to have led to a direct impact on decisions.(75)</li> </ul> </li> </ul> </li> </ul>
Key elements of the policy element if it was tried elsewhere	<ul style="list-style-type: none"> <li>• <b>Establishing a process to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems</b> <ul style="list-style-type: none"> <li>○ <i>Inter-sectoral collaboration:</i> <ul style="list-style-type: none"> <li>▪ A recent medium-quality review identified several facilitators for collaboration between primary care and public health at the system (fit between government and local needs, funding, education and training), organizational (leadership/management and accountability, geographic proximity of partners and information sharing) and interpersonal level (role clarity, shared purpose, philosophical and professional identity, attention to maintaining partnerships and effective communication and decision-making strategies).</li> <li>▪ The same review also identified barriers for collaboration at the system (issues related to funding, power/control within the collaboration and information infrastructure), organizational (lack of common agenda, resource limitations, lack of knowledge and skills) and interpersonal level (conflicting</li> </ul> </li> </ul> </li> </ul>

	<p>attitudes and beliefs).</p> <ul style="list-style-type: none"> <li>• <b>Establishing a process to set priorities for evidence syntheses to be completed as part of a pan-Canadian coordinating ‘hub’</b> <ul style="list-style-type: none"> <li>○ <i>Priority-setting processes:</i> <ul style="list-style-type: none"> <li>▪ An older medium-quality review found that: the majority of priority-setting frameworks (seven of the 12 that were identified) used a panel or committee to provide advice with all committees engaging representatives from funders, health professionals and researchers; some drew on advice from a board of directors (often in conjunction with a separate committee); one-third used a rating system to inform priorities (all of these were used along with a committee); and only two models explicitly considered the balance of costs and benefits in the assessments made.(68)</li> <li>▪ An older medium-quality review of priority setting for healthcare identified formal and informal priority-setting processes.(77) <ul style="list-style-type: none"> <li>• Formal processes – assemble a government-appointment committee, identify principles and factors to be considered during the priority-setting process (e.g., equity, solidarity, equality and effectiveness and efficacy of healthcare services under review)</li> <li>• Informal processes – informal debates, discussions among policymakers and one-off consensus development meetings</li> </ul> </li> <li>▪ The same review indicated that tools for generating lists of priorities based on data were often found to be impractical or conceptually difficult to understand.(77)</li> </ul> </li> </ul> </li> <li>• <b>Developing criteria to guide the panel’s decision-making</b> <ul style="list-style-type: none"> <li>○ <i>Criteria for healthcare decision-making:</i> <ul style="list-style-type: none"> <li>▪ A recent medium-quality review of decision criteria for resource allocation and healthcare decision-making identified the following criteria that have been used (in descending order): equity/fairness, efficacy/effectiveness, stakeholder interests and pressures, cost-effectiveness, strength of evidence, safety, mission and mandate of the health system, organizational requirements and capacity, patient-reported outcomes and need.(69)</li> <li>▪ A recent but low-quality review found that clinical evidence on benefits and costs were the main decision criteria used by decision-making processes for including and/or excluding drugs from reimbursement lists and drug formularies, but also found that pharmacoeconomic analyses were generally afforded a small role, and values played an important role given that the available evidence often did not provide a firm foundation on which to make a decision.(70)</li> </ul> </li> </ul> </li> <li>• <b>Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel’s decision-making</b> <ul style="list-style-type: none"> <li>○ <i>Training to support consumer involvement:</i> An older medium-quality review found that training of patients and healthcare professionals is an important component for successfully involving cancer patients in research, policy, planning and practice.(71)</li> <li>○ <i>Public engagement:</i> <ul style="list-style-type: none"> <li>▪ A recent medium-quality review outlined that the mechanisms used for public engagement need to be adapted according to the context of policy development around the issue (e.g., by forming the group in ways that are sensitive to the type of topic, history of the issue and possible power dynamics).(73)</li> <li>▪ Sixty-nine of the 117 papers included in an older medium-quality review reported on a diverse set of methods used for eliciting public values (e.g., ranking of services or programs, rating of options, making explicit choices between options, individual interviews, a Delphi process, focus groups, citizens’ juries and town hall meetings) to inform resource allocation decision-making, and noted that no single approach can be defined as the gold standard, and suggested that instead selection of an approach should be completed after considering population-specific factors.(72)</li> <li>▪ The same review found (based on key informant interviews with local decision-makers) that the most common approach used by regional health authorities to engage the public has been through advisory groups.(72)</li> </ul> </li> </ul> </li> </ul>
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> <li>• <b>Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel’s decision-making</b> <ul style="list-style-type: none"> <li>○ <i>Public engagement:</i> A recent medium-quality review found that those who participate in well-designed interactive public engagement processes report high levels of satisfaction across different components of the process (e.g., communication of objectives, adequacy of the information materials provided to inform discussions and the logistics and management of the deliberation), as well as increased levels of topic-specific learning.(73)</li> </ul> </li> </ul>

## **Element 2 – Establish a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening**

Sub-elements of this element might include:

- conducting and regularly updating syntheses of the many types of research evidence relevant to decision-making about optimal screening approaches;
- convening panels comprised of methodological and content experts as well as consumers to grade the quality of evidence, assess the local applicability of research evidence, and grade the strength of recommendations about optimal screening approaches; and
- developing ‘workbooks’ to support provincial and territorial adaptations of screening recommendations to their contexts.

### *Overview and context*

A hub to coordinate evidence synthesis and recommendation development regarding screening could focus on syntheses of screening efficacy and/or about possible approaches for supporting optimal screening. While there are existing structures and mechanisms for conducting syntheses and developing recommendations about screening (most notably the CTFPHC), there is a limited range of topics for which syntheses have been completed and for which commitments to complete syntheses have been made. For example, since being re-established in 2010, the CTFPHC has published guidelines in five areas of screening (breast cancer, cervical cancer, depression, hypertension and Type 2 diabetes) and has established five additional priority areas for developing screening guidelines (colorectal cancer, prostate cancer, developmental delay, obesity and child obesity).(78)

Several provinces have infrastructure in place for conducting health technology assessments and developing recommendations,(79) which can include topics related to screening. Therefore, in the area of synthesis for screening efficacy, there may be room both for scaling up efforts and for greater coordination among existing synthesis infrastructures to avoid duplication of effort and to support consistent guidance across the country. In contrast, synthesis efforts about possible approaches for supporting optimal screening (e.g., programmatic versus opportunistic; physician-controlled versus patient-controlled models; whether and how to use incentives, etc.) are limited or non-existent, and a ‘hub’ may be particularly appropriate to fill this gap.

### *What we found*

No systematic reviews were identified that addressed any of the sub-elements related to establishing a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening. However, there are several key resources related to the sub-elements that may offer insight into ‘best’ practices for such an approach. For example, a series of 16 non-systematic reviews of methods related to the development of guidelines was published in 2006, which had the overall goal of improving the use of research evidence in guideline development.(80) Included in this series are reviews that provide recommendations about the key components included in the first sub-element (i.e., for conducting and updating syntheses),(81) as well as the second sub-element, including convening panels comprised of methodological and content experts (and facilitating sound processes within groups more generally),(82;83) involving consumers in guideline development,(84) grading the quality of evidence and strength of recommendations,(85) and assessing the local applicability of research evidence.(81)

Key recommendations from these reviews include:

- central coordination for the preparation of systematic reviews to be included in guidelines or recommendations, which should be conducted through collaboration with stakeholders with content and methodological expertise;(81)

- optimal group composition, which means including a broad group of stakeholders (e.g., consumers, health professionals, managers and policymakers), individuals with content and technical/methodological expertise, and an effective leader to guide the group to facilitate collaboration and contributions from all panel members, and training for those who may not be familiar with all of the methods and processes used to develop recommendations;
- an approach for developing consensus in the development of recommendations (while it is difficult to discern which formal consensus methods such as nominal group technique and Delphi are best, these formal methods have been found to perform better than informal approaches);(82;83)
- consumer involvement in all stages of guideline and/or recommendation development, which can include incorporating individual patients in the group, conducting one-off meetings with patients or incorporating a consumer advocate in the development group;(84)
- grading the quality of the evidence and strength of recommendations using an accepted approach such as GRADE and applying it uniformly in products produced through the group to avoid confusion among those who develop and use guidelines or recommendations;(85) and
- specific guidance for how the recommendations can be adapted to local contexts while ensuring that the processes for local adaptation are systematic and transparent, how to involve relevant stakeholders and how to report on key factors influencing the process and specific reasons for any modifications that are made.(81)

A summary of the key findings from the synthesized research evidence is provided in Table 3. For those who want to know more about the reviews contained in Table 3 (or obtain citations for the reviews), a fuller description of the reviews is provided in Appendix 2.

