



EVIDENCE >> INSIGHT >> ACTION

**Evidence Brief:
Addressing Overuse of Health Services in Canada**

18 November 2015

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 regional/provincial levels 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?

- Overuse of health services leads to unneeded and potentially harmful care for patients, and places strain on already overstretched health systems.
- Overuse of health services is driven by a range of system-level factors.
- Addressing overuse is complicated by a culture of 'more is better,' patient and provider characteristics and competing priorities between patients and providers.
- Numerous initiatives have been developed to address overuse of health services, but they are fragmented and not well evaluated.

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

- Element 1 – Implementing transdisciplinary approaches to identify health services that are overused
 - Sub-elements may include using the best available data, research evidence and guidelines to identify overuse of health services, conducting jurisdictional scans to identify health services that have been delisted in other health systems, and/or identifying health services that should be prioritized for removal from the health system through stakeholder- and consumer-engagement processes.
 - Several approaches have been developed and implemented to identify overuse of health services, and while we have identified literature describing these approaches, we have not identified evaluations of their impacts.
- Element 2 – Implementing health-system stakeholder-led initiatives to address overuse
 - Sub-elements may include fostering better communication and shared decision-making between providers and patients based on evidence-based recommendations, identifying and changing provider behaviour to address inappropriate use of health services, educating patients/citizens about what health services they need, and/or developing mass-media campaigns.
 - Several high-quality systematic reviews found beneficial effects for each of the sub-elements, however the magnitude of the effects varied, and were modest at best.
- Element 3 – Implementing government-led initiatives to address overuse
 - Sub-elements may include revising lists of publicly financed products and services, modifying remuneration for providers or incentivizing consumers to prioritize the use of some products and services over others, requiring prior authorization for use of specific health services that are identified on a list of overused services, and/or engaging stakeholders and consumers in decision-making processes.
 - Several systematic reviews found evidence that revising lists of products and services, modifying remuneration and requiring prior authorization have resulted in increased use of targeted services and reduced expenditures, but overall, the effects were varied and modest at best.

What implementation considerations need to be kept in mind?

- While potential barriers exist at the levels of patient/individuals, providers, organizations and systems, the biggest barrier may be the complex interplay between a culture of 'more is better,' the competing priorities among patients and providers as well as between different levels of government, and the willingness of health system decision-makers to make tough decisions to address these barriers.
- On the other hand, a number of potential windows of opportunity could be capitalized upon, which include many provincial and territorial policymakers prioritizing the need to address overuse given the potential for cost savings at a time of budget constraint, as well as the increasing number of initiatives to address overuse of health services in other countries, which can provide opportunities for applying 'lessons learned' and adapting them to local contexts.

REPORT

Countries like Canada are facing the challenge of how to maximize value for money spent by maintaining or improving the quality and efficiency of healthcare in the face of shrinking or slow-growing budgets.(1;2) An important part of this challenge is the significant amount of resources that are consumed as a result of overuse of health-system resources. Addressing the issue of overuse of health services that provide no added benefit, may cause harm, or are low-value, can result in improvements in patient safety and in appropriateness and quality of care, and in reduced waste in the system.

While Canadian provinces and territories have placed increasing emphasis on addressing overuse of health services, the situation is complicated by provincial and territorial health systems having a culture where ‘more is better’ (i.e., where consumers ‘demand’ health services that are not needed), and where the perspective is ‘better safe than sorry’ (i.e. where clinicians may order more tests just to be ‘sure’ or ‘thorough’). Clinicians are often required to balance the competing priorities of increased consumer demand and the need to reduce overuse of health services.

Approaches have been implemented over the past few decades at the level of systems (e.g., health technology assessments) and practices (e.g., clinical practice guidelines) to ensure that patients receive treatments of proven effectiveness and cost-effectiveness. However, similar efforts focusing on avoiding inappropriate or overuse of health services, have not reached the same state of maturity. Failure to engage in such efforts leads to inefficient allocation of limited healthcare resources because health systems continue to provide reimbursement for services (and to those who deliver them) that may provide limited or no health gain, cause harm or waste resources.

While there is growing recognition in many countries that the overuse of health services is a health-system challenge that needs to be addressed, identifying possible solutions, assessing their local applicability, adapting them to meet local contexts and developing an implementation plan is a significant and complex challenge.

Box 1: Background to the evidence brief

This evidence brief mobilizes both global and local research evidence about a problem, three elements of a potentially comprehensive approach to 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 the McMaster Health Forum;
- 2) developing and refining the terms of reference for an evidence brief, particularly the framing of the problem and three elements of a potentially 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.

It is therefore timely to ask what can be done to address overuse of health services in Canada. In address this challenge in this evidence brief and the stakeholder dialogue it was prepared to inform, efforts to addressing overuse of health services at a system level, which includes policy options and frameworks that can be used at the macro level (i.e., national and provincial) and meso level (i.e., regions, healthcare organizations or networks) are in scope. However, the evidence brief will not focus on overuse of health services in the context of clinical decisions of individual clinicians or teams of clinicians. While the evidence brief will include a focus on the efforts of clinicians (i.e., primarily physicians and/or interprofessional teams, but also others such as nurse practitioners, nurses and allied health professionals) to address overuse of health services, the main focus is on what can be done at the system or organizational level. Moreover, this evidence brief will also not address the underuse of health services (e.g., access challenges).

The evidence brief gives particular attention to people of low socio-economic status, including those with poor health literacy. This group may be affected by decisions to fully or partially withdraw public coverage for health services for which they end up having to pay out-of-pocket, or they may not understand health information and alternatives, which can lead to the overuse of health services (see Box 2).

The phenomenon of overuse has been referred to in many different ways, such as ‘too much medicine,’ ‘low-value care,’ ‘inappropriate use,’ ‘obsolescence,’ ‘unnecessary care’ or ‘disinvestment.’⁽³⁻⁶⁾ This terminology, and related studies and initiatives, have different motivations, with some focused on improving the effectiveness of care, some focused on improving the efficiency of care, and others on both. Some of these terms imply a complete removal of the technology from the health system but, given effects often vary across patient subgroups, very few health services will be candidates for complete removal, and instead “may be suited to partial retraction.”⁽⁷⁾

The overuse of health services such as tests, treatments, procedures and technologies (which are the focus of this evidence brief) stems from several factors, such as system inefficiencies (e.g., lack of integration among sites and providers, resulting in duplication of tests), clinician activity (e.g., ordering tests and procedures that are not needed), or patient expectations (e.g., patients requesting tests and procedures that are not needed). We therefore use the term ‘overuse of health services’ which includes “care that can lead to harm and consumes resources without adding value for patients.”⁽⁸⁾

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 people of low socio-economic status, including those with poor health literacy. 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.

THE PROBLEM

The problem can be understood in relation to the following four themes:

1. overuse of health services leads to unneeded and potentially harmful care for patients, and places strain on already overstretched health systems;
2. overuse of health services is driven by a range of system-level factors;
3. addressing overuse is complicated by a culture of ‘more is better,’ patient and provider characteristics and competing priorities between patients and providers; and
4. numerous initiatives have been developed to address overuse of health services, but they are fragmented and not well evaluated.

Overuse of health services leads to unneeded and potentially harmful care for patients, and places strain on already overstretched health systems

Issues regarding the appropriate provision of health services have been classified into three broad categories: underuse, misuse and overuse.(9;10) Until recently, the two former categories have received the bulk of attention. However, with many countries facing the challenge of how to maintain high-quality care in the face of shrinking or slow-growing budgets,(1;2) there has been an increased focus on the issue of overuse. It has also been driven by various studies that have documented the extent of overuse of health services, with some finding that 20–33% of patients receive care that is not needed, ineffective, or potentially harmful.(11-13) Moreover, most providers now widely acknowledge the significance of the problem with 72% of physicians in a national survey conducted by the Choosing Wisely Campaign in the United States reporting that they prescribe an unnecessary test or procedure at least once a week.(14)

The implications of overuse of health services are many as overuse can lead to negative outcomes at the patient, system and global levels. At the patient level, the overuse of health services can lead to serious patient harm and lower quality of care. For example, in the area of imaging, although CT scans expose patients to high levels of radiation and hence increased rates of cancer, the use of CT scans has increased across the world, which is at least partially driven by the use of unnecessary scans.(15;16) In the area of prescription medications, there has been substantial overuse of benzodiazepines among older adults, despite large-scale studies demonstrating high risks associated with prolonged use, including higher rates of motor vehicle accidents, and of falls and hip fractures that may lead to hospitalization and death.(17;18) Furthermore, undertaking low-value tests in low-risk populations could lead to false-positive findings that lead to further unnecessary investigations and/or treatments that expose patients to other harms, such as risks of side effects or interactions with other medications.

At the level of health systems, the overuse of health services leads to wasted resources, and results in resources being ‘trapped’ and unable to be used for more appropriate and underfunded parts of the system.(7) Such waste creates an inefficient and often ineffective health system, which also can lead to poor quality care.

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 “hedgies” 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 Institute for Clinical Evaluative Sciences, Health Quality Ontario, Canadian Institute for Health Information, Choosing Wisely (both in Canada and the U.S.), National Institute for Health and Care Excellence (United Kingdom), European Observatory on Health Systems and Policies, and Organisation 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.

At the global level, the overuse of some health services can also lead to negative global health outcomes. The most far-reaching example of the global impact of overuse is the overuse of antibiotics, which leads to antimicrobial resistance, and affects every country given that infectious agents ‘travel’ and do not respect international borders.(19) Complicating this is the phenomenon of the “tragedy of the commons,” wherein the attempt to maximize the use of a resource by each individual leads ultimately to the destruction of that resource. In the example of antibiotics, each clinician or patient thinks about their consumption at the level of the immediate gain of the individual, unaware of the cumulative system-level consequences. The resulting overuse, and the selection pressure it induces, creates resistant bacteria which diminish the effectiveness of antibiotics in treating future infections, and increase the likelihood of untreatable disease outbreaks in the population.(20)

The issue of overuse is further complicated because it crosses all disease states, clinical specialties and demographic groups. For example, in addressing the issue of overuse, numerous health systems, initiatives and researchers have identified ‘lists’ of health services that could be considered overused. In all of these lists, interventions that cross all clinical groups and disease states have been identified. For example:

- Elshaug and colleagues identified more than 150 low-value services funded by the Australian Medical Benefits Schedule;(21)
- Prasad and colleagues identified 146 examples of ‘best practice’ services where robust evidence was available that indicated they were inferior to an alternative practice;(22)
- the National Institute for Health and Clinical Excellence (NICE) in the United Kingdom has identified more than 800 clinical interventions for potential disinvestment to achieve cost savings, but there is no evidence that these services have been reduced in practice;(23) and
- the Choosing Wisely movement that started in the United States and has since gained popularity internationally, including in Canada, collaborates with medical specialty societies to create lists of the top five to 10 tests, treatments and procedures that providers in their discipline should carefully consider before ordering, and should engage patients in discussions about whether the test, treatment or procedure is appropriate.(8) For the Choosing Wisely Campaign, in Canada alone, as of June 2015, 50 Canadian medical specialty societies have joined the campaign and more than 150 recommendations pertaining to unnecessary tests, treatments and procedures have been released by these societies.

The issue of overuse of health services is made even more complex by the fact that it rarely makes sense to fully withdraw health services because patient heterogeneity and the provision of ‘personalized care’ means that a service may offer little or no benefit to patients with certain risk factors, while being very beneficial to others.(24) Given this, decisions to withdraw services from a health system are rarely ‘black and white,’ and fall in a broad ‘grey’ spectrum that takes into account this heterogeneity in order to provide access to services for those who can benefit most from a certain treatment, while limiting access to those who will not benefit.(25)

Overuse of health services is driven by a range of system-level factors

The issue of overuse of health services is driven by a complex interplay of system-level factors related to delivery, financial and governance arrangements.