**Table 3: Summary of key findings from systematic reviews relevant to Element 2 – Establish a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• None of the identified reviews provided information about benefits of the sub-elements</li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>• None of the identified reviews provided information about potential harms of the sub-elements</li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>• None of the identified reviews provided information about costs of the sub-elements and no economic evaluations were identified</li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the element were pursued)	<ul style="list-style-type: none"> <li>• Uncertainty because no systematic reviews were identified                             <ul style="list-style-type: none"> <li>○ <b>Conducting and regularly updating syntheses of the many types of research evidence relevant to decision-making about optimal screening approaches</b> <ul style="list-style-type: none"> <li>▪ One of the non-systematic reviews that were identified provides guidance on the key components included in the sub-element (see the section below about key elements of the policy option if it was tried elsewhere).</li> </ul> </li> <li>○ <b>Convening panels comprised of methodological and content experts as well as consumers to grade the quality of evidence, assess the local applicability of research evidence, and grade the strength of recommendations about optimal screening approaches</b> <ul style="list-style-type: none"> <li>▪ Several non-systematic reviews that were identified provide guidance on the key components included in the sub-element (see the section below about key elements of the policy option if it was tried elsewhere).</li> </ul> </li> <li>○ <b>Developing ‘workbooks’ to support provincial and territorial adaptations of screening recommendations to their contexts</b> <ul style="list-style-type: none"> <li>▪ None of the non-systematic reviews that were identified addressed a topic related to this sub-element and therefore, unlike the other two sub-elements, no additional insight about key components of it was identified.</li> </ul> </li> </ul> </li> <li>• Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review                             <ul style="list-style-type: none"> <li>○ Not applicable (no ‘empty’ reviews were found)</li> </ul> </li> <li>• No clear message from studies included in a systematic review                             <ul style="list-style-type: none"> <li>○ Not applicable</li> </ul> </li> </ul>

<p>Key elements of the policy element if it was tried elsewhere</p>	<ul style="list-style-type: none"> <li>• <b>Conducting and regularly updating syntheses of the many types of research evidence relevant to decision-making about optimal screening approaches</b> <ul style="list-style-type: none"> <li>○ One of the non-systematic reviews within a series of 16 that assessed methods related to the development of guidelines, recommended that the preparation of systematic reviews to be included in guidelines be coordinated centrally through collaboration with stakeholders (including centres located throughout the world) who have expertise in systematic reviews and produce them.(81)</li> </ul> </li> <li>• <b>Convening panels comprised of methodological and content experts as well as consumers to grade the quality of evidence, assess the local applicability of research evidence, and grade the strength of recommendations about optimal screening approaches</b> <ul style="list-style-type: none"> <li>○ Several non-systematic reviews within a series of 16 that assessed methods related to the development of guidelines, provide guidance on the key components included in this sub-element. <ul style="list-style-type: none"> <li>▪ <i>Group composition:</i> One review found that existing empirical evidence suggests that the composition of panels has an impact on the content of recommendations, but given the limited research evidence available to guide the composition of panels, the following recommendations were made based on logical arguments and organizational experience: <ul style="list-style-type: none"> <li>• groups should include a broad group of stakeholders (consumers, health professionals, managers and policymakers);</li> <li>• individuals with content expertise and those with necessary technical skills (e.g., information retrieval, systematic reviewing, health economics, group facilitation, project management, writing and editing) should be included (or the panel should have access to individuals with these skills);</li> <li>• an effective leader that can guide the group in terms of tasks and processes and facilitate collaboration and contribution from all panel members; and</li> <li>• training and support should be available to members of the panel who may not be familiar with all of the methods and processes used to develop recommendations.(82)</li> </ul> </li> <li>▪ <i>Facilitating sound processes within groups:</i> One review outlined that in addition to selecting a qualified group leader to facilitate, several evaluations comparing formal consensus methods such as Nominal Group Technique (NGT) and the Delphi method indicated that formal methods generally perform better than informal methods, but that it is difficult to discern which of the formal methods (NGT and Delphi) is best.(83)</li> <li>▪ <i>Consumer involvement:</i> One review about integrating values and involving consumers in guidelines development processes outlined that: <ul style="list-style-type: none"> <li>• consumers should be involved in all stages of guideline development;</li> <li>• there are three broad methods to consider for consumer involvement (incorporating individual patients, one-off meetings with patients or incorporating a consumer advocate in the guideline development group);</li> <li>• involvement of consumers in guideline development requires clear understanding of the research evidence, and given the complexity and jargon often used, consumers with experience in this area may be more likely to engage in guideline development processes as compared to those who are less familiar with research/clinical terminology and jargon.(84)</li> </ul> </li> <li>▪ <i>Grading evidence and recommendations:</i> One review recommends that: <ul style="list-style-type: none"> <li>• “both the quality of the evidence and the strength of recommendations should be graded”;</li> <li>• the criteria used should also assess the quality of the underlying research evidence;</li> <li>• the ‘best’ instruments (based on evaluation grids from the U.S. Agency for Healthcare Research and Quality) were the GRADE and SIGN approaches (with the former being the recommended approach for use in World Health Organization guidelines); and</li> <li>• panels should consider using a uniform approach to grading the quality of evidence and strength of recommendations to avoid confusion among those who develop and use guidelines.(85)</li> </ul> </li> <li>▪ <i>Assessing local applicability:</i> <ul style="list-style-type: none"> <li>• One review focused on applicability, transferability and adaption of guidelines, recommended that the central guideline authority (which was the WHO in the review) should provide specific guidance for how the recommendations can be adapted to local contexts. and that those processes should: be systematic and transparent; involve stakeholders; and report on key factors influencing the process and the specific reasons for any modifications that are made.(81)</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> <li>• No reviews provided information about stakeholders’ views and experiences</li> </ul>

### Element 3 – Support optimal implementation of screening approaches

Sub-elements of this element might include:

- supporting the implementation of screening guidelines by healthcare providers;
- developing decision aids or decision support systems about optimal screening for consumers/patients;
- using other types of strategies to involve consumers/patients/families to encourage them to express their beliefs, values and preferences, and to optimize communication between them and their healthcare providers; and
- monitoring the implementation of selected screening approaches and evaluating their impact.

#### *Overview and context*

Supporting optimal implementation of screening approaches complements efforts to synthesize research evidence and make recommendations for optimal screening. As noted in the problem section of the brief, there is a gap in the monitoring and reporting of the reach and impact of screening outside of highly organized areas such as cancer and newborn screening, and this element can further support optimal implementation by operationalizing these activities in other sectors and across jurisdictions.

#### *What we found*

We found several high-quality systematic reviews outlining the beneficial impacts of interventions aimed at supporting the implementation of practice guidelines, including interventions involving local opinion leaders,(86) distribution of educational materials,(87) educational outreach visits,(88) audit and feedback,(89) and multifaceted interventions (i.e., combining two or more of these interventions).(86;90) We also found several systematic reviews that evaluated interventions designed to increase screening for specific diseases (breast, cervical and colorectal cancers and chlamydia). These reviews similarly found benefits for the distribution of educational materials,(91) educational outreach visits,(91;92) reminders and prompts (computerized decision support and chart reminders),(92;93) audit and feedback,(92;94) and multifaceted interventions.(91;95) In addition, a recent overview of systematic reviews evaluating financial incentives found mixed effects, with evidence that they are effective at supporting appropriate consultation or visit rates and processes of care (e.g., referrals and admissions), but that they are generally ineffective at improving compliance with guidelines.(96)

For consumers/patients, we identified several reviews that found benefits for decision aids and for other strategies to support them and their families for implementing optimal screening approaches. Eight reviews found evidence that decision aids (which include genetic counselling and strategies for risk communication):

- increase patients' knowledge of screening and treatment options;(97-100)
- encourage patient involvement;(100)
- support realistic perception of outcomes and risk;(98;100-103)
- reduce decision-related conflict;(100)
- increase patient-practitioner communication;(100) and
- support professionals to provide information and counselling about the available choices.(97)

In addition to decision aids, a recent and high-quality review found that postal reminders, telephone reminders, signatures from general practitioners on invitation letters, providing scheduled appointments (as opposed to open appointments) and mailing a kit for self-sampling (for cervical cancer screening) were effective at increasing participation in organized screening programs.(104) Another review found that involving patients in the planning and development of healthcare plans had several benefits for consumers (e.g., improved self-esteem), providers and staff (e.g., viewed as rewarding experience), processes for care (e.g., simplified appointment procedures) and broader supports (e.g., improved transportation between sites and access for people with disabilities).(74) Lastly, this review and one other review found that involving

patients in the development of information materials resulted in products that are more relevant, understandable and easy to read.(67;74)

We also found two reviews that outlined benefits for quality-improvement strategies (as one possible component of efforts to monitor the implementation of selected screening approaches and evaluate their impact). Specifically, one review found that collaborative quality-improvement interventions contributed to improvements in processes of care, patient care and organizational performance. The other review found that patient- or clinician-driven quality-improvement was more effective than approaches driven by managers or policymakers.(105;106)

A summary of the key findings from the synthesized research evidence is provided in Table 4. For those who want to know more about the systematic reviews contained in Table 4 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 3.

**Table 4: Summary of key findings from systematic reviews relevant to Element 3 – Support optimal implementation of screening approaches**

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> <li>• <b>Supporting the implementation of screening guidelines by healthcare providers</b> <ul style="list-style-type: none"> <li>○ <i>Implementation of guidelines:</i> We identified high-quality systematic reviews that found benefits for the following strategies to support the implementation of practice guidelines in general:                             <ul style="list-style-type: none"> <li>▪ local opinion leaders (supported by a high-quality review);(86)</li> <li>▪ distribution of educational materials (supported by a high-quality review);(87)</li> <li>▪ educational outreach visits (supported by a high-quality review);(88)</li> <li>▪ audit and feedback (supported by a high-quality review);(89)</li> <li>▪ multifaceted interventions such as combining local opinion leaders and audit and feedback (supported by a high- and a medium-quality review);(86;90) and</li> <li>▪ financial incentives for supporting appropriate consultation or visit rates, processes of care, referrals and admissions, but not for improving compliance with guidelines (supported by an overview of systematic reviews).(96)</li> </ul> </li> <li>○ <i>Implementation of screening guidelines:</i> We also identified systematic reviews focused on screening that found benefits for many of the same strategies.                             <ul style="list-style-type: none"> <li>▪ Distribution of educational materials: One older low-quality review found that educational packages for primary care providers and online continuing medical education significantly increased appropriate screening for chlamydia.(91)</li> <li>▪ Educational outreach visits: Two older systematic reviews (one of medium quality and one of low quality) found benefits for educational outreach with the medium-quality review (92) finding that physician outreach visits were effective at increasing cervical screening rates, and the low-quality review finding significant increases in appropriate chlamydia screening.(91)</li> <li>▪ Reminders and prompts: A recent high-quality review found that computerized decision support systems for diagnostic screening or test ordering significantly improved process and/or practitioner performance in the majority of the included studies,(93) and an older medium-quality review found chart reminders to be effective at improving cervical screening rates.(92)</li> <li>▪ Audit and feedback: A recent medium-quality review found audit and feedback to be effective for increasing provider delivery or promotion of screening for breast, cervical and fecal occult blood testing for colorectal screening,(94) and an older medium-quality review similarly found it to be effective at improving cervical screening.(92)</li> <li>▪ Multifaceted interventions: A recent medium-quality review found large increases in chlamydia screening rates following a multifaceted quality improvement program,(95) and an older low-quality review similarly found benefits for a multifaceted approach on improving chlamydia screening rates.(91)</li> </ul> </li> </ul> </li> <li>• <b>Developing decision aids or decision support systems about optimal screening for consumers/patients</b> <ul style="list-style-type: none"> <li>○ <i>Decision aids:</i> Three recent reviews evaluated the use of decision-aids:                             <ul style="list-style-type: none"> <li>▪ a high-quality review found increases in knowledge, patient involvement and realistic perception of outcomes among patients who received decision aids, as well as reductions in decision-related conflict and increases in patient-practitioner communication;(100)</li> <li>▪ a medium-quality review found that cancer-related decision aids increased knowledge of screening and preventive/treatment options without increasing anxiety;(107) and</li> <li>▪ another medium-quality review that evaluated decision aid tools for women in obstetric care found that</li> </ul> </li> </ul> </li> </ul>

	<p>all identified tools facilitated significant increases in knowledge (except for Decision Trees) and that in general, decision aids help professionals provide information and counselling about choices during pregnancy, and support shared decision-making.(97)</p> <ul style="list-style-type: none"> <li>○ <i>Genetic counselling:</i> One recent medium-quality review assessed the impact of genetic counselling on the accuracy of risk perception and found an increase in the proportion of accurate risk assessments by participants after receiving counselling, with the changes sustained at one-year follow-up.(103)</li> <li>○ <i>Risk communication:</i> Four systematic reviews assessed strategies for communicating risk:             <ul style="list-style-type: none"> <li>▪ an older high-quality review found three studies reporting that personalized risk communication interventions supported accurate risk perception, and three other studies found that it increased knowledge;(98)</li> <li>▪ a recent high-quality review found that framing messages positively resulted in more positive perceptions of effectiveness, but did not change the persuasiveness of the message;</li> <li>▪ a recent medium-quality review found that providing information about screening and framing the information with messages of loss led to a more positive perception of the effectiveness of what could be gained;(101) and</li> <li>▪ a medium-quality review published in 2009 (for which the year of last search was not provided) found that tailoring information about cancer risk and screening options increased both patient knowledge and accurate perception of risk as compared to those receiving generic information.(102)</li> </ul> </li> <li>● <b>Using other types of strategies to involve consumers/patients/families to encourage them to express their beliefs, values and preferences and to optimize communication between them and their healthcare providers</b> <ul style="list-style-type: none"> <li>○ <i>Consumer-targeted implementation strategies:</i> <ul style="list-style-type: none"> <li>▪ A recent and high-quality review found that postal reminders, telephone reminders, signatures from general practitioners on invitation letters, providing scheduled appointments (as opposed to open appointments) and mailing a kit for self-sampling (for cervical cancer screening) were effective at increasing participation in organized screening programs.(104)</li> </ul> </li> <li>○ <i>Consumer involvement:</i> <ul style="list-style-type: none"> <li>▪ A high-quality but older review found research evidence indicating that the involvement of consumers during the creation of information materials for patients results in products that are more relevant, understandable and easy to read.(67)</li> <li>▪ An older review of medium-quality found several benefits related to the involvement of patients in the planning and development of healthcare, which include: improved self-esteem for patients; rewarding experience for healthcare staff; production of updated/improved patient-information resources; simplified appointment procedures; more efficient transportation between treatment sites; improved access for people with disabilities; and organizational attitudes that are supportive to patient involvement.(74)</li> </ul> </li> </ul> </li> <li>● <b>Monitoring the implementation of selected screening approaches and evaluating their impact</b> <ul style="list-style-type: none"> <li>○ <i>Quality improvement:</i> <ul style="list-style-type: none"> <li>▪ A medium-quality but older review found a positive effect for collaborative quality-improvement interventions on processes of care, patient care and organizational performance as a result of participation in a quality-improvement collaborative.(105)</li> <li>▪ Another review that was conducted recently but was of low quality found clinician/patient-driven quality-improvement interventions were effective, but that manager/policymaker-driven approaches were less effective.(106)</li> <li>▪ The same review also found that the most effective quality-improvement strategies included clinician-directed audit and feedback, decision support systems and the use of small-group discussions in continuing medical education.</li> </ul> </li> </ul> </li> </ul>
Potential harms	<ul style="list-style-type: none"> <li>● None of the identified reviews provided information about potential harms of the sub-elements</li> </ul>
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> <li>● None of the identified reviews provided information about costs of the sub-elements and no economic evaluations were identified</li> </ul>
Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be	<ul style="list-style-type: none"> <li>● Uncertainty because no systematic reviews were identified             <ul style="list-style-type: none"> <li>○ Not applicable</li> </ul> </li> <li>● Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review             <ul style="list-style-type: none"> <li>○ Not applicable (no 'empty' reviews were identified)</li> </ul> </li> <li>● No clear message from studies included in a systematic review             <ul style="list-style-type: none"> <li>○ <b>Supporting the implementation of screening guidelines by healthcare providers</b> <ul style="list-style-type: none"> <li>▪ <i>Educational meetings:</i> One older medium-quality review of organizational strategies to improve the management of depression,(108) and another evaluating guideline dissemination and implementation</li> </ul> </li> </ul> </li> </ul>