Delivery arrangements

Clinicians are increasingly called upon to balance the (often competing) system- and patient-level priorities, and feel unable or ill-equipped to do so. For example, some physicians have indicated that they have not been taught how to appropriately handle a conversation with their patient about not ordering a specific test or treatment that the patient feels they need.(8) Additionally, time pressures during each patient visit may limit a clinician’s ability to properly engage a patient in discussions related to overuse and in shared decision-making.(26) Lastly, delivery arrangements themselves and the fragmentation of the system lends itself to

overuse (e.g., in situations where patient data are not properly integrated among care providers, or when electronic medical records are not readily accessible and duplicate tests are ordered).(27)

Further complicating the issue is the fact that health services are rarely provided in isolation of other services and are instead bundled in packages of care and support that are determined based on the unique needs of each patient. Therefore, addressing overuse is not as simple as reducing the use of specific health services, because many emerging technologies function in a complementary or supplementary manner to older technologies, instead of taking their place. This results not only in the inability to withdraw from the older option, but, in fact, creates a situation where more funds and personnel are needed for the newer aspects of the health system, thereby creating an unsustainable situation.(28)

Financial arrangements

Fee-for-service remuneration creates incentives for providers to provide more, but not necessarily more appropriate services.(29;30) In addition, if clinicians' incomes depend on ordering more health services, there is likely to be resistance to limiting or reducing the overuse of health services, which could be viewed by some as limiting their income as well as their autonomy. Moreover, while Canada has provided financial incentives for achieving health-system goals,(31) using financial 'levers' as disincentives for delivering specific health services has not been widely supported. The use of financial 'levers' may be straightforward in cases where resources can be withheld for the delivery of health services with harmful effects. However, such approaches are far too simple for efforts to remove resources for health services that benefit some but not others, or that may be more expensive or cost-ineffective, but that are valued by some patient groups.(32)

Governance arrangements

Governance arrangements also complicate the ability to appropriately address the issue of overuse. For example, a tension exists in the fact that organizations and clinicians are given the autonomy to decide the health services that are needed, but there is also a lack of accountability in place to ensure that the right healthcare service was given at the right time, to the right patient, and for the right reason. For example, in Ontario, while many primary-care providers have accountability agreements with the payer for services, the accountability focuses more on operational indicators like volume, and not on quality indicators or on avoiding the unnecessary use of health services.(30) Additionally, some services are outsourced to other organizations, and if changes are mandated but then not included in the service contract, there may be no interest or commitment to manage the change.

Also related to governance arrangements, decisions to partially or fully withdraw health services from a system are made difficult in areas of overlapping federal and provincial authority. For example, a provincial decision to remove a service, technology or drug listed on a formulary may be difficult politically given confusion among patients who may value it and see that it still has regulatory approval at the federal level. Similarly, addressing overuse of health services may be further complicated given the lack of consistency across provincial health systems (e.g., due to political pressure that results from removing a service that other provinces or countries continue to provide). Furthermore, rapid advances in health-related technology often result in high demand for new and well marketed (but not always needed) technologies by increasingly well-informed and proactive consumers. However, regulatory processes are often not nimble enough to communicate the appropriate uses for such technologies.

Addressing overuse is complicated by a culture of 'more is better,' patient and provider characteristics and competing priorities among patients and providers

Identifying overuse of services and low-value services is complex and goes beyond assessing clinical and cost effectiveness, and the outcomes of assessments depend on who is looking, where they look, and what they expect to see.(33;34) For example, while an economist is more likely to assess value using the benefits attained for amount of funds spent and a clinician is likely to focus on the clinical benefits of a treatment,

whereas a policymaker must balance not only clinical benefits and costs, but also the values and preferences of citizens.

More generally, the culture in provincial and territorial health systems contributes to the problem of overuse of health services. Clinician culture is rooted in their training, which is based in identifying and thoroughly examining all possible diagnoses and tests that could confirm or exclude the diagnosis, which can lead to overuse of diagnostic or treatment decisions.(29) In addition, societal culture supports the ideas that ‘more is better,’ and therefore providers and users often opt for more tests or procedures, or take more drugs, just to be sure. Furthermore, among patients there is often a perception that providers who do more are better than those who adopt a ‘wait and see’ approach.(29) This culture is further entrenched by market forces that seek to increase demand for products, as well as by a lack of counteracting force that explains that more is not always better.

The framing of overuse also contributes to the problem, given it’s human nature to prefer being provided something rather than nothing to address a real or perceived issue. For example, ‘loss aversion’ is one contributing factor in explaining why various initiatives to address the issue of overuse may not succeed. Behavioural economists agree that a loss is psychologically twice as powerful as an equivalent gain.(35) Following this, clinicians and patients have been reported to perceive a greater disadvantage in removing an already existing health service than from the decision to deny access to a new service of similar value.(25) Not surprisingly, increasing investments is viewed positively as compared to the retraction or reduction in the availability of health services (36) from both a political and a civic perspective. It is also human tendency to prefer immediate over delayed payoffs, even when the immediate reward is lesser in value.(36) This makes the approaches to address overuse difficult to implement given that the benefits of implementation (running a more efficient system, reallocating resources wisely, etc.) are realized much later than the perceived benefit of getting a test or medication immediately.(37) Furthermore, when framing the issue of overuse, there is a lack of emphasis on the concept of opportunity cost, which would require being explicit that the resources spent on overused services results in less money available to invest in priority areas within the system (i.e., where there are unmet needs).

Clinician- and patient-level characteristics and interests also contribute to the problem of overuse, which we summarize in Table 1. At the clinician level, various factors are at play, such as shifting the blame of overuse, providing excuses for overuse, and not having the skills to address overuse.(29) At the patient level, various factors such as patient demand, lack of health literacy, and a lack of patient engagement can impede initiatives that address overuse.(11;14)

Table 1: Provider- and patient-level considerations when addressing overuse of health services

Level	Considerations	Explanation
Clinicians	<ul style="list-style-type: none"> Acknowledgement of overuse within sub-specialty 	<ul style="list-style-type: none"> Some specialities have difficulty acknowledging that a service, test or procedure in which they have a vested interest may be overused. For example, Elshaug and colleagues identified more than 150 services funded by the Australian Medical Benefits Schedule that were potential candidates for disinvestment,(21) which motivated the publication of many critical responses from various specialties analyzing the ‘erroneous’ decisions and decrying the lack of clinical processes used to arrive at the conclusions.(38-40)
	<ul style="list-style-type: none"> Blame avoidance 	<ul style="list-style-type: none"> When provider groups have been asked to create lists of low-value services, they tend to include recommendations for other clinicians about what to do (or not to do) rather than address overuse by themselves and their colleagues.(8)
	<ul style="list-style-type: none"> Justification for overuse 	<ul style="list-style-type: none"> Physicians have demonstrated that they feel somewhat justified in overusing health services. A survey of 600 physicians across the United States found that while 73% indicated that the frequency of unnecessary services, tests and procedures in the

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		health system is a very or somewhat serious problem, the top reasons for ordering these are to provide reassurance to physicians (e.g., to address concerns about potential malpractice, to be safe, and wanting more information for reassurance), and patient concerns or system pressures were not among the top three reasons.(14)
	<ul style="list-style-type: none"> Clarity of role 	<ul style="list-style-type: none"> Many providers do not see themselves as resource stewards and therefore often do not consider or discuss the financial implications of ordering various tests, treatments and procedures with patients.(41)
	<ul style="list-style-type: none"> Ability to address overuse 	<ul style="list-style-type: none"> Some providers feel that they do not have the knowledge or skills to deal with the issue of overuse. A key area that has been proposed to address overuse has been to promote shared decision-making and patient education, but clinicians may feel that they have not been taught how to appropriately handle a conversation with their patient about not ordering a specific service, test or procedure that the patient feels they need. Even if the next generation of clinicians is trained to change their attitudes and behaviours from the beginning of their training, it will take time before these clinicians are practising, and longer still before the norms instilled in them become dominant in clinical culture.(8)
	<ul style="list-style-type: none"> Income 	<ul style="list-style-type: none"> Providers may feel that if they reduce the demand for certain services, their income will be affected, since their income often depends on ordering health services. While fee-for-service remuneration creates incentives that can improve access to care, it also incentivizes providers to provide more services, some of which may not be appropriate.(29;30)
Patients	<ul style="list-style-type: none"> Demand for tests that are not evidence-based and may lead to overuse 	<ul style="list-style-type: none"> Patients may not believe that their particular service, test or procedure is of low value and, when they are ill, disregard efforts to address overuse that are “for the greater good.” Patients will advocate for inappropriate tests and procedures that have only a small chance of being beneficial.(42) Group heterogeneity contributes to the confusion, as the same intervention may be effective for one patient type, and ineffective for another.
	<ul style="list-style-type: none"> Demand may be fuelled by the ‘well-informed’ patient 	<ul style="list-style-type: none"> While the information presented by patients to their clinician may be accurate, they may not be fully informed about what they need and hence many demand too many services and/or services that are inappropriate.(43)
	<ul style="list-style-type: none"> Health illiteracy at the patient level could lead to overuse 	<ul style="list-style-type: none"> Limited health literacy is a barrier to understanding health information and necessary alternatives, which can lead to the overuse of health services such as emergency room visits and hospitalizations.(44;45) Some patients either do not have access to basic health-related information, or they do not understand the information they need to make informed decisions about their care.(46-48)
	<ul style="list-style-type: none"> Patients are not always consulted in decision-making processes 	<ul style="list-style-type: none"> Patients are often not engaged, or are engaged too late in the process and, as a result, do not fully understand, appreciate, or agree with the decisions being proposed by their provider.(2)

The issues related to a culture of ‘more is better’ and clinician and patient characteristics and interests are even further complicated by competing priorities among patients, clinicians and health system decision-makers. For example, system-level priorities emphasize the need for clinicians to reduce, patients are telling

clinicians they want more, and clinicians want to provide high-quality care while at the same time pleasing their patients and sustaining their practice.

Numerous initiatives have been developed to address overuse of health services, but they are fragmented and not well evaluated

Significant effort has been invested in developing well-defined criteria and processes that draw on the best available evidence to assess the safety, effectiveness and cost-effectiveness of new and emerging health services.(49) Yet only recently have similar efforts been directed towards the removal of health services that are believed to be ineffective or inefficient. These efforts will be critical for addressing overuse of health services, but without more coordinated and sustained responses, inefficient allocation of limited health resources will persist.(50)

Despite the relatively recent focus (at least in comparison to efforts to assess new health services), several responses have been developed to identify and address overuse of health services in many countries, which is likely reflective of the complexity of the issue.(51) In general, approaches to identifying overuse of health services have adopted economic principles by using health technology assessment methods, using a policy analysis perspective by ensuring stakeholder's interests are included, or a combination of these methods. Many proposed approaches to identifying overuse also predominately draw on evidence-based assessments, with notable examples including program budgeting marginal analysis,(52-54) health technology reassessment (55;56) and applying results from Cochrane reviews.(4;23) Efforts to address overuse (and not just identify it) range from stakeholder-led approaches such as the Choosing Wisely approach that attempts to address the lack of communication between physicians and patients as a cause of wasteful spending,(8;11) to government-led approaches such as value-based insurance that uses financial incentives (e.g., increased out-of-pocket payment for low-value services) to promote cost-efficient healthcare services and consumer choices.(57)

However, there has been criticism that the approaches are fragmented and that the evidence on which decisions are based is minimally helpful, and health systems need to find a way to address the issue in real world settings and not just in randomized control trials (e.g., by focusing on areas of significant variation in practice as a trigger for identifying common areas of overuse).(58;59) Moreover, the effects of these initiatives, both in and of themselves and compared to the other initiatives, are not fully established, and much of the literature generally points out that the implementation of these approaches is difficult and results are hard to achieve.(60-62)

Additional equity-related observations about the problem

An important element of the problem is how it may disproportionately affect certain groups or communities. Addressing overuse of health services in Canada is an issue that could affect all Canadians, but, as noted earlier, this evidence brief gives particular attention to people of low socio-economic status. As described above, the issue of overuse of health services is inherently complicated as it rarely makes sense to fully withdraw health services because patient heterogeneity and the provision of 'personalized care' means that a service may offer little or no benefit to patients with certain risk factors, while being very beneficial to others.(24) This component of the problem may disproportionately affect people of low socio-economic status because fully or partially removing some services may result in some individuals having to pay out-of-pocket for needed services. Such out-of-pocket payments will disproportionately affect those of low socio-economic status, who may not be able to pay for needed services or wait for special-approval processes. In addition, the issue of overuse is particularly relevant to people of low socio-economic status when the opportunity cost of not addressing overuse is considered. Specifically, not addressing overuse of health services means that health-system resources are used for services that are not needed, which could instead be allocated to addressing the health needs of vulnerable populations that may not be covered.

THREE ELEMENTS OF A COMPREHENSIVE APPROACH FOR ADDRESSING THE PROBLEM

Many approaches could be selected as a starting point for deliberations about addressing overuse of health services 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 developing such strategies. The three elements were developed and refined through consultation with the Steering Committee and with key informants who we interviewed during the development of this evidence brief. The elements are:

- 1) implementing transdisciplinary approaches to identify health services that are overused;
- 2) implementing health-system stakeholder-led initiatives to address overuse; and
- 3) implementing government-led initiatives to address overuse.

The elements could be pursued separately or simultaneously, or components could be drawn from each element to create a new 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. Given that we identified few reviews related to some components of the elements, we have supplemented findings from systematic reviews with supporting frameworks wherever possible to help identify important components of the elements and how they might be operationalized. For the included systematic reviews, we present key findings with an appraisal of whether their methodological quality (using the AMSTAR tool) (63) 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), which is a continuously updated database containing more than 4,600 systematic reviews and more than 2,200 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 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 element 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 – Implementing transdisciplinary approaches to identify health services that are overused

Sub-elements might include activities to:

- conduct jurisdictional scans to identify health services that have been delisted in other health systems using evidence-based processes and determine whether the same services are still being used locally;
- use the best available data, research evidence and guidelines to identify overuse of health services; and
- identify health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes.

As noted in the problem section, several approaches have been developed and implemented to identify overuse of health services. As part of an in-progress critical interpretive synthesis that we are conducting,⁽⁵⁰⁾ we have identified four broad approaches, which we summarize in Table 2. While we have identified literature describing these approaches, we have not identified evaluations of their impacts.

Table 2: Examples of approaches that have been used to identify overuse of health services

What is the approach?	Where has it been used?	Who (typically) leads it?	What does it do?
NICE “do not do” recommendations (23)	England	<ul style="list-style-type: none"> • Top-down approach led by a government agency 	<ul style="list-style-type: none"> • Using health technology assessments, advisory bodies identify areas of practice that are ineffective or lack sufficient evidence to support their continued use. • A database of practices and procedures that should either be discontinued completely or used sparingly was created to decision-making.
Cochrane Collaboration reviews (4)	International	<ul style="list-style-type: none"> • Either top-down approach led by government agencies or bottom-up approach led by an independent network of researchers, professionals, patients and carers 	<ul style="list-style-type: none"> • In-depth, systematic reviews that address a clearly formulated research question and are designed to promote informed decision-making. • For example, to develop their “do not do” list, NICE in the U.K. screens Cochrane reviews to identify those that conclude that an intervention is not yet ready for practice, or is ineffective and should not be used. • These interventions are then used to develop a ‘Cochrane Quality and Productivity report,’ which outlines the potential impacts of removing or reducing provision of the health service. • Areas of focus when examining the reviews include the potential impact on patient safety, clinical care and patient outcomes, and on money or productivity savings.
Practice variation studies (59;64)	International	<ul style="list-style-type: none"> • Either top-down or collaborative approach led by stakeholders at different levels in the health system 	<ul style="list-style-type: none"> • Focuses on variation in care among regions, organizations or providers. • The approach identifies high users of specific health services (e.g., those that prescribe or order higher amounts than other regions, organizations or providers) in order to identify strategies that can then be used to address overuse (e.g., through one or more of the strategies for behaviour change outlined in element 2).
Health technology assessment (HTA) (5;55;56)	33 countries	<ul style="list-style-type: none"> • Top-down approach led by government 	<ul style="list-style-type: none"> • Focuses on the clinical and cost-effectiveness as well as associated ethical, legal, social and organizational issues related to existing health technologies and services. • The goal of HTA is to evaluate new health technologies, as well provide ongoing evaluation over the life cycle of a technology.

<p>Program Budgeting and Marginal Analysis (PBMA) (65-67)</p>	<p>Canada, United States</p>	<ul style="list-style-type: none"> • Top-down approach led by government agencies or health system organizations, combined with a bottom-up approach that uses stakeholder panels 	<ul style="list-style-type: none"> • Relies on the examination of: 1) benefits forgone by choosing one alternative over another; and 2) the additional costs of an option versus its benefits. • The stakeholder advisory panels are charged with making recommendations for resource reallocation. • An ideal reallocation of resources adopted through PBMA will maximize benefits while minimizing costs.
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Turning to the sub-elements, we identified a systematic review that could be used as an example for identifying areas of overuse (for sub-element 2), as well as 15 systematic reviews related to sub-element 3 that focus on priority-setting processes and stakeholder- and consumer-engagement. We did not identify any systematic reviews about conducting jurisdictional scans (sub-element 1).

Identifying overuse of health services

The processes outlined in Table 2 (in particular the use of Cochrane reviews) could be combined with conducting and then periodically updating a systematic review that identifies areas of overuse in specific provinces or across the country. An example of this is an older high-quality systematic review that assessed the magnitude and the nature of clinical quality problems in general practice in Australia, New Zealand and the U.K.(68) A similar approach is currently being planned for Canada by Squires et al. at the University of Ottawa.

Priority setting

As detailed in a recent evidence brief about advancing national childhood cancer-care strategies in Latin America, the four systematic reviews identified from Health Systems Evidence related to priority setting are all older and of medium (69;70) or low quality.(71;72) While none provided an explicit assessment of the benefits, harms and costs of priority setting, they did provide information related to key elements of such processes. In general, the reviews point to the importance of using a mix of quantitative techniques (e.g., to solicit general feedback and guidance) and qualitative techniques (e.g., where decisions are needed) for priority setting with different groups of stakeholders (e.g., policymakers, funders, patients and families/caregivers). One of the medium-quality reviews highlighted that either formal priority-setting processes (e.g., assembling a government-appointed committee with specific principles or factors to be considered during the process) or informal priority-setting processes (e.g., informal debates, discussions or consensus-building meetings) can be used.(71) The same review emphasized the importance of identifying principles and factors to be considered during priority-setting processes (e.g., efficacy, effectiveness, equality and solidarity).

The other reviews found that these types of processes have been operationalized using a range of quantitative, qualitative and mixed techniques designed to elicit preferences from stakeholders.(69-72) For example, reviews of priority setting in developing countries (72) and for health technology assessments (70) indicate that several processes have used interdisciplinary panels or committees of funders, health professionals and researchers to provide advice. In addition, one of the reviews focused on public engagement in priority setting for resource allocation and found that engaging the public is most common during visioning and goal-setting.(69)

Stakeholder- and consumer-engagement

We identified two systematic reviews focused on stakeholders (e.g., clinicians and/or relevant stakeholder organizations),(73;74) and eight systematic reviews that focused on public- and consumer-engagement processes,(75-82) which are described in a recent evidence brief.(83) For stakeholder engagement, one

recent, medium-quality review focused on the benefits and challenges of engaging stakeholders in a process of developing and conducting systematic reviews.(74) Stakeholder engagement was found to be most beneficial for identifying and prioritizing topics for research, and providing pragmatic feedback on the research protocol. Other key benefits include ensuring that findings are interpreted with the end user in mind, developing final products that are readable and accessible, and facilitating wider dissemination and uptake of the research findings. The second review focused on stakeholder engagement in program evaluation and found limited research evidence, but did find considerable overlap in the key features of stakeholder-engagement processes in the literature.(73) Specifically, the review indicated that the methodological centrepiece of these processes is entering into collaboration with a collective willingness to participate, and placing emphasis on the need to draw on the strengths of each member while respecting their unique positions and expertise.(73)

Of the eight systematic reviews about public- and consumer-engagement, all indicated that the available evidence is limited and that it is difficult to draw firm conclusions about the benefits of particular public- and consumer-engagement processes.(75-82) One recent medium-quality review outlined that consumer engagement in healthcare aims to engage consumers, community members and the public in general, as well as specific sub-groups that are involved in or affected by a particular issue (e.g., people from culturally and socioeconomically linguistically diverse backgrounds).(80) In addition, an older, 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, as well as increased levels of topic-specific learning.(75) Another older, medium-quality review also found that case studies of project administrators' views about the impact of patient engagement indicate that it has contributed to changes in services.(78) The reviews also noted that:

- the underlying goal of public deliberations is to obtain public opinion (including from under-represented individuals and groups) to provide insight into social values and ethical principles for consideration in public decisions;(76)
- when adapting public deliberation processes (e.g., citizen juries) for specific aims, special attention should be paid to recruitment, independent oversight by a steering committee, duration of the jury, moderation, and respect for volunteer participants;(81)
- common tasks in public deliberation include developing policy directions, recommendations and tools, and priority setting for resource allocation;(76;81)
- strategies that can be used for public and consumer engagement vary in their goals, scope of activities and methods used,(80) and processes need to be adapted to the context of the policy issue;(75)
- public and consumer engagement can be helpful for improving dissemination of information and processes for developing interventions, as well as for enhancing awareness and understanding among citizens;(77;82)
- training of patients and their families, as well as healthcare professionals, is an important component of successfully involving cancer patients and their families in research, policy, planning and practice;(79) and
- involving patients in the planning and development of healthcare plans has several benefits for consumers (e.g., improved self-esteem), providers and staff (e.g., rewarding experience), processes of care (e.g., simplified appointment procedures) and broader supports (e.g., improved transportation between sites and access for people with disabilities).(78)

As outlined in the same evidence brief, deliberative processes could also be used as a stakeholder-engagement process to prioritize health services for full or partial removal from the health system. A recent systematic review described key features and intended effects of deliberative dialogues.(84) Specifically, dialogues, such as the one this brief was prepared to inform, could be periodically convened to systematically elicit tacit knowledge, views and experiences of stakeholders to prioritize health services for full or partial removal from the health system. The model developed in the review outlines three key features of deliberative dialogues, which include ensuring an:

- 1) appropriate meeting environment (e.g., by ensuring adequate resources, commitment from participants, transparency, timeliness of the issue, appropriate group size, clear meeting rules, pre- and post-meeting tasks and effective facilitation);
- 2) appropriate mix of participants (e.g., by ensuring fair and balanced representation of those with an interest in the issue, and that participants are motivated and provided with the resources they need to meaningfully engage in the issue); and
- 3) appropriate use of research evidence (e.g., fostering a clear understanding of the policy issue among all participants by presenting what is currently known about it based on the best available research evidence).