<p>warranted if the element were pursued)</p>	<p>strategies in general,(90) found educational meetings to be generally ineffective. However, one older medium-quality review of interprofessional education for improving care for patients with mental health problems found that educational meetings were generally effective.</p> <ul style="list-style-type: none"> <li>▪ <i>Financial incentives:</i> A recent overview of systematic reviews found that financial incentives were generally ineffective at improving compliance with guidelines,(96) and a recent medium-quality review found insufficient evidence to determine the effectiveness of provider incentives for increasing the delivery or promotion of screening for breast, cervical and colorectal cancer.(94)</li> <li>○ <b>Developing decision aids or decision support systems about optimal screening for consumers/patients</b> <ul style="list-style-type: none"> <li>▪ An older, high-quality review found limited evidence to determine whether personalizing risk communication (either in writing, verbally or visual presentations) increased the uptake of screening tests or supported informed decision-making.(98)</li> <li>▪ A medium-quality review found limited evidence from which to be able to assess the effectiveness of using a website tailored to cancer risk factors to increase patient’s knowledge and perceptions of risk.(102)</li> </ul> </li> <li>○ <b>Using other types of strategies to involve consumers/patients/families to encourage them to express their beliefs, values and preferences and to optimize communication between them and their healthcare providers</b> <ul style="list-style-type: none"> <li>▪ A recent medium-quality review found no significant effect of patient participation in face-to-face primary care consultations on patient- or disease-related outcomes.(109)</li> </ul> </li> </ul>
<p>Key elements of the policy element if it was tried elsewhere</p>	<ul style="list-style-type: none"> <li>● <b>Developing decision aids or decision support systems about optimal screening for consumers/patients</b> <ul style="list-style-type: none"> <li>○ <i>Communicating clinical evidence:</i> An older low-quality review found, based on the limited evidence available as well as expert opinion, five components for efforts to frame and communicate clinical evidence to improve patient understanding: understanding the patient’s (and family members’) experience and expectations; building partnerships; providing evidence (including a balanced discussion of uncertainties); presenting recommendations informed by clinical judgment and patient preferences; and checking for understanding and agreement.(110)</li> </ul> </li> <li>● <b>Using other types of strategies to involve consumers/patients/families to encourage them to express their beliefs, values and preferences and to optimize communication between them and their healthcare providers</b> <ul style="list-style-type: none"> <li>○ A recent high-quality review found that long, detailed letters may increase inequalities in participation by discouraging those with lower educational levels.(104)</li> </ul> </li> <li>● <b>Monitoring the implementation of selected screening approaches and evaluating their impact</b> <ul style="list-style-type: none"> <li>○ <i>Public reporting:</i> An older low-quality review examined practices for using public reporting of performance as a way of improving healthcare quality, and suggests that for public reporting to be effective it should focus on information directly related to a program’s objectives, audience, content, product, distribution and impacts.(111)</li> </ul> </li> </ul>
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> <li>● <b>Using other types of strategies to involve consumers/patients/families to encourage them to express their beliefs, values and preferences and to optimize communication between them and their healthcare providers</b> <ul style="list-style-type: none"> <li>○ <i>Patient involvement in treatment:</i> An older medium-quality review found that: <ul style="list-style-type: none"> <li>▪ the preferences of patients’ involvement in cancer treatment vary, with the majority of patients preferring a collaborative role in treatment decision-making and a significant minority preferring a passive or active role; and</li> <li>▪ many patients experience a dissonance between their preferred role and the role they perceive they actually played. (112)</li> </ul> </li> </ul> </li> </ul>

### **Additional equity-related observations about the three elements**

Few of the reviews addressing the three elements provided findings specifically about the priority groups for this evidence brief (people living in rural and remote areas or people of low socioeconomic status and people from disadvantaged ethno-cultural communities), either because no studies were included in the reviews that focused on these populations or because insufficient detail was reported in reviews to make this assessment.

The reviews that we noted as having implications related to either of the priority populations focused on approaches to consumer involvement. Related to the first element (a model to coordinate decision-making about screening across sectors and/or jurisdictions), one review noted that equity (in general) is a key principle considered during priority-setting processes for healthcare,(77) and another found that equity/fairness was the most frequently mentioned criterion in a review of decision criteria for resource allocation and healthcare decision-making.(69) Similarly, another review indicated that approaches to interactive public engagement during the process of developing healthcare policies and programs need to be tailored to the broader policy context surrounding specific topics, including being attentive to the group(s) engaged, the history of the issue and any power dynamics that could emerge among the groups during the engagement process.(73) Related to the second element (establishing a 'hub' to coordinate evidence synthesis and recommendation development), one of the key recommendations we extracted from the series of reviews of methods about the development of guidelines, highlighted the need for consumer involvement in all stages of guideline development.(84) With respect to equity, consumer involvement in guideline development is important as it helps to ensure the views and perspectives of groups that are disproportionately affected by a particular issue are heard and incorporated into the recommendations that are developed. Lastly, related to the third element (supporting the implementation of guidelines), one review evaluated interventions that provide patients with tailored cancer risk and cancer screening information, and found that it led to increased cancer risk perception and knowledge of breast cancer as compared to generic information.(102) In addition, a recent high-quality review found that long, detailed invitation letters to an organized cancer screening program may increase inequalities in participation by discouraging those with lower educational levels.(104) Therefore, tailoring letters using concise and non-technical language could be important for increasing participation more generally and for conveying information to people from different ethno-cultural communities where perceptions of risk and/or knowledge of particular diseases may vary.

## **IMPLEMENTATION CONSIDERATIONS**

Potential barriers to supporting optimal screening approaches in Canada can be identified at the level of individuals (e.g., limited uptake of recommendations due to over enthusiasm for certain approaches to screening), providers (e.g., lack of adherence to guidelines that may challenge their professional attitudes or behaviours), organizations (e.g., lack of interest or willingness to collaborate in a coordinated model that considers screening for many different diseases), and systems (e.g., lack of political will to invest the resources needed to establish and sustain a ‘hub’ for evidence synthesis). A list of potential barriers to implementing the three elements is provided in Table 5.

**Table 5: Potential barriers to implementing the elements**

<b>Levels</b>	<b>Element 1: Create a model to coordinate decision-making about screening across sectors and/or jurisdictions</b>	<b>Element 2: Establish a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening</b>	<b>Element 3 – Support optimal implementation of screening approaches</b>
<b>Patient/Individual</b>	None identified	None identified	Consumers/patients may not adopt recommendations due to overenthusiasm for certain approaches to screening
<b>Care provider</b>	Providers may view a decision-making model that makes recommendations about what screening approaches to adopt as an encroachment on their professional autonomy	Experts may be unwilling or uninterested in being engaged in a panel or a process to develop a ‘workbook’ that may address screening for a range of diseases, many of which would not be within their areas of expertise	Providers may be unwilling to participate in strategies to support the implementation of practice guidelines that challenge their current practice
<b>Organization</b>	Organizations working in different disease sectors may be unwilling or uninterested in collaborating in a coordinated model that considers screening for many different diseases	Existing synthesis ‘hubs’ may be unwilling, or uninterested, in becoming part of a ‘central hub,’ or they may lack the resources to expand their mandate to include evidence synthesis for screening approaches (if a ‘hub’ were to be implemented by expanding the remit of an existing synthesis program)	Organizations with frequent staff turnover may not see value in investing heavily in efforts such as education and training to support the implementation of guidelines (especially those with limited resources)
<b>System</b>	Federal, provincial and territorial governments may be unwilling or uninterested in creating a model that coordinates decision-making about screening across sectors and/or jurisdictions	Federal, provincial and territorial governments may not be willing to invest the resources required to develop and sustain a ‘hub’ to coordinate evidence synthesis and recommendation development, and those with synthesis hubs in place may view this as a duplication of resources	None identified

In addition to considering barriers to implementation, it is important to also consider potential opportunities or ‘windows of opportunity’ for implementing the elements, which we outline in Table 6.