The model further outlines several intended effects of deliberative dialogues, including short-term (e.g., strengthened capacity of participants to address the policy issue), medium-term (e.g., strengthened community or organizational capacity) and long-term effects (e.g., strengthened system capacity to make evidence-informed decisions).(84) In addition, a recent evaluation of deliberative dialogues in six African countries found that they were viewed positively and led to strong intentions to act on what was learned, regardless of the country, health system issue addressed and the group actors investigated.(85)

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 systematic reviews contained in Table 3 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 1.

Table 3: Summary of key findings from systematic reviews relevant to Option 1 – Identifying health services that are overused

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> • Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ○ One recent review outlined a model for deliberative dialogues and identified possible intended effects of deliberative dialogues, including short-term (e.g., strengthened capacity of participants to address the policy issue), medium-term (e.g., strengthened community or organizational capacity) and long-term effects (e.g., strengthened system capacity to make evidence-informed decisions).(84) ○ An older high-quality review found some evidence that community engagement improves the dissemination of information and processes for developing interventions.(82) ○ A recent medium-quality review found that the main benefits of stakeholder engagement in developing and conducting systematic reviews include: identifying and prioritizing topics for research; providing pragmatic feedback on the research protocol; aiding in recruitment of research participants; helping the researchers understand the research subject’s perspective; ensuring that findings are interpreted with the end user in mind and that final products are readable and accessible; and facilitating wider dissemination and uptake of research findings.(74) ○ The same review noted that stakeholder engagement in the topic refinement and research development phase of conducting a systematic review was identified as the point where stakeholder engagement yielded the greatest benefit.(74)
Potential harms	<ul style="list-style-type: none"> • Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ○ An older low-quality review about priority setting for health interventions in developing countries noted important limitations in some of the priority-setting processes studies, including: <ul style="list-style-type: none"> ▪ using a limited number of criteria to inform priority-setting when a broader set of policy-relevant information could have been included; and ▪ relying exclusively on one technique (e.g., quantitative techniques such as discrete-choice experiments or qualitative techniques such as deliberative processes) to identify respondent preferences when not all criteria relevant to priority-setting are amenable to use in a single approach.(72) ○ A recent medium-quality review indicated that the biggest challenges of engaging stakeholders in the development and conduct of systematic reviews include time and resources, researcher skills for stakeholder engagement, finding the right people, balancing multiple inputs, and understanding the best/most appropriate time in the review process to engage different types of stakeholders.(74)

<p>Costs and/or cost-effectiveness in relation to the status quo</p>	<ul style="list-style-type: none"> • Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ○ 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.(69) ○ 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.(79)
<p>Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the element were pursued)</p>	<ul style="list-style-type: none"> • Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> ○ Conducting jurisdictional scans to identify health services that have been delisted in other health systems and determine whether the same services are still being used locally • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> ○ Not applicable (no ‘empty’ reviews were identified) • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ▪ Most of the studies included in an older low-quality review about priority setting for health interventions in developing countries were small pilot studies, which did not include evaluations of the priority-setting processes that were described.(72) ▪ One older medium-quality review identified and compared priority-setting approaches for health technology assessment,(86) and another older but low-quality review described priority-setting processes for healthcare,(71) 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). ▪ 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.(69) ▪ A recent, medium-quality review indicated that while there is some evidence to support the developmental role of public involvement (e.g., for enhancing awareness and understanding among citizens), no clear conclusions can be drawn due to lack of clarity about what success looks like.(87) ▪ Another medium-quality but older review similarly found few studies that described the effects of involving patients in the planning and development of healthcare.(78)
<p>Key elements of the sub-element if it was tried elsewhere</p>	<ul style="list-style-type: none"> • Use the best available data, research evidence and guidelines to identify overuse of health services <ul style="list-style-type: none"> ○ An older high-quality review used a systematic approach to assess the magnitude and the nature of clinical quality problems in general practice in the United Kingdom, Australia and New Zealand,(68) and similar reviews could be conducted and periodically updated in Canada (or other jurisdictions) to identify areas of overuse (in addition to using Cochrane reviews as outlined in Table 2). • Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ○ A recent review outlined a model for deliberative dialogues (as one possible component for identifying a clear picture of challenges related to addressing childhood cancer), which included three key features: <ul style="list-style-type: none"> ▪ ensuring an appropriate meeting environment (e.g., by ensuring adequate resources, commitment from participants, transparency, timeliness of the issue, appropriate group size, clear meeting rules, pre- and post-meeting tasks and effective facilitation); ▪ ensuring an appropriate mix of participants (e.g., by ensuring fair and balanced representation of those with an interest in the issue, and that participants are motivated and provided with the resources they need to meaningfully engage in the issue); and ▪ ensuring appropriate use of research evidence (e.g., fostering a clear understanding of the policy issue among all participants by presenting what is currently known about it based on the best available research evidence).(84) ○ An older low-quality review about priority setting for health interventions in developing countries indicated that: <ul style="list-style-type: none"> ▪ most involved policymakers, health workers and the general population in their priority-setting process; ▪ quantitative techniques (e.g., discrete-choice experiments) are most appropriate where general guidance on priority setting is needed;

	<ul style="list-style-type: none"> ▪ qualitative techniques (e.g., deliberative processes) may be best used in situations where decisions are required. ○ 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.(70) ○ An older, medium-quality review of priority setting for healthcare identified formal and informal priority-setting processes.(71) <ul style="list-style-type: none"> ▪ Formal processes – assemble a government-appointed 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). ▪ Informal processes – informal debates, discussions among policymakers and one-off consensus development meetings. ○ 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.(71) ○ Eight reviews focused on public and consumer engagement. <ul style="list-style-type: none"> ▪ A recent medium-quality review about public involvement in healthcare policy found that key features of public involvement are poorly defined and rarely detailed.(87) ▪ A recent low-quality review outlined that having the potential to find common ground is a requirement for using public engagement to address issues, and that common goals include activities related to developing policy direction, recommendations and tools, priority setting, resource allocation and risk assessments.(76) ▪ The same review indicated that public-engagement processes include three broad characteristics: 1) a sponsor seeking input from the public; 2) participants considering an ethical- or values-based dilemma; and 3) provision of accurate and balanced information to participants about the dilemma.(76) ▪ A recent medium-quality review indicated that when adapting public-deliberation processes (e.g., citizen juries) for specific aims, special attention should be paid to recruitment, independent oversight by a steering committee, duration of the jury, moderation, and respect for volunteer participants.(81) ▪ Two medium-quality reviews (one recent and one older) 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).(75;76) ▪ 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.(79) ▪ An older medium-quality review defined patient involvement as “the active participation in the planning, monitoring, and development of health services of patients, patient representatives, and wider public as potential patients.”(78) ▪ An older high-quality review indicated that community-engagement activities used a variety of approaches, including convening community groups, committees and workshops, and engaging educators, champions and volunteers.(82) ○ A recent medium-quality review indicated that there was considerable overlap in the key features of stakeholder-engagement processes in the literature, and found that the methodological centrepiece of stakeholder involvement is entering into collaboration with a collective willingness to participate, and that draws on the strengths of each member while respecting their unique positions and expertise.(73)
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> • Identifying health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes <ul style="list-style-type: none"> ○ 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.(88) <ul style="list-style-type: none"> ▪ Case studies including project administrators’ views about public engagement in the planning and development of healthcare in an older medium-quality review provided support to the view that patient engagement has contributed to changes in services.(78)

Element 2 – Implementing health-system stakeholder-led initiatives to address overuse

Sub-elements might include activities to:

- foster better communication and shared decision-making between providers and patients based on evidence-based recommendations and best practices;
- change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice;
- educate patients/citizens about what health services they need (e.g., through decision aids); and
- develop mass-media campaigns to raise awareness about the need to address overuse.

While these are framed as being led by health-system stakeholders (i.e., clinicians, relevant stakeholder organizations, as well as patients) they could also be led by or in collaboration with governments depending on the health and political system. However, in Canada it's likely that stakeholder groups would lead or be involved in them at the national or provincial level.

One stakeholder-led approach that has figured prominently in the literature that we identified in our ongoing critical interpretive synthesis is the Choosing Wisely campaign, which has garnered significant attention, originally in the United States and more recently in Canada.

Launched in April 2012 by the American Board of Internal Medicine, the Choosing Wisely Campaign targets physicians, patients and other stakeholders in an effort to raise awareness and change attitudes about medically unnecessary tests, procedures, and related technologies, particularly by addressing “routine” tests which are frequently used but have questionable effectiveness or are potentially harmful.(8;89;90) The campaign developed its definition of inappropriate services from the RAND Appropriateness Method, and defined it as “a health care service [that] is provided under circumstances in which its potential for harm exceeds the possible benefit.”(91)

As part of Choosing Wisely, interested providers within clinical specialities convene a panel to produce a “top five” list of overused health services, tests or treatments within their field of expertise based on clinical evidence of effectiveness, lack of harm and necessity. These lists are shared with members of the professional society, and disseminated to the public. In addition, the lists are meant to provide physicians and patients with an opportunity for conversation about appropriate treatment for an individual, and, as a corollary, eliminate some harmful or unnecessary treatments that may have originally been part of the treatment plan.(11) Since its launch in 2012, other countries such as Australia, Canada, Denmark, England, Germany, Italy, Japan, the Netherlands, New Zealand, Switzerland and Wales, have launched parallel campaigns.(8) In 2014, the Choosing Wisely Campaign was launched first in Ontario and then in other provinces in Canada.(92) Canada has also begun to work with medical schools to integrate Choosing Wisely recommendations into their curricula.(8)

Given its recent emergence as an approach to addressing overuse of health services, evidence regarding its impacts are only starting to emerge. For example, in relation to raising awareness and improving education regarding overuse, Choosing Wisely has only begun to have documented success, with one study indicating that the number of physicians who feel that they have “a major responsibility for reducing healthcare costs” has increased 30% between 2013 and 2014.(93) Additionally, preliminary results show that physicians who are aware of the movement are more likely to have reduced the number of times they recommend a test or procedure,(14) although other results show that less than one in five physicians have heard of the campaign.(9) The most recent in-depth evaluation of Choosing Wisely has concluded that “for an effort that only begun [sic] 2 years ago, [uptake] is encouraging...[but] measuring the impact of the Choosing Wisely efforts is complex,”(94) and no impact on overuse has yet to be demonstrated.

Turning to the sub-elements, we identified nine systematic reviews related to shared decision-making, two recent evidence briefs detailing findings from systematic reviews focused on identifying and changing the behaviour of providers, nine systematic reviews and one overview of systematic reviews about educating patients/citizens, and seven systematic reviews about mass-media campaigns.

Shared decision-making

We identified eight systematic reviews that examined shared decision-making between providers and patients, of which three were high quality,(95-97) and five medium quality.(98-102) These reviews found:

- no significant effect of patient participation in primary care on patient- or disease-related outcomes;(98;99)
- mixed (but mostly positive) effects of tools designed to support shared decision-making with reviews indicating that:
 - tools and resources such as communication-skills workshops or education sessions, coaching sessions targeted at patients or health professionals, computerized decision aids, video-based interventions to improve informed decision-making and shared decision-making, counselling sessions, booklets or DVD decision aids and paper-based hand-outs had some positive effects on knowledge, participation, decisional conflict and self-efficacy of disadvantaged populations, but no significant effect on adherence levels, anxiety, and screening/treatment preferences, intentions or uptake;(95)
 - tools to promote shared decision-making in serious illness improved knowledge, and some tools (e.g., video advance care planning tool to assist in discussions of treatment preference with patients with advanced dementia, and an advanced directive documentation guide designed for patients with low health literacy) changed treatment decisions;(100) and
 - videos designed to educate patients and involve them in the decision-making process for prostate care improved knowledge about prostate cancer and about the risks and benefits of different treatment options, improved health and physical functioning, and improved satisfaction with the decision-making process;(101)
- mixed effects of shared decision-making interventions for people with mental illness;(96)
- the most frequently reported barriers by health professionals for implementing shared decision-making were time constraints, lack of applicability due to patient characteristics and lack of applicability based on the clinical situation, and the most frequently reported facilitators were provider motivation and perception that shared decision-making would lead to improved clinical processes and patient outcomes;(102) and
- interventions targeting both patients and providers had a positive effect compared to usual care and compared to interventions targeting patients alone.(97;99)

Interventions to change provider behaviour

Identifying behaviours to be changed to address overuse could be achieved by using a systematic/structured approach and/or by using iterative/theory-based approaches to identify the underlying causes of problems. Drawing on two recent evidence briefs,(31;103) we summarize possible systematic and iterative/theory-based approaches in Table 4. The same evidence briefs also identify many candidate strategies and techniques, and methods for delivering them to optimize clinical practice (i.e., provider-targeted implementation strategies). Many such approaches have been evaluated, and as of October 2015 there were 947 systematic reviews evaluating provider-targeted implementation strategies in Health Systems Evidence (www.healthsystemsevidence.org). While assessing these reviews is beyond the scope of this brief, a recent (non-systematic) review provides a summary of the results of the highest quality and most up-to-date systematic reviews produced by the Cochrane Effective Practice and Organizational Change (EPOC) group.(104)

This set of EPOC systematic reviews found beneficial effects of optimizing clinical practice for educational materials,(105) educational meetings,(106) educational outreach visits,(107) local opinion leaders that can champion change,(108) audit and feedback, (109) computerized reminders,(110) and tailored interventions.(111) While each of these interventions has been found to have positive absolute effects ranging from 2-12%, an older medium-quality systematic review found that combining them in multifaceted interventions does not result in increased effects on optimizing practice.(112) While financial incentives/disincentives can also be used to change the behaviour of providers, we profile findings from reviews about them in element 3.

A notable finding across these reviews is that while the absolute effect sizes are similar, there are large distributions of observed effects. Given this, Grimshaw et al. suggest that the likely effects of interventions vary in relation to the degree to which the causal mechanisms of action for the intervention address the specific barriers identified.(104) This interpretation makes it even more essential to engage in the types of activities outlined in Table 4 for diagnosing the underlying cause of the problem, and then selecting from the array of candidate strategies and iteratively refining and tailoring them to ensure the active ingredients, causal mechanisms, mode of delivery and intended targets are combined in a way that maximizes the impact. This interpretation is further supported by the Behaviour Change Wheel, which indicates that “[a] given intervention might change one or more components in the behaviour system. The causal links within the system can work to reduce or amplify the effect of particular interventions by leading to changes elsewhere.”(113) Furthermore, efforts to tailor interventions need to draw on the broader categories of interventions outlined in Table 5, but for those working at the programmatic level (as opposed to those making decisions about the overall direction), it will be important to draw on a more detailed taxonomy of 93 behaviour-change techniques.(114)

Patient/citizen education

For consumers/patients, we identified several reviews that found benefits for decision aids (as an intervention that supports shared decision-making and patient education) and for other strategies to support them and their families when deciding on optimal approaches to care. Eight reviews found evidence that decision aids:

- increase patients’ knowledge of screening and treatment options;(115-118)
- encourage patient involvement;(118)
- support realistic perception of outcomes and risk;(116;118-121)
- reduce decision-related conflict;(118)
- increase patient-practitioner communication;(118) and
- support professionals to provide information and counselling about the available choices.(115)

However, one older high-quality review, found two studies that evaluated a patient decision aid for people with mental health conditions combined with health professional education, and found no significant effects on clinical outcomes or hospital readmission rates.(96) In addition, an overview of reviews that evaluated the effects of interventions on promoting evidence-based prescribing for and medicine use by consumers found that no single strategy improved medicine use outcomes across all tested diseases.(122) However, the overview indicated that interventions that were found to be effective included approaches that supported medication self-monitoring and self-management, simplified dosing, and interventions directly involving the pharmacist in medicine management.

Mass-media campaigns

Mass-media campaigns could be used to support behaviour change by both patients and providers, and we found seven recent and one older systematic reviews that evaluate the effectiveness of mass media campaigns, of which three are high-quality,(123-125) four medium quality (126-129) and one low quality.(130) Five of the reviews examined the effects of mass-media campaigns on patients or the public, two focused on both

patients and providers, and one focused on the use of social media by providers. However, none of these reviews focused on reducing overuse of health services.

Seven of the reviews found positive effects of mass media campaigns on a range of outcomes, including health behaviour changes (e.g., weight loss, physical activity and dietary awareness),(123;126) voluntary lifestyle behaviours,(127) knowledge related to health conditions and prevention,(124) awareness of symptoms,(130) and the use of needed health services (e.g. cancer screening, immunization programs).(125;128) The last review examined the use of social media by healthcare professionals and trainees to facilitate communication or improve patient knowledge, and found that discussion forums were the most commonly studied tools, with many also including social media tools as part of a complex intervention.(129) Findings from the review were mixed with six of 13 included studies reporting a statistically significant improvement in communication or patient knowledge.(129)

A summary of the key findings from the synthesized research evidence is provided in Table 5. For those who want to know more about the systematic reviews contained in Table 5 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 2.

Table 4: Examples of processes to identify the citizen (or patient) behaviours, clinical practices and/or organizational behaviours that need to change to address overuse of health services

Type of approach	Example	Key features
Systematic/structured	Integrated checklist to identify factors that might prevent or enable improvements in clinical practice (131)	<ul style="list-style-type: none"> • Developed through a recent medium-quality review.(131) • Based on 12 checklists that were identified in the review, an integrated checklist with 57 potential determinants of practice (many of which include theory-based elements) was developed. • The determinants of practice were grouped into the following seven domains: <ul style="list-style-type: none"> ○ guideline factors (e.g., whether recommendations are based on strong evidence, feasible and appropriate); ○ individual health professional factors (e.g., knowledge/skills, attitudes and behaviours); ○ patient factors (e.g., patient needs, beliefs, knowledge, preferences, motivation and behaviour); ○ professional interactions (e.g., communication and influence, team processes, and referral processes); ○ incentives and resources (e.g., availability of resources, financial and non-financial incentives and disincentives, information systems, quality and safety monitoring systems, continuing education, and availability of assistance for clinicians); ○ capacity for organizational change (e.g., mandate, authority, accountability and leadership); and ○ social, political and legal factors (e.g., economic constraints, contracts, legislation, payer or funder policies, and malpractice liability). • In addition to the checklist, five worksheets were developed as part of this review that are designed to support the development of tailored implementation strategies based on the areas identified as warranting targeted implementation efforts.(131)
Iterative/theory-based (i.e., focused on iteratively testing and refining an approach based on an existing theory to ensure it is attuned to the underlying causes of a problem)	The Behaviour Change Wheel (113)	<ul style="list-style-type: none"> • Developed through a recent medium-quality systematic review of 19 frameworks of behaviour change.(113) • The Behaviour Change Wheel is centred around a “behaviour system” that includes three essential conditions of: 1) capability (i.e., an individual's psychological and physical capacity to engage in a specified activity); 2) opportunity (social and physical factors that lie outside the individual that make a behaviour possible or prompt it); and 3) motivation (cognitive processes that energize and direct behaviour).(113) • These three conditions of the behaviour system provide a basis for identifying underlying causes of a particular problem, and then for designing interventions that address areas where the need for behaviour change has been prioritized. • Encircling this hub are nine groupings of interventions that could be used to address deficits in the three conditions, which are further encircled by seven policy activities that could be used to support the implementation of those interventions (see element 2 for more details about these activities).(113)

	<p>Theoretical Domains Framework (132)</p>	<ul style="list-style-type: none"> • Developed through an expert consensus process and validation exercise, and offers a process to identify relevant psychological and organizational theory to support clinical behaviour change at the individual level.(132;133) • At the stage of identifying what needs to be changed, it is important to specify who needs to do what differently, and assess the barriers and enablers that need to be addressed (i.e., ascertain the causes of the problem). • The tasks used for specifying who needs to do what differently include: <ul style="list-style-type: none"> ○ identifying gaps between evidence and practice (using explicit criteria and high-quality data and evidence); ○ identifying the types of behaviours that need to change in order to reduce or eliminate the evidence-to-practice gap; and ○ specifying the health professional groups that need to change behaviour.(132) • Specific groups of tasks involved for ascertaining the cause of the problem can be time-intensive and include selecting theory(ies) and frameworks to identify possible pathways to change, and likely barriers and enablers along the pathway, and then collecting data (quantitative and/or qualitative) to identify barriers and enablers. • As another complementary framework outlines, causes of the problem could be at one or more of the following five levels: <ol style="list-style-type: none"> 1) motivation at the individual level (e.g., how knowledge, beliefs about capabilities and consequences, skills, memory, emotion and goals exert influence); 2) tasks at the individual or team level (e.g., how work routines and procedures function); 3) roles at the professional level (e.g., how responsibilities are assigned); 4) rules at the organizational level (e.g., how authority is allocated); and 5) strategies (e.g., how resources are allocated) at the system level (e.g., governance, financial and delivery arrangements, which include the financial incentives and complementary policy instruments being discussed here).(134)
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Table 5: Summary of key findings from systematic reviews relevant to Element 2 – Implementing initiatives led by stakeholders, providers and/or civil society to address overuse

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> • Foster better communication and shared decision-making between providers and patients based on evidence-based recommendations and best practices <ul style="list-style-type: none"> ○ One high-quality review found clinically significant effects for shared decision-making interventions in three of 21 included studies.(99) ○ One high-quality review found moderate positive effects of shared decision-making interventions on knowledge, participation, decisional conflict and self-efficacy of disadvantaged populations, and indicated that interventions appeared to benefit disadvantaged groups more than groups with higher literacy, education and socio-economic status.(95) ○ One medium-quality review found evidence that supports several tools targeted toward shared decision-making in immediate clinical choices, with the two advance care planning tools (a video advance care planning tool to assist in discussions of treatment preference with patients with advanced dementia, and an advanced directive documentation guide designed for patients with low health literacy and available for free on the Internet) supported by the strongest evidence.(100) ○ One medium-quality review indicated that patients reported improved health and physical functioning, improved knowledge about the risks and benefits of different treatment options, and increased satisfaction with the decision-making process.(101) • Identify and change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice <ul style="list-style-type: none"> ○ High-quality systematic reviews found absolute effect sizes related to changing behaviour to optimize practice ranging from 2%-12% for printed educational materials, educational meetings, educational outreach, local opinion leaders, audit and feedback, computerized reminders, and tailored interventions.(105-111) • Educate patients/citizens about what health services they need <ul style="list-style-type: none"> ○ Three high-quality (116;118;119), five medium-quality (115;120;121;135) and one low-quality reviews (136) found evidence that decision aids: <ul style="list-style-type: none"> ▪ increase patients' knowledge of screening and treatment options;(115-118) ▪ encourage patient involvement;(118) ▪ support realistic perception of outcomes and risk;(116;119-121) ▪ reduce decision-related conflict;(118) ▪ increase patient-practitioner communication;(118) and ▪ support professionals to provide information and counselling about the available choices.(115) • Develop mass-media campaigns led by stakeholders, providers and/or civil society to raise awareness about the need to address overuse <ul style="list-style-type: none"> ○ Three high-quality, three medium-quality and one low-quality reviews found positive effects of mass media campaigns on a range of outcomes, including health behaviour changes (e.g., weight loss, physical activity, and dietary awareness),(123;126) voluntary lifestyle behaviours,(127) knowledge related to health conditions and prevention,(124) awareness of symptoms,(130) and the use of needed health services (e.g. cancer screening, immunization program).(125;128)
Potential harms	<ul style="list-style-type: none"> • Foster better communication and shared decision-making between providers and patients based on evidence-based recommendations and best practices <ul style="list-style-type: none"> ○ One recent medium-quality review found that for disease-related outcomes, no overall effect of patient participation could be demonstrated, with some studies finding deterioration in disease-related outcomes.(48)
Costs and/or cost-effectiveness in relation to the status quo	<ul style="list-style-type: none"> • Identify and change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice <ul style="list-style-type: none"> ○ The costs associated with implementing behaviour-change interventions can vary substantially with interventions such as printed educational materials costing substantially less than interventions such as educational outreach or audit and feedback. ○ While costs of interventions can vary substantially they need to be assessed in relation to the full chain of events from intervention, the resulting improvements in clinical practice, and the subsequent cost savings at the system level. For example, a cost-effectiveness analysis using this perspective for educational outreach found that it was cost saving with an approximate absolute effect of 5%.(137)