**Table 6: Potential windows of opportunity for implementing the elements**

Type	Element 1: Create a model to coordinate decision-making about screening across sectors and/or jurisdictions	Element 2: Establish a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening	Element 3 – Support optimal implementation of screening approaches
General	<ul style="list-style-type: none"> <li>After being disbanded in 2005, the CTFPHC was re-established in 2010 and could provide an existing model and infrastructure to work from for all of the elements.</li> </ul>		
Element-specific	None identified	None identified	None identified

We identified one decision-support guide (focused on population-based genetic screening) and two task forces/groups that could be drawn on as models for how to support coordinated action across jurisdictions. The goal of the decision-support guide is to provide a “systematic and transparent approach to guide genetic screening policymaking in a way that enables more balanced and informed decisions,”(39) and was developed through literature reviews and consultations with stakeholders and experts. In general, the decision guide provides a process that includes a set of underlying principles, decision nodes, criteria and types of supporting evidence that might be considered for making judgments about the benefits and risks of screening from the perspective of individuals and families, target population(s) and society.(113)

Perhaps the most directly applicable example of how to operationalize some or all of the elements is the CTFPHC.(114) The Task Force is an independent panel of clinicians and methodologists and makes recommendations for preventive actions by primary care providers based on research syntheses and through grading the quality of evidence and strength of recommendations from the syntheses.(115) While the focus of the task force relates more broadly to preventive health care, screening is a key component within this scope and therefore provides both a model for how to approach evidence synthesis and recommendation development to support optimal screening, and a mechanism through which a coordinating ‘hub’ might be operationalized.

A second example of how to operationalize some or all of the elements is the immunization sector, which (as outlined in the problem section) faces similar challenges as those encountered in screening. In 2003 a National Immunization Strategy was approved by the Federal/Provincial/Territorial (F/P/T) Conference of Deputy Ministers of Health with the aim of providing a “framework for inter-jurisdictional collaboration to improve the relevance, effectiveness and efficacy of immunization programming in Canada.”(116) The strategy was initially supported with a federal investment of \$45 million over five years, which is now \$5.6 million per year on an ongoing basis, with additional investments and in-kind contributions from provincial and territorial authorities. As the National Immunization Strategy Task Group (NIS-TG) outlines, the strategy “is a collaborative pan-Canadian Initiative that provides a vehicle for F/P/T jurisdictions to pursue opportunities of mutual interest and benefit, and to create consistent, equitable approaches to immunization planning, purchasing, delivery and education.”(116) As can be seen, the National Immunization Strategy is very similar to the elements presented in this evidence brief and could be used as a model for how to implement and achieve similar progress for screening approaches in Canada. For example, the review conducted by the NIS-TG outlines several successes of the strategy so far, including support for expert review and guidance, stronger core competencies for program design and delivery, improved safety and public confidence, security of vaccine supply (which could be analogous to securing consistent and timely access to laboratory services) and enhanced federal/provincial/territorial collaboration in areas of mutual interest and benefit.(116)

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## APPENDICES

The following tables provide detailed information about the systematic reviews and economic evaluations or costing studies identified for each element. Each row in a table corresponds to a particular document and the documents are organized by element (first column). The focus of the document is described in the second column. Key findings from the document that relate to the element are listed in the third column, while the fourth column records the last year the literature was searched as part of the review (or the year that the economic evaluation or costing study was published).

The fifth column presents a rating of the overall quality of any systematic review (no such ‘scoring’ system exists for economic evaluations and costing studies). The quality of each review has been assessed using AMSTAR (A MeaSurement Tool to Assess Reviews), which rates overall quality on a scale of 0 to 11, where 11/11 represents a review of the highest quality. It is important to note that the AMSTAR tool was developed to assess reviews focused on clinical interventions, so not all criteria apply to systematic reviews pertaining to delivery, financial, or governance arrangements within health systems. Where the denominator is not 11, an aspect of the tool was considered not relevant by the raters. In comparing ratings, it is therefore important to keep both parts of the score (i.e., the numerator and denominator) in mind. For example, a review that scores 8/8 is generally of comparable quality to a review scoring 11/11; both ratings are considered “high scores.” A high score signals that readers of the review can have a high level of confidence in its findings. A low score, on the other hand, does not mean that the review should be discarded, merely that less confidence can be placed in its findings and that the review needs to be examined closely to identify its limitations. (Lewin S, Oxman AD, Lavis JN, Fretheim A. SUPPORT Tools for evidence-informed health Policymaking (STP): 8. Deciding how much confidence to place in a systematic review. *Health Research Policy and Systems* 2009; 7 (Suppl1):S8.

The last three columns convey information about the utility of the document in terms of local applicability, applicability concerning prioritized groups, and issue applicability. For each review, the third-from-last column notes the proportion of studies that were conducted in Canada, while the second-from-last column shows the proportion of studies included in the review that deal explicitly with one of the prioritized groups. The last column indicates the review’s issue applicability in terms of the proportion of studies focused on screening. Similarly, for each economic evaluation and costing study, the last three columns note whether the country focus is Canada, if it deals explicitly with one of the prioritized groups and if it focuses on screening.

All of the information provided in the appendix tables was taken into account by the evidence brief’s authors in compiling Tables 2-4 in the main text of the brief.

**Appendix 1: Systematic reviews relevant to Element 1 - Create a model to coordinate decision-making about screening across sectors and/or jurisdictions**

Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
Establishing a processes to identify promising coordination models that could be scaled up and/or adapted to provincial and territorial health systems	To determine what is known from published studies, literature reviews and descriptive accounts about: 1) structures and processes required to build successful collaborations between public health (PH) and primary care (PC); 2) outcomes of collaborations between PH and PC; and 3) markers of successful collaboration between PH and PC.(66)	<p>Findings highlighted the importance of collaboration between levels of government; coordination and priority setting to enhance PH and PC collaboration were stressed.</p> <p>Facilitators for collaboration:</p> <ol style="list-style-type: none"> <li>1. Systemic level: fit between government and local needs, funding, education and training;</li> <li>2. Organizational level: Leadership management and accountability, geographic proximity of partners, information sharing;</li> <li>3. Interpersonal level: role clarity, shared purpose, philosophy and professional identity, developing and maintaining good relationships, effective communication and decision-making strategies.</li> </ol> <p>Barriers for collaboration:</p> <ol style="list-style-type: none"> <li>1. Systems level: policy, funding, power and control issues, and information infrastructure;</li> <li>2. Organizational level: lack of a common agenda, resource limitations, lack of knowledge and skills;</li> <li>3. Interactional level: attitudes and beliefs, relationship challenges.</li> </ol> <p>Successful collaboration between PH and PC led to positive outcomes</p>	2008	4/10 (AMSTAR rating from the McMaster Health Forum)	22/114	24/114 (5 were mixed urban and rural)	20/114

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		for the healthcare system and health professionals, and health benefits for individuals and populations.					
	Review of the impact of organizational partnerships on public-health outcomes (health improvement and/or a reduction in health inequalities) in England between 1997 and 2008.(76)	The review suggests that there is not yet any clear evidence of the effects of public-health partnerships on health outcomes. More appropriately designed and timed studies are required to establish whether, and how, partnerships are effective.	2008	6/9 (AMSTAR rating from Program in Policy Decision-making)	0/15	0/15	0/15
Establishing a process to set priorities for evidence syntheses to be completed as part of a pan-Canadian coordinating 'hub'	To identify and compare various practical and current approaches of health technology assessment (HTA) priority setting.(68)	<p>A majority (7 of 12) of priority-setting frameworks used a panel or committee to provide advice regarding priorities. In all cases, committees contained representatives from healthcare system funders, health professionals, and researchers. Advice from a board of directors was used in four priority-setting systems and in conjunction with a committee in two of these.</p> <p>Four of the 12 frameworks identified used a rating system to inform priorities. In all cases, these were used in conjunction with a committee. Two systems explicitly considered the cost benefit of conducting the assessment in deciding priorities.</p> <p>Eleven categories were identified for priority-setting criteria (listed in descending order of prevalence): clinical impact, economic impact,</p>	2006	4/10 (AMSTAR rating from the McMaster Health Forum)	3/12	Not Reported	?/12 (included studies were focused on priority setting, but the specific policy domains were not explicitly outlined)

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		disease burden, budget impact, evidence, expected level of interest, timeliness of review, variation in rates of use, controversial nature of proposed technology, ethical, legal, or psychosocial implications, alternatives.					
	To identify published academic work describing priority-setting processes for healthcare that either exist or have been tried in different jurisdictions around the world.(77)	<p>Priority-setting processes were identified as both formal and informal at national/state and regional levels.</p> <p>Formal processes began with the assembly of a government-appointed committee and identified principles and factors to be considered during priority setting (values such as equity, solidarity, equality, effectiveness/benefit and efficacy of healthcare services under review).</p> <p>Informal approaches comprised informal debates, discussions among policymakers, and a one-off consensus development meeting.</p> <p>Tools for generating a list of priorities, which relied heavily on data, were found to be impractical and conceptually difficult to understand by decision-makers.</p>	2005	3/10 (AMSTAR rating from the McMaster Health Forum)	1/30	Not Reported	?/30 (included studies were focused on priority setting, but the specific policy domains were not explicitly outlined)
Establish a panel to coordinate decision-making about what screening programs should be introduced, adapted, scaled up or discontinued in provincial	No reviews identified	n/a	n/a	n/a	n/a	n/a	n/a