	<ul style="list-style-type: none"> • Develop mass-media campaigns led by stakeholders, providers and/or civil society to raise awareness about the need to address overuse <ul style="list-style-type: none"> ○ No significant difference was found in the effectiveness of mass-media interventions when compared with sophisticated print interventions, however, online interventions offer a small effect with the advantage of lower costs and larger reach.(127) ○ Three economic evaluations assessed the cost effectiveness of smoking cessation campaigns and each found that such mass-media campaigns were cost-effective, with one study indicating that it was most cost-effective among those aged 35-44 years old and least effective among those younger than 35.(138-140) ○ One older cost effectiveness study found that the most cost-effective strategies in a campaign to increase physical activity include those that encourage the use of pedometers and mass media-based community campaigns.(141)
<p>Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the element were pursued)</p>	<ul style="list-style-type: none"> • Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> ○ Identify and change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice <ul style="list-style-type: none"> ▪ No reviews specified benefits, harms and costs of interventions to identify provider behaviours to be changed to address overuse, but three provide descriptions of key features of approaches that could be used (see below). • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> ○ Not applicable (no ‘empty’ reviews were identified) • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ Not applicable
<p>Key elements of the sub-element if it was tried elsewhere</p>	<ul style="list-style-type: none"> • Foster better communication and shared decision-making between providers and patients based on evidence-based recommendations and best practices <ul style="list-style-type: none"> ○ One high- and one medium-quality review found that interventions targeting both patients and providers had a positive effect compared to usual care and compared to interventions targeting patients alone.(97;99) ○ Based on the limited evidence available as well as expert opinion, a low-quality review recommends five components for efforts to frame and communicate clinical evidence: 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.(136) • Identify and change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice <ul style="list-style-type: none"> ○ A recent medium-quality review outlined a structured approach to identify factors that might prevent or enable improvements in clinical practice through an integrated checklist and five worksheets designed to support the development of tailored implementation strategies based on the areas identified as warranting targeted implementation effort.(131) ○ The Behaviour Change Wheel, which was developed using a recent medium-quality review, supports the identification of behaviours associated with underlying causes of a particular problem and designing interventions to address areas where the need for behaviour change has been prioritized.(113) • Develop mass-media campaigns led by stakeholders, providers and/or civil society to raise awareness about the need to address overuse <ul style="list-style-type: none"> ○ A recent high-quality review on the effectiveness of mass-media interventions for HIV prevention found longer campaigns and campaigns where message content was tailored to the target audience and refusal rates were low, resulted in greater increases in condom use.(124) ○ An older medium-quality review found that shorter interventions generally achieved larger impacts and greater adherence.(127)
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> • Foster better communication and shared decision making between providers and patients based on evidence-based recommendations and best practices <ul style="list-style-type: none"> ○ One medium-quality review found that providers reported barriers to implementing shared decision-making in clinical practice such as time constraints, lack of applicability due to patient characteristics, and lack of applicability based on the clinical situation.(102) ○ The same review found that facilitators reported by providers for implementing shared decision-making in clinical practice were healthcare provider motivation, their perception that putting shared decision-making into practice would lead to improved clinical processes, and their perception that putting shared decision-making into practice would lead to improved patient outcomes.(102)

Element 3 – Implementing government-led initiatives to address overuse

Sub-elements might include activities to:

- revise lists of publicly financed products and services;
- modify remuneration for providers or incentivize consumers to prioritize the use of some products and services over others;
- require prior authorization for use of specific health services that are identified on a list of overused services; and
- engage stakeholders and consumers in decision-making processes.

One government-led/top-down approach that has figured prominently in the literature that we have identified in our ongoing critical interpretive synthesis is value-based insurance design, which has been used in the United States. Value-based insurance design seeks to promote the use of high-value services and discourage the use of low-value services by modifying cost-sharing arrangements. For example, patients are incentivized to use lower-cost alternatives by increasing out-of-pocket fees for the use of low-value services and decreasing out-of-pocket fees for higher-value services.(142) One advantage of this initiative that has been identified is its recognition and incorporation of patient heterogeneity since the amount of the “patient cost sharing is a function of the value that the specific service provides to the specific patient.”(57)

In addition to the literature we identified describing this approach, we found one recent high-quality review that evaluated value-based insurance in the context of chronic diseases.(143) Each of the 10 studies included in the review found that value-based insurance models resulted in small improvements (2%-5%) in medication adherence, but that it was unclear whether it was associated with improvements in clinical outcomes, healthcare utilization or spending. Moreover, results from the RAND Health Insurance Experiment discussing the impact of cost-sharing found that higher cost-sharing was associated with reduced use of healthcare services, but that patients were just as likely to reduce the use of necessary as unnecessary services.(144)

Turning to the sub-elements, in addition to the activities in element 2 that government could also be involved in or lead (e.g., mass-media campaigns), we identified four systematic reviews related to managing and revising lists of publicly financed products and services, four reviews that evaluated approaches to modifying remuneration in the context of pharmaceutical pricing, as well as seven overviews of systematic reviews and nine reviews from a recent evidence brief about the use of financial incentives to achieve health-system goals, one review about an approach to prior authorization, and 10 reviews (from element 1) about engaging stakeholders and consumers in decision-making processes. For findings related to stakeholder- and consumer-engagement processes, please see element 1.

Revise lists of publicly financed products and services

We identified four older low-quality systematic reviews that addressed aspects of revising or monitoring lists of publicly financed products and services. Three of the reviews addressed the outcomes of restricting some form of health treatment or service and found that:

- most managed care organizations have had limited success using formularies, therapeutic interchange, and prior approval to influence prescribing and dispensing decisions;(145)
- closed formularies have been found to be effective in reducing utilization of prescription drugs, but not their costs;(145)
- the evidence from the U.S. does not support the assumption that restriction of specific drugs results in savings in drug costs because restricting formularies leads to dynamic changes in the Medicaid program;(146) and
- the most common concern regarding preferred drug lists was that restrictions would lead to increased healthcare service utilization, such as hospital and clinician visits.(147)

The last review focused on decision-making and priority-setting process for including or excluding drugs from reimbursement lists.(148) The review outlined that clinical evidence about drug benefits and the quality of that evidence were the main criteria used in priority-setting, followed by the costs of the drug, while formal pharmacoeconomic analyses were accorded a small role in the process. In addition, other criteria considered in such processes included the availability of alternative treatments, decisions made in other hospitals/systems, size of population affected, and severity of disease. External factors mentioned as influencing decision-making were patient demand, pharmaceutical company activities, and clinicians' enthusiasm.

Modify remuneration mechanisms for providers or incentivize consumers

We found two older high-quality reviews (149;150) and one recent (151) and two older (152;153) medium-quality reviews that evaluated approaches to modifying remuneration in the context of pharmaceutical pricing. In addition, an evidence brief prepared for a September 2015 dialogue found seven overviews of systematic reviews about financial incentives and nine systematic reviews that complement these overviews.(31)

The reviews focused on modifying remuneration in the context of pharmaceutical pricing found that:

- reference pricing, a policy strategy that sets a standard price or reimbursement level for a group of therapeutically interchangeable drugs, led to reduced plan spending, decreases in drug prices, and increases in utilization of targeted medications;(151)
- tiered formularies were associated with reduced plan expenditures, greater patient cost, and increased rates of non-compliance;(152)
- implementing restrictions to coverage and reimbursement of selected medications can decrease third-party drug spending without increasing the use of other health services,(150;151) with another review indicating that it led to an increased usage of physician services;(152) and
- instituting drug budgets for physicians may limit drug expenditure by limiting the volume of prescription drugs, increasing the use of generic drugs, or both.(149)

The key messages emerging from the overviews and reviews that evaluated the use of financial incentives include:

- 1) financial incentives targeting citizens can be effective at changing behaviours, but the evidence supporting these effects is either inconsistent (e.g., for improving adherence to medicines),(154) indicates that effects are not sustained in the long-term (e.g., for promoting healthy behaviours such as changes in smoking, eating, alcohol consumption, and physical activity),(155-157) or require substantial cash incentives to sustain behaviour changes (e.g., for smoking cessation);(158)
- 2) the reviews of the evidence for the use of financial incentives for health professionals,(159-163) health organizations (164) and for both health professionals and health organizations,(165-167) found that evidence is either insufficient,(161;163;166;167) modest and of variable effects,(160;162) or based on perceived outcomes (e.g., organizational leaders),(164) and/or point to incentives being more effective for changing some behaviours in the short-run (e.g., for simple, distinct and well-defined behaviours such as providing priority services to specific populations)(160;166) or for specific types of conditions (e.g., for chronic rather than acute care),(165) but not for other more complex behaviours (e.g., improving adherence to clinical guidelines)(160) or over the long term (e.g., retention of human resources);(159) and
- 3) how they are designed (e.g., using cash incentives for citizens, selecting targets based on those with the largest room for improvement, and using process and intermediary outcome indicators as target measures) (154;168) and complemented by other policy instruments (e.g., using cash plus other motivational interventions for citizens, combining with educational interventions and audit and feedback for health professionals)(155;169) can be very important.

Prior authorization for use of specific health services

We identified one older medium-quality review of policies involving prior authorization for pharmaceutical prescription on drug use, healthcare utilization, healthcare expenditures, and health outcomes.(170) The review found that prior authorization policies resulted in decreases in overall drug expenditure, but no significant changes in the utilization of other medical services were found. The review indicated that there is generally a lack of evidence in relation to medium- and long-term policy effects.

A summary of the key findings from the synthesized research evidence is provided in Table 6. For those who want to know more about the systematic reviews contained in Table 6 (or obtain citations for the reviews), a fuller description of the systematic reviews is provided in Appendix 3.

Table 6: Summary of key findings from systematic reviews relevant to Element 3 – Implementing government-led initiatives to address overuse

Category of finding	Summary of key findings
Benefits	<ul style="list-style-type: none"> • Revise lists of publicly financed products and services <ul style="list-style-type: none"> ○ One older low-quality review on managed care organizations found that closed formularies were found to be effective in reducing utilization of prescription drugs, but not their costs.(145) • Modify remuneration for providers or incentive consumers to prioritize the use of some products and services over others <ul style="list-style-type: none"> ○ Two older high-quality reviews (149;150) and one recent (151) and two older (152;153) medium-quality reviews found that reference pricing can lead to reduced plan spending, decreases in drug prices, and increases in utilization of targeted medications;(151) tiered formularies are associated with reduced plan expenditure, greater patient cost, and increased rates of non-compliance;(152) restrictions to coverage and reimbursement of selected medications can decrease third-party drug spending without increasing the use of other health services;(150;151) and the use of drug budgets for physicians may limit drug expenditure by limiting the volume of prescription drugs, increasing the use of generic drugs, or both.(149) ○ One overview of reviews,(154) three high-quality reviews (155;157;158) and one medium-quality review (156) indicate that financial incentives targeting citizens can be effective at changing behaviours, but the evidence supporting these effects is either inconsistent (e.g., for improving adherence to medicines),(154) indicates that effects are not sustained in the long term (e.g., for promoting healthy behaviours such as changes in smoking, eating, alcohol consumption and physical activity),(155-157) or require substantial cash incentives to sustain behaviour changes (e.g., for smoking cessation).(158) ○ Five overviews of reviews,(159;160;163;165;166) three high-quality reviews (161;162;164) and one medium-quality review (167) focused on the use of financial incentives for health professionals,(159-163) organizations,(164) and for both health professionals and organizations,(165-167) and found that evidence is either insufficient,(161;163;166;167) modest and of variable effects (160;162) or based on perceived outcomes (e.g., organizational leaders),(164) and/or point to incentives being more effective for changing some behaviours in the short-run (e.g., for simple, distinct and well-defined behaviours such as providing priority services to specific populations),(160;166) for specific types of conditions (e.g., for chronic rather than acute care),(165) or for improving process-related outcomes, but not for other more complex behaviours (e.g., improving adherence to clinical guidelines)(160) or over the long term (e.g., retention of human resources).(159) • Require prior authorization for use of specific health services that are identified on a list of overused services <ul style="list-style-type: none"> ○ An older medium-quality review of policies involving prior authorization for pharmaceutical prescription found decreases in overall drug expenditure, no significant changes in the utilization of other medical services, and a lack of evidence in relation to medium- and long-term policy effects.(170) • Engage stakeholders and consumers in decision-making processes <ul style="list-style-type: none"> ○ See Table 3
Potential harms	<ul style="list-style-type: none"> • Revise lists of publicly financed products and services <ul style="list-style-type: none"> ○ Restricting formularies may lead to dynamic changes in other parts of the system and, as a result, there may be unexpected costs seen in other health services or technologies such as increased hospitalizations and physician visits.(146;147) • Provide financial incentives/disincentives to prioritize the use of some products and services over others <ul style="list-style-type: none"> ○ An older medium-quality review indicated that restrictions to coverage and reimbursement of selected medications can lead to an increased use of physician services.(152)

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	<ul style="list-style-type: none"> ○ Possible risks associated with results-based financing include: motivating unintended behaviours; ignoring important tasks that are not rewarded with incentives; improving or cheating on reporting rather than improving performance; widening the resource gap between rich and poor; and dependency on financial incentives.(166) • Engage stakeholders and consumers in decision-making processes <ul style="list-style-type: none"> ○ See Table 3
<p>Costs and/or cost-effectiveness in relation to the status quo</p>	<ul style="list-style-type: none"> • Revise lists of publicly financed products and services <ul style="list-style-type: none"> ○ An older low-quality review that included eleven articles from 1972-1985 found that the evidence does not support the assumption that restriction of specific drugs results in savings in drug costs, and indicated that the impact of restricted formularies on administrative costs and therapeutic appropriateness of substituted drugs is unclear. Specifically, the review found that in Michigan, 23.7% of patients received alternate drugs and 30.7% of patients still received prescriptions for the restricted drugs. In Louisiana, there was a 34% increase in the number of hospitalized patients and the state saved \$4.1 million in its drug program, but spent \$15.1 million in non-prescription services.(146) • Provide financial incentives/disincentives to prioritize the use of some products and services over others <ul style="list-style-type: none"> ○ An older non-systematic review found one study that reported on the cost-effectiveness of a pay-for-performance program, and found that the estimated cost per quality-adjusted life years saved ranged from \$13,000 to \$30,000.(171)* • Engage stakeholders and consumers in decision-making processes <ul style="list-style-type: none"> ○ See Table 3
<p>Uncertainty regarding benefits and potential harms (so monitoring and evaluation could be warranted if the element were pursued)</p>	<ul style="list-style-type: none"> • Uncertainty because no systematic reviews were identified <ul style="list-style-type: none"> ○ Not applicable (reviews were identified for each of the sub-elements) • Uncertainty because no studies were identified despite an exhaustive search as part of a systematic review <ul style="list-style-type: none"> ○ Not applicable (no ‘empty’ reviews were identified) • No clear message from studies included in a systematic review <ul style="list-style-type: none"> ○ Not applicable
<p>Key elements of the sub-element if it was tried elsewhere</p>	<ul style="list-style-type: none"> • Revise lists of publicly financed products and services <ul style="list-style-type: none"> ○ One older low-quality review found that clinical evidence related to the benefits of drugs and the quality of that evidence were the main criteria used in priority setting concerning medicines.(148) • Provide financial incentives/disincentives to prioritize the use of some products and services over others <ul style="list-style-type: none"> ○ Cash incentives for promoting healthy behaviours in citizens on average have greater effects as compared to other formats,(155) and sustained success rates are seen when resources are concentrated into substantial cash payments.(158) ○ A recent overview of systematic reviews indicated that key features of effective pay-for-performance programs included lower baseline levels, involvement of stakeholders in target selection, utilization of process indicators instead of outcome measures, making new funds available, sufficient awareness about the elements of the program(s), and incentives targeted at the individual or team level (as opposed to the hospital/organizational level).(165) ○ Key considerations for designing and implementing financial incentives to improve quality of care provided by primary-care physicians that were identified in an older high-quality review include: <ul style="list-style-type: none"> ▪ amount and method of payment (salary, fee-for-service, performance bonus, payment target (individual or team), timing); ▪ importance of the additional income relative to other motivators (e.g., intrinsic motivation or other extrinsic motivators such as autonomy); ▪ opportunity costs of changing behaviour; ▪ heterogeneity across physicians; and ▪ heterogeneity in marginal costs of changing behaviour (e.g., administration costs).(162) ○ A recent overview of reviews noted that there is some (but weak) evidence to suggest that financial incentives for promoting generic drug prescribing may be most effective when combined with educational interventions and audit/feedback.(169) • Engage stakeholders and consumers in decision-making processes <ul style="list-style-type: none"> ○ See Table 3
<p>Stakeholders’ views and experience</p>	<ul style="list-style-type: none"> • Provide financial incentives/disincentives to prioritize the use of some products and services over others <ul style="list-style-type: none"> ○ A recent, medium-quality review found that financial incentives targeting citizens were more accepted if they are found to be effective, safe, recipient-focused and intrusion-minimizing, but may also be perceived as paternalistic, which can undermine an individual’s autonomy.(156) • Engage stakeholders and consumers in decision-making processes <ul style="list-style-type: none"> ○ See Table 3

Additional equity-related observations about the three elements

As noted earlier, this evidence brief gives particular attention to people of low socio-economic status. A key consideration related to this group is that each of the three elements emphasize the need for citizen/consumer engagement, but such engagement needs to be reflective of those who are involved in and affected by the issue (particularly those who are likely to be disproportionately affected by it), for policy development and implementation to address the issue in a meaningful way. This means ensuring that stakeholder- and consumer-engagement processes are inclusive of diverse populations and that proper supports are put in place to ensure that initiatives such as shared decision-making interventions achieve the desired impacts across diverse populations. For example, a recent high-quality systematic review that evaluated interventions to support shared decision-making found moderate positive effects of such interventions on knowledge, participation, decisional conflict and self-efficacy of disadvantaged populations.⁽⁹⁵⁾ Moreover, seven studies compared the effects of interventions between high- and low-literacy groups and the results indicated that shared decision-making interventions appeared to benefit disadvantaged groups more than groups with higher literacy, education and socio-economic status. As a result, efforts such as these will be needed to ensure meaningful participation in processes designed to support consumer engagement.

Another challenge related to citizen/consumer engagement is ensuring effective engagement for those with lower health literacy. Health literacy is important for supporting public and patient engagement in healthcare,⁽¹⁷²⁾ but in Canada it has been found that 60% of adults and 88% of seniors are not health literate, which means they have difficulty accessing, understanding, evaluating and communicating health information.⁽¹⁷³⁾ In addition to people with lower income and education, many groups are particularly likely to have low health literacy, including people over the age of 65, recent immigrants, those with limited cognitive capacities, as well as those who are not proficient in English.^(172;174) As a result, the level of health literacy will need to be taken into account when considering consumer-engagement efforts to identify overuse of health services (element 1); approaches to shared decision-making and efforts to educate patients/citizens about what health services they need (element 2); and engaging consumers in decision-making processes (element 3).

IMPLEMENTATION CONSIDERATIONS

A number of barriers might hinder implementation of the three elements of a potentially comprehensive approach to addressing overuse of health services in Canada, which need to be factored into any decision about whether and how to pursue any given element (Table 7). While potential barriers exist at the levels of patient/individuals, providers, organizations and systems, the biggest barrier may be the complex interplay between a culture of ‘more is better,’ the competing priorities among patients and providers as well as between different levels of government, and the willingness of health system decision-makers to make tough decisions to address these barriers.

Table 7: Potential barriers to implementing the elements

Levels	Element 1 – Implementing transdisciplinary approaches to identify health services that are overused	Element 2 – Implementing health-system stakeholder-led initiatives to address overuse	Element 3 – Implementing government-led initiatives to address overuse
Patient/individual	<p>Patients are increasingly looking online to determine which tests, treatments or procedures may benefit them and, as a result, may demand services that have been deemed overused and argue against the attempt to remove or limit these services</p> <p>Patients may resist the process if they are not consulted early in the process</p> <p>Some patient groups may be funded by the manufacturers of drugs and technologies, and these groups could influence stakeholder- and consumer-engagement processes to identify overused health services</p>	<p>Patients and the public more generally are often not included in this approach, thereby limiting their buy-in</p> <p>Some patients may not feel sufficiently informed to properly contribute to this process</p>	<p>Patients may not want to have health services ‘rationed’ and will resist having services removed</p> <p>Some patient groups may be funded by the manufacturers of drugs and technologies, and these groups could influence stakeholder- and consumer-engagement processes to identify overused health services</p>
Care provider	<p>Some providers may not be aware of or agree with the services that have been identified as overused and they may view the service as necessary, which could be the result of many reasons such as publication bias (i.e., where they read mostly what should be done and not what shouldn’t) or industry pressure where more is viewed as better</p> <p>Providers may view this as an encroachment on their professional autonomy or scope of practice or as a threat to their income</p>	<p>Providers may resist these initiatives as they may be viewed as an encroachment on their professional autonomy or scope of practice or as a threat to their income</p> <p>Providers may perceive these initiatives as just another passing fad, and therefore may not invest energy in them</p> <p>Clinicians involved in stakeholder-led initiatives such as Choosing Wisely may prioritize ‘low hanging fruit’ (i.e., services for which removal from the system amounts to small or negligible cost savings) or that affect the income of another specialty and not their own</p>	<p>Providers will be resistant to initiatives that encroach on their professional autonomy or scope of practice or that pose a threat to their income</p> <p>Many providers prefer to be ‘better safe than sorry’ in providing services and therefore may further resist having limitations placed on the types of services that can be offered</p>

Organization	Some organizations may have competing interests and priorities and therefore may resist collaborating with such an initiative	Organizations may view such an initiative as requiring extra organizational resources (e.g., shared decision-making requires more time with patients and hence more resources) Some organizations may be experiencing fatigue (e.g., some organizations and their management may be tired of new ideas so there may be resistance to implementing another new initiative)	Some organizations may not have the infrastructure to implement the necessary changes Organizations may perceive these initiatives as just another passing fad, and therefore may not invest energy in them
System	Some health system leaders may not be aware of the issues and the potential negative outcomes of the overuse of health services Some health system leaders may lack the political will to address the overuse of health services Building consensus between stakeholders, provincial and territorial governments, as well as with the federal government will be challenging, which will make coordination at a national level challenging	Some health system leaders may lack the political will to address the overuse of health services Building consensus between stakeholders, provincial and territorial governments, as well as with the federal government will be challenging, which will make coordination at a national level challenging	Some health system leaders may lack the political will to address the overuse of health services Building consensus between stakeholders, provincial and territorial governments, as well as with the federal government will be challenging, which will make coordination at a national level challenging

Two key considerations warrant attention in addressing these barriers and supporting implementation. First, given that there is limited evidence available about the impact of approaches to identify and address overuse, there is a need to develop and implement mechanisms to evaluate these approaches. This will require developing consensus among relevant stakeholders on appropriate measures and targets to determine whether overuse was successfully addressed, as well as mechanisms to modify the overall strategy and approach based on the results of the evaluation. Such an evaluation approach will be important for supporting jurisdictional comparisons of provincial initiatives to allow for the identification of those that have demonstrated at least some success in addressing overuse of health services.