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
and territorial health systems							
Developing criteria to guide the panel's decision-making	To identify decision criteria and their frequency reported in the literature on resource allocation and healthcare decision-making.(69)	<p>The most frequently mentioned criteria were (in descending order): equity/fairness, efficacy/effectiveness, stakeholder interests and pressures, cost-effectiveness, strength of evidence, safety, mission and mandate of health system, organizational requirements and capacity, patient-reported outcomes and need.</p> <p>Among these, three were from the 'health benefits and outcomes of intervention' category, highlighting the importance of this consideration in decision-making.</p> <p>In addition, there is a predominance of normative criteria (8 out of 10), which highlights the importance of considering the actual worth or value of healthcare interventions rather than just feasibility criteria.</p> <p>Among these criteria:</p> <ul style="list-style-type: none"> <li>- equity is difficult to operationalize in decision-making and priority-setting processes in a pragmatic manner, given that it is a complex ethical concept; and</li> <li>- cost-effectiveness criteria fails to incorporate equity considerations.</li> </ul>	2010	4/10 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	?/40 (included studies were focused on priority setting, but the specific policy domains were not explicitly outlined)
	Macro- and meso-level decision-making and priority-setting processes for including drugs in and/or excluding drugs from	The clinical evidence on benefit and the quality of that evidence were the main criteria used in priority setting concerning medicines. The costs of	2007	1/10 (AMSTAR rating from Program in Policy Decision-making)	3/6	Not Reported	?/6 (included studies were focused on priority



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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
	reimbursement lists and drug formularies in industrialized countries.(70)	<p>the drug emerged as the second major criteria while formal pharmacoeconomic analyses were given a small role.</p> <p>Other criteria used were: alternative treatments available, decisions in other hospitals/systems, size of population affected, severity of disease and past decisions.</p> <p>External factors mentioned as influencing decision-making were patient demand, pharmaceutical company activities and clinicians' excitement.</p>					setting, but the specific policy domains were not explicitly outlined)
Conducting periodic cross-jurisdictional reviews to identify strengths and key areas where the panel could support improvements	No reviews identified	n/a	n/a	n/a	n/a	n/a	n/a
Establishing a strategy to inform, consult and engage consumers and other relevant stakeholders to inform the panel's decision-making	Public engagement in priority setting and resource allocation.(75)	<p>Public engagement is most common at the visioning or goal-setting level, and in specific decisions about sites or programs, but is less common in monitoring and evaluation activities.</p> <p>Consultations are typically one-off rather than on-going, and not likely to involve the public in direct face-to-face interaction with decision-makers.</p> <p>Costs are seldom reported, but well-structured processes can range from tens of thousands of dollars to the million-plus range.</p>	2006	3/10 (AMSTAR rating from the McMaster Health Forum)	17/190 (total 190 cases from 175 articles)	Not Reported	?/175 (included studies were focused on resource allocation, but the specific policy domains were not explicitly outlined)

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		<p>Evaluation, because of its potential impact upon program and policy decisions, can be an implicit form of priority setting. Engagement exercises are rarely formally evaluated. Despite lack of evaluation, results are generally seen as successful and often claimed to lead to direct impact on decisions.</p> <p>There is a lack of practical guidance for integrating public input with other forms of evidence.</p>					
	<p>Evaluation of the effects of consumer involvement and comparison of various methods of involvement in healthcare policy development and related research, clinical practice guidelines and information materials developed for patients.(67)</p>	<p>The impact of consumer involvement on healthcare policy creation and related research and the development of clinical practice guidelines remain uncertain due to lack of research.</p> <p>The review notes the benefits of consumer involvement, in comparison to no consumer involvement, appear to be greatest in the creation of patient-information materials</p> <p>Research evidence indicates involving consumers in the creation of information materials for patients produces material with improved readability and relevance, and that is more understandable to patients without elevating their anxiety.</p>	2005	9/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	0/6	Not reported	7/6 (included studies were focused on decision-making, but the specific policy domains were not explicitly outlined)
	Effectiveness of the agenda of	Training of patients and healthcare	2004	4/9 (AMSTAR	Not	17/131	0/131

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
	involvement of people affected by cancer in research, policy and planning, and practice.(71)	<p>professionals is necessary for successful involvement of cancer patients in research, policy and planning, and practice.</p> <p>Patient involvement requires personnel and financial support.</p> <p>The opposing ideologies of individualism and collectivism are the most common rationales as to why people affected by cancer should be involved in research, policy and planning, and practice.</p>		rating from Program in Policy Decision-making)	reported in detail - Description states: Canada, U.K., U.S.A.		
	Strategies for interactive public engagement in the development of healthcare policies and programs.(73)	<p>Public engagement mechanisms should be adapted to the wider context of policy development around the issue, including the type of topic, the group(s) to be engaged, the history of the issue and the perceived power dynamics.</p> <p>Participants in well-designed interactive public engagement processes tend to report high levels of satisfaction with the communication of objectives, adequacy of the information materials provided to inform discussions, and the logistics and management of the deliberation. Increased levels of topic-specific learning are also commonly reported.</p> <p>Interactive public engagement methods can influence participant</p>	2009	6/9 (AMSTAR rating from Program in Policy Decision-making)	7/12	5/12	0/12

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
	<p>Incorporating public values and technical information into healthcare resource allocation decision-making.(72)</p>	<p>views but are less likely to change more dominant views (top rankings, highest priorities).</p> <p>Sixty-nine of the 117 papers presented methods for eliciting public values to inform resource allocation decision-making. These methods included: ranking of services or programs, rating of options using Likert-type scales, making explicit choices between options, individual interviews, a Delphi process, focus groups, citizens’ juries and town hall meetings. No single “generic” approach has been identified as the gold standard. Further, selection of which approach to use required consideration of a variety of population-specific factors.</p> <p>Key informant interviews with local decision-makers indicated that creation of advisory groups has been the most common approach used by Regional health authorities (RHAs) to engage the public in priority setting. Further, during actual priority setting, two types of public values-based “evidence” were identified: information from formal needs assessments and the board’s awareness of the public’s acceptability or support of a specific “need”. Within RHAs, priority-setting decisions were communicated directly to healthcare</p>	2002	4/10 (AMSTAR rating from the McMaster Health Forum)	8/117	Not Reported	7/117 (included studies were focused on priority setting, but the specific policy domains were not explicitly outlined)

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		providers and indirectly to the public through the media. In contrast, provincial boards/committees were found to rely exclusively on the media.					

**Appendix 2: Systematic reviews relevant to Element 2 – Establish a ‘hub’ to coordinate evidence synthesis and recommendation development to support optimal screening**

Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
Conducting and regularly updating syntheses of the many types of research evidence relevant to decision-making about optimal screening approaches	No reviews identified (see the section in the body of the evidence brief about the second element for a brief summary of key literature relevant to this element).	n/a	n/a	n/a	n/a	n/a	n/a
Convening panels comprised of methodological and content experts as well as consumers to grade the quality of evidence, assess the local applicability of research evidence, and grade the strength of recommendations about optimal screening approaches	No reviews identified (see the section in the body of the evidence brief about the second element for a brief summary of key literature relevant to this element).	n/a	n/a	n/a	n/a	n/a	n/a
Developing ‘workbooks’ to support provincial and territorial adaptations of screening recommendations to their contexts	No reviews identified (see the section in the body of the evidence brief about the second element for a brief summary of key literature relevant to this element).	n/a	n/a	n/a	n/a	n/a	n/a

Appendix 3: Systematic reviews relevant to Element 3 – Support optimal implementation of screening approaches

Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
Supporting the implementation of screening guidelines by healthcare providers	Effectiveness of strategies to increase cervical cancer screening among women in clinic-based settings.(92)	<p>Nine of the included studies used outreach methods (telephone calls or letters of invitation) and 11 used in-reach methods (promoting screening when women are already at an office or clinic), of which three were aimed at changing physician behaviour.</p> <p>Results across the three studies were inconsistent. One study found modest improvements in screening rates after providing lists to physicians of unscreened women in their practice, a physician visit to the practice to encourage screening, or providing both lists and a physician visit. The other two studies found that chart reminder versus audit and feedback and a physician office visit compared to no intervention were effective at improving Pap test rates.</p>	1999	7/9 (AMSTAR rating from Program in Policy Decision-making)	2/20	7/20  (+ 3 studies urban/rural mix)	20/20
	Effectiveness of interventions to increase screening for breast, cervical, and colorectal cancers.(94)	<p>Provider assessment and feedback was found to be effective for increasing provider delivery or promotion of screening for breast, cervical and colorectal (only for fecal occult blood testing).</p> <p>There was insufficient evidence to determine the effectiveness of provider incentives for increasing the delivery or promotion of</p>	2008	6/9 (AMSTAR rating from Program in Policy Decision-making)	7/45	17/45  (+ 6 studies urban/rural mixed)	45/45

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		screening for breast, cervical and colorectal cancer.					
	Interventions for increasing chlamydia screening in primary care.(91)	Four studies that assessed an educational package for primary care providers, a multifaceted intervention addressing barriers to providing screening, educational outreach (a health advisor providing training) and internet-based continuous medical education each found significant increases in appropriate chlamydia screening after the delivery of each intervention.	2005	3/10 (AMSTAR rating from Program in Policy Decision-making)	0/4	0/4	4/4
	Interventions for increasing the uptake of chlamydia screening in primary care.(95)	Interventions that promoted the universal offer of a chlamydia test in young people had the greatest impact on increasing screening in primary care.  A large increase in screening rates was found in a multifaceted quality-improvement program that involved provision of a urine jar to patients at registration, linking screening to routine Pap smears, computer alerts for doctors, education workshops for clinic staff, internet-based continuing medical education, and free sexual health consultations.	2010	4/11 (AMSTAR rating from the McMaster Health Forum)	0/16	1/16	6/16
	Computerized decision support systems in order communicate diagnostic, screening or monitoring test ordering.(93)	Computerized decision support systems showed statistically significant benefits for process-related or practitioner-performance outcomes in nearly	2009	8/10 (AMSTAR rating from Program in Policy Decision-making)	0/23	Not Reported	7/26



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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		<p>two-thirds of the studies.</p> <p>In the four studies that assessed adverse effects as a result of test cancellation or delay, no significant detrimental effects in terms of additional utilization of healthcare resources or adverse events were observed as a result of using computerized decision support.</p> <p>Of the two studies that assessed the cost-effectiveness of computerized decision support, one found a mean cost decrease of 3% for blood test orders in each of the intervention clinics compared with a 2% increase in control clinics. The other study found a significant increase in the cost of laboratory tests from 41.8 euros per patient per annum to 47.2 euros after implementation of the system.</p> <p>No studies were identified on the acceptability of computerized decision support systems to physicians or patients.</p> <p>Two studies found that the impact of computer decision support systems plus order communication systems (computer applications used to enter diagnostic and therapeutic patient care orders and to view test results) versus order</p>					

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		communication systems alone had no significant impact on test costs.					
	Organizational and educational strategies to improve the management of depression (108)	<p>Multifaceted interventions had mixed effects for appropriate care outcomes.</p> <p>Educational meetings were found to be generally ineffective for appropriate care.</p> <p>Insufficient evidence was found for reminders (computerized decision support versus reminders) on appropriate care.</p>	2003	6/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	Not Reported in detail - Description states: USA	Not Reported	2/36
	Whether different factors influence the effectiveness of educational outreach visits (EOVs) and whether adding another intervention to EOVs, such as the use of patient-mediated interventions or using manuals or computerized reminders to prompt clinicians to perform clinical actions, alters their effectiveness (88)	<p>Multifaceted interventions that included educational outreach and distribution of educational materials and/or other intervention compared to a control group, compared to audit and feedback and compared to educational materials were all found to be generally effective for improving appropriate care.</p> <p>Educational-outreach interventions used alone compared to a control group and compared to educational materials were found to be generally effective.</p> <p>There was insufficient evidence for comparisons of multifaceted versus educational meetings, educational outreach visits versus continuity of care, and multifaceted versus reminders.</p>	2007	8/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	1/69	2/69	6/69

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
	Effects of different types of educational materials (manuals, bulletins, guidelines, quick reference guides, newsletters, consensus statements), distribution audiences (targeted or general audiences), format (colourful versus black and white) and frequency of distribution.(87)	<p>Distribution of educational materials was found to be generally effective for appropriate care outcomes.</p> <p>There was insufficient evidence found comparing the effectiveness of educational meetings with distribution of educational materials for appropriate care outcomes.</p>	2011	8/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	12/45	Not Reported	11/45
	Effects of providing interprofessional education to different health professionals in order to improve care for patients with mental health problems.(117)	Educational meetings were found to be generally effective for appropriate care.	1998	4/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	0/19	Not Reported	0/19
	Guideline dissemination and implementation strategies.(90)	<p>Single interventions compared with no intervention: reminders, audit and feedback patient-mediated, and the distribution of educational materials were found to be effective for improving appropriate care with medium effect sizes.</p> <p>Time series data were reported for the distribution of educational materials, and half of the studies showed an immediate effect or effect over time.</p> <p>Insufficient evidence exists for educational meetings, other professional interventions (interviewing physicians about outpatient referrals, and a rapid</p>	1998	7/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	15/235	Not Reported	1/235

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Sub-element	Focus of systematic review	Key findings	Year of last search	AMSTAR (quality) rating	Proportion of studies that were conducted in Canada	Proportion of studies that deal explicitly with one of the prioritized groups	Proportion of studies that focused on screening
		<p>rule-out protocol), continuity of care, and revision of pharmacy-related professional roles.</p> <p>Insufficient evidence exists for three comparisons of single interventions compared with another: physicians responding to reminders compared with reminders, educational materials compared with reminders, and reminders compared with patient-mediated interventions.</p> <p>Multifaceted interventions compared with no intervention were found to be effective for improving appropriate care with medium effect sizes. Time series data show that these interventions also have immediate effects, most of which are sustained over time.</p> <p>Multifaceted interventions compared with intervention controls were found to be effective for improving appropriate care with small effect sizes.</p>					
	Effects of audit and feedback on professional practice and healthcare outcomes.(89)	In all comparison - audit and feedback alone compared to no other interventions, audit and feedback with educational meetings compared to no intervention, audit and feedback as part of a multifaceted intervention compared to no intervention, audit	2010	8/11 (AMSTAR rating from <a href="http://www.rxfchange.ca">www.rxfchange.ca</a> )	11/140	Not Reported	Not Reported

*Supporting Optimal Screening Approaches in Canada*

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		and feedback combined with complementary interventions compared to audit and feedback alone, and audit and feedback compared to other interventions - audit and feedback was found to be generally effective.					
	Effects of local opinion leaders on professional practice and healthcare outcomes.(86)	Local opinion leaders alone and local opinion leaders with audit and feedback were found to be generally effective for improving appropriate care behaviour (based on 40 and five RCT comparisons respectively).  Multifaceted interventions that included the use of opinion leaders in addition to one or more interventions had mixed results for improving appropriate care behaviour (based on 10 RCT comparisons).	2009	10/10 (AMSTAR rating from Program in Policy Decision-making)	6/18	Not Reported	Not Reported
	Effectiveness of financial incentives in changing healthcare professional behaviours and patient outcomes.(96)	Payment for working for a specified time period was generally ineffective, improving 3/11 outcomes from one study reported in one review.  Payment for: each service, episode or visit; providing care for a patient or specific population; and providing a pre-specified level or providing a change in activity or quality of care were all generally effective.  Mixed and other systems were of	2010	No rating tool available for this type of document (overview of systematic reviews)	n/a (included systematic reviews as the unit of analysis)	n/a (included systematic reviews as the unit of analysis)	n/a (included systematic reviews as the unit of analysis)

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		<p>mixed effectiveness.</p> <p>Assessing the effect of financial incentives overall across categories of outcomes, they were: of mixed effectiveness on consultation or visit rates; generally effective in improving processes of care; generally effective in improving referrals and admissions; generally ineffective in improving compliance with guidelines outcomes; and generally effective in improving prescribing costs outcomes.</p>					
Developing decision aids or decision support systems about optimal screening for consumers/patients	Efficacy of different decision aid tools compared to regular care for women facing several options in the specific field of obstetric care.(97)	<p>The review found that all decision aid tools, except for Decision Trees, facilitated significant increases in knowledge.</p> <p>The computer-based information tool, the decision analysis tools, individual counselling and group counselling interventions presented significant results in reducing anxiety levels.</p> <p>The Decision Analysis Tools and the Computer-based Information tool were associated with a reduction in levels of decisional conflict.</p> <p>The Decision Analysis Tool was the only tool that presented evidence of an impact on the final choice and final outcome.</p>	2010	7/11 (AMSTAR rating from Program in Policy Decision-making)	2/10	Not Reported	5/10

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		<p>Decision aid tools can assist health professionals in providing information and counselling about choices during pregnancy, and support women in shared decision-making.</p> <p>The review suggested that the choice of a specific tool should depend on resources available to support their use as well as the specific decisions being faced by women, their healthcare setting and providers.</p>					
	Effectiveness of decision aids for patients' treatment or screening decisions.(100)	<p>Decision aids increase patient involvement, and improve knowledge and realistic perception of outcomes.</p> <p>Patients exposed to decision aids with explicit values clarification versus those without explicit values clarification were better informed and achieved decisions more consistent with their values.</p> <p>Decision aids, compared to typical care interventions, resulted in lower decisional conflict related to feeling uncertain about personal values and feeling uninformed, and reduced the number of passive patients in decision-making and those left feeling undecided post-intervention.</p>	2009	9/11 (AMSTAR rating from <a href="http://www.rxfchange.ca">www.rxfchange.ca</a> )	Not Reported in detail-description states: Australia; Canada; China; Finland; Netherlands; UK; USA	Not Reported	7/86 (focus of studies not reported)

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		In the four studies that measured this outcome, decision aids positively affect patient-practitioner communication.					
	Effectiveness of cancer-related decision aids to improve communication between health professionals and patients, and to involve patients in their healthcare decisions.(107)	<p>Knowledge of screening options was significantly improved with the use of decision aids compared to regular practice, and similarly, knowledge of preventive/treatment options was also increased.</p> <p>In a screening context, based on 34 randomized controlled trials, decision aids enhanced patient knowledge about screening options without augmenting anxiety.</p> <p>There was little difference between the different decision aids.</p> <p>Review concluded that cancer-related decision aids are effective in increasing patient knowledge compared with usual practice without increasing anxiety, particularly in the area of cancer screening.</p>	2007	4/11 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	22/34
	Overview of the impact on risk perception accuracy of genetic counselling.(103)	Overall, studies found that an increased proportion of individuals correctly perceived their risk after counselling rather than before, and those who did not had smaller deviations from their objective risk than before	2007	5/9 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	2/19



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		<p>counselling.</p> <p>The positive effects were sustained at follow-up one year later.</p> <p>Some studies observed no impact at all, or only observed an impact for low-risk participants</p>					
	To evaluate the effects of attribute framing (positive versus negative) and goal framing (gain versus loss) of the same health information, on understanding, perception of effectiveness, persuasiveness, and behaviour of health professionals, policymakers and consumers.(101)	<p>Attribute framing in a positive manner caused more positive perceptions of effectiveness than negatively-framed messages, but did not cause a change in persuasiveness of the message.</p> <p>For screening messages, loss messages led to a more positive perception of effectiveness than gain messages.</p>	2007	10/11 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	19/35
	Effects of different types of personalized risk communication for consumers making decisions about taking screening tests.(98)	<p>There was little evidence to suggest that personalized risk communication (written, spoken or visually presented) increases uptake of screening tests, or promotes informed decision-making by consumers.</p> <p>In three studies, personalized risk communication interventions lead to a more accurate risk perception, and three other trials reported that interventions lead to increased knowledge.</p> <p>More detailed personalized risk communication (i.e., those which</p>	2006	10/11 (AMSTAR rating from Program in Policy Decision-making)	2/22	Not Reported	22/22

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		present numerical calculations of risk) may be associated with a smaller increase in uptake of tests.					
	Effectiveness of interventions that provide patients with cancer risk and cancer screening information tailored to their personal attributes.(102)	Tailored information regarding cancer risk and screening led to increased cancer risk perception and knowledge of breast cancer compared to generic information.  There is limited evidence to suggest that a website tailored for risk factors would be effective.	Not Reported	7/11 (AMSTAR rating from Program in Policy Decision-making)	0/40	Not Reported	29/40
	Identification of ways to communicate evidence to improve patient understanding, involvement in decisions and outcomes.(110)	There is limited evidence available to guide how physicians can most effectively share clinical evidence with patients facing decisions.  Based on the limited evidence available as well as expert opinion, the review recommends five components for efforts to frame and communicate clinical evidence: understanding the patient's (and family members') experience and expectations; building partnership; providing evidence, including a balanced discussion of uncertainties; presenting recommendations informed by clinical judgment and patient preferences; and checking for understanding and agreement.	2003	0/10 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	1/7
Using other types of strategies to involve consumers/patients/families to	Methods to increase participation in organized screening programs.(104)	Postal reminders, telephone reminders, signatures from general practitioners on invitation letters,	2012	8/11 (AMSTAR rating from Program in Policy Decision-	1/69	8/69	69/69

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encourage them to express their beliefs, values and preferences and to optimize communication between them and their healthcare providers		<p>providing scheduled appointments (as opposed to open appointments) and mailing a kit for self-sampling (for cervical cancer screening) were effective at increasing participation in organized screening programs for cancer.</p> <p>Different styles of letter presentation may affect participation. Specifically, there is evidence that long, detailed letters may increase inequalities in participation by discouraging those with lower educational level</p>		making)			
	Preferences of patients for their involvement in cancer treatment.(112)	<p>Preferences of patients' involvement in cancer treatment vary, with the majority of patients preferring a collaborative role in treatment decision-making and a significant minority preferring a passive or active role.</p> <p>Many patients experience a dissonance between their preferred role and the role they perceive they actually played.</p> <p>It is inconclusive whether factors such as age, gender, marital status, socioeconomic status and health status affect preferences.</p>	2004	5/10 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	0/31
	Effects of patient involvement in the planning and development of health care.(74)	Most patients who participated in involvement initiatives had improved self-esteem. Healthcare staff also found patient	2002	5/9 (AMSTAR rating from Program in Policy Decision-making)	2/40	Not Reported	Not Reported

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		<p>involvement rewarding, though some reported difficult relationships between patients and staff.</p> <p>Changes to service associated with increased patient involvement included: production of new or improved information sources for patients; simplifying appointment procedures; improving transport to treatment units; and, improving access for people with disabilities.</p> <p>Organizational attitudes shifted to become more open to patient involvement after patient-involvement initiatives were implemented.</p>					
	Effects of patient participation in face-to-face primary care consultations on patient-oriented and/or disease-oriented outcomes.(109)	Despite the underlying theory, the review saw no significant effect (a suggestion of a positive impact at most) of patient participation on patient-related outcomes. For disease-related outcomes, no overall effect of patient participation could be demonstrated; some studies even revealed deterioration in disease-oriented outcomes.	2011	6/11 (AMSTAR Rating from the McMaster Health Forum)	1/7	Not Reported	0/7
Monitoring the implementation of selected screening approaches and evaluating their impact	Assessment of the relative effectiveness of various quality-improvement strategies for enhancing healthcare.(106)	<p>Research evidence suggests clinician/patient-driven quality-improvement strategies are more effective compared to manager/policymaker-driven approaches.</p> <p>The most effective quality-</p>	2008	2/11 (AMSTAR rating from Program in Policy Decision-making)	Not Reported	Not Reported	Not Reported

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		improvement strategies included clinician-directed audit and feedback, decision support systems and the use of small-group discussions in continuing professional education.					
	Effectiveness of quality-improvement collaboratives in enhancing the quality of care.(105)	Systematic review of nine controlled trials found a positive effect of quality-improvement collaboratives on processes of care and patient outcomes.  Review additionally examined the findings of 60 uncontrolled reports of which 53 trials indicated specific improvements in patient care and organizational performance due to participation in a quality-improvement collaborative.	2006	4/11 (AMSTAR rating from <a href="http://www.rxforchange.ca">www.rxforchange.ca</a> )	Not Reported	Not Reported	1/72
	Examines evidence on promising practices for effective public reporting on healthcare quality.(111)	Review suggests for public reporting to be effective attention must be focused on the reporting program's objectives, audience, content, product, distribution and impacts.  Review also indicates public reporting should be part of broader efforts to develop and nurture a relationship with the report's intended audience in order to increase accountability and quality within the healthcare system.	Not Reported	2/9 (AMSTAR rating from Program in Policy Decision-making)	1/13	Not Reported	0/13



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