Second, sustainability of new approaches is an important consideration. As outlined in two recently published evidence briefs,(31;103) a recent low-quality review that assessed the sustainability of new programs and interventions found that partial sustainability was more common than the continuation of the entire program or intervention (even when full implementation was initially achieved).(175) The same review indicated that fidelity ratings used to assess sustainability at the care-provider level found that less than half sustained the program or intervention at high levels of fidelity, and proposed that fidelity-maintenance strategies are needed as part of implementation efforts. Such strategies could draw on the findings of a recent, medium-quality systematic review that identified the key success factors for implementation to be: “1) the organization and staff have planned for the initiative; 2) there are enough people with necessary and synergistic skills to implement the initiative; 3) there are capabilities and a receptiveness for change; 4) the chosen implementation [approach] meets needs and is the best fit for the organization and stakeholders; 5) the necessary human and financial resources are available for implementation; 6) there is support and momentum throughout the implementation process; and 7) processes to support mid-to-long-term acceptance are established during preparation and anchored throughout the implementation process.”(176)

On the other hand, a number of potential windows of opportunity could be capitalized upon (Table 8), which also need to be factored into any decision about whether and how to pursue one or more of the approach elements. These potential windows of opportunity include a growing focus on achieving health-system goals, and a willingness on the part of key health-system policymakers and stakeholders to learn from past experience.

Table 8: Potential windows of opportunity for implementing the elements

Type	Element 1 – Implementing transdisciplinary approaches to identify health services that are overused	Element 2 – Implementing health-system stakeholder-led initiatives to address overuse	Element 3 – Implementing government-led initiatives to address overuse
General	<ul style="list-style-type: none"> Increasingly constrained budgets have spurred many provincial and territorial policymakers to prioritize addressing overuse given the potential for cost savings. The increasing number of initiatives to address overuse of health services in other countries provides many opportunities for applying ‘lessons learned’ from these initiatives and adapting them to local contexts. The election of a new federal government that has explicitly indicated an emphasis on great collaboration with provincial and territorial health systems may provide a window to address this issue at a national scale. The increasing number of grassroots organizations such as the Lown Institute,⁽¹⁷⁷⁾ or international scientific meetings such as the Preventing Overdiagnosis conference ⁽¹⁷⁸⁾ are bringing awareness to this issue which can help change the culture and enable open discussions about addressing overuse of health services. The increased use of team-based and interprofessional care may allow for more time to be spent with patients leading to improved care, patient education, patient engagement and shared decision-making, which can lead to more coordinated efforts to identifying and reducing the use of health services at a system level. 		
Element-specific	<ul style="list-style-type: none"> The increased focus on quality of care and patient-focused care has raised the awareness about the importance of providing appropriate care for the right patient at the right time, and therefore, addressing overuse can build on, or be incorporated with, other initiatives that are also focused on quality of care. 	<ul style="list-style-type: none"> The increasing popularity of one stakeholder-led approach (the Choosing Wisely campaign) can help garner further interest in addressing the issue in a more comprehensive manner. 	<ul style="list-style-type: none"> The increased focus on patient-centred care (e.g., through shared decision-making) may help patients become more informed about and less resistant to the removal of inappropriate services.

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APPENDICES

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

The fifth column presents a rating of the overall quality of the review. 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 review in terms of local applicability, applicability concerning prioritized groups, and issue applicability. 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 addressing overuse of health services. 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 people of low socio-economic status (SES).

All of the information provided in the appendix tables was taken into account by the evidence brief’s authors in compiling Tables 1-3 in the main text of the brief.

Appendix 1: Systematic reviews relevant to Element 1 - Implementing transdisciplinary approaches to identify health services that are overused

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
Conduct jurisdictional scans to identify health services that have been delisted in other health systems using evidence-based processes and determine whether the same services are still being used locally	No systematic reviews were identified related to this sub-element						
Use the best available data, research evidence and guidelines to identify overuse of health services	Quality of clinical care in general practice in the U.K., Australia and New Zealand (68)	<p>The majority (85%) of included studies assessed the quality of care provided for chronic conditions, and 12% and 2% examined preventive care and acute conditions, respectively.</p> <p>The processes of care in almost of all of the studies did not meet standards of care as outlined in national guidelines or in those set by the investigators.</p> <p>While the review outlines deficiencies in the research, and clinical and policy agendas in general practice, additional work is required to assess the quality of clinical care in a representative sample of the population, identify reasons for sub-standard care, and test strategies to improve the clinical care provided in general practice.</p>	1999	8/10 (AMSTAR rating from McMaster Health Forum)	0/90	0/90	0/90
Identify health services that should be prioritized for full or partial removal from the health system through stakeholder- and consumer-engagement processes	Deliberative dialogues as a mechanism for knowledge translation and exchange in health systems decision-making (84)	The model developed in the review outlines three key features of deliberative dialogues, which include ensuring an: 1) appropriate meeting environment (e.g., by ensuring adequate resources, commitment from participants, transparency, timeliness of the issue, appropriate group size, clear meeting rules, pre- and post-meeting tasks and effective facilitation); 2) appropriate mix of participants (e.g., by ensuring fair and balanced representation of those with an interest in the issue, and that participants are motivated and provided with the resources they need to meaningfully engage in the issue); and 3) appropriate use of research evidence (e.g., fostering a clear understanding of	2009	No rating tool available for this type of synthesis	4/17	0/17	0/17

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		<p>the policy issue among all participants by presenting what is currently known about it based on the best available research evidence).</p> <p>The model further outlines several intended effects of deliberative dialogues, including short-term (e.g., strengthened capacity of participants to address the policy issue), medium-term (e.g., strengthened community or organizational capacity) and long-term effects (e.g., strengthened system capacity to make evidence-informed decisions)</p>					
	Public engagement in priority setting and resource allocation (69)	<p>As the literature covers all levels of government, decision-makers are likely to find information relevant to their own setting and situation. The pressures that decision-makers face to satisfy demands for a greater public role in priority setting is indicative of their involvement in public-engagement processes. Most decision-makers use multiple methods to engage multiple publics, and according to the researcher’s perspective, it provides a balance that may lead to a more rounded understanding of the public’s desires. In addition, the willingness to seek public input in an ongoing, sustainable fashion over time provides a promising way of obtaining public engagement in priority setting.</p> <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. Consultations are typically one-off rather than ongoing, and not likely to involve the public in direct face-to-face interaction with decision-makers. Costs are seldom reported, but well-structured processes can range from tens of thousands of dollars to the million-plus range.</p>	2006	4/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	36/190	Not reported in detail
	Setting priorities for health interventions in developing countries (72)	This study reviewed empirical studies on priority setting of health interventions in developing countries, classified their methodological approaches and defined methodological suggestions for future studies. The studies covered a wide range of priority-setting areas: 10 studies prioritized interventions across the healthcare system, four studies	2008	2/10 (AMSTAR rating from McMaster Health	1/18	18/18	0/18

Addressing Overuse of Health Services in Canada

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		<p>across several disease areas and four studies concentrated on particular disease areas. Most of the identified studies (14/18) focused on priority setting at the national level.</p> <p>Findings show that most of the included studies involved policymakers, health workers and the general population in their priority-setting process. This coincides with observations in the literature which emphasize the need to involve relevant stakeholders in these debates. Additionally, a number of studies involved only a limited number of quantitative criteria, whereas observations in the literature stress that many other criteria, including medical (e.g. effectiveness of interventions and severity of disease) and non-medical (e.g. economic efficiency, ethical reasons and political circumstances) criteria, may also be important to consider. Furthermore, some studies identified criteria through literature review, however the definitions of criteria are likely to be dependent on culture and perspective. As such, authors suggest identifying these criteria through focus group discussions with relevant stakeholders as a better approach to obtain an appropriate set of criteria. It was also found that a number of studies relied solely on quantitative techniques to elicit preferences of respondents. Weighing the strengths and weaknesses of both approaches, authors suggest that quantitative techniques may be relevant to situations where general guidance on priority setting is required, whereas qualitative techniques may be more apt in situations where more specific decisions are required on, for example, implementation of certain interventions. Lastly, a number of studies presented their results in descriptive format such as identified criteria or respondents' preferences, and authors suggest that studies should also present the impact of their findings in this respect.</p>		Forum)			
	Priority setting for health technology assessments (70)	A majority (7/12) 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	2007	4/10 (AMSTAR rating from McMaster	3/17	0/17	0/17

McMaster Health Forum

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		four priority-setting systems and in conjunction with a committee in two of these. 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. Eleven categories were identified for priority-setting criteria (listed in descending order of prevalence): clinical impact, economic impact, 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, and alternatives.		Health Forum)			
	Describing priority-setting processes for healthcare that either exist or have been tried in different jurisdictions around the world (71)	Priority-setting processes were identified as both formal and informal at national/state and regional levels. 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). Informal approaches comprised informal debates, discussions among policymakers, and a one-off consensus development meeting. 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.	2005	3/10 (AMSTAR rating from McMaster Health Forum)	1/30	0/30	0/30
	Effectiveness of community-engagement approaches and methods for health-promotion interventions (82)	<p>There is little evidence on the effects of specific interventions on health promotion. Varying qualities of evidence suggest that interventions that engage the community improve the dissemination of information and the development of interventions. The review includes no evidence regarding the effectiveness of community-engagement approaches and methods for health-promotion interventions with regards to optimizing clinical practice.</p> <p>The evidence from one study suggests that community champions used in planning/design or delivery of health-promotion interventions can increase their level of knowledge, skills and confidence following training, and feel that they make the greatest impact in areas in which</p>	Not reported (published in 2008)	9/10 (AMSTAR rating from McMaster Health Forum)	4/21	Not reported in detail	0/21

Addressing Overuse of Health Services in Canada

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		<p>they have ownership and a stronger voice within their communities.</p> <p>The community-engagement approaches reviewed included the use of community groups, committees, educators, volunteers, workshops and champions. In addition, the community-engagement methods and approaches focused on the planning, design and delivery of intervention(s) in areas of cardiovascular health, childhood immunization, injury prevention, sexual health, smoking, alcohol use, nutrition and physical activity.</p>					
	<p>Effective strategies for interactive public engagement in developing healthcare policy and program delivery at a provincial/regional level (75)</p>	<p>Interactive public engagement designed to contribute to decision-making can be successfully implemented in various situations. The relative success of implementation is influenced by a range of contextual variables, of which organizational commitment and issue characteristics play more important roles than other contextual variables. In well-designed interactive public-engagement processes, participants generally report high levels of satisfaction with the communication of objectives, adequacy of the information materials, and the logistics of the deliberations. These public-engagement methods can influence participant views, but are less likely to alter dominant views, such as the highest priorities. Researchers note that continued ambiguity in the terminology, goals, theoretical properties and benefits of public engagement amongst Canadian health-system managers and policymakers will threaten potential meaningful progress towards informing practice and involving the public in the development of healthcare programs.</p>	2009	4/9 (AMSTAR rating from McMaster Health Forum)	?	5/29	0/29
	<p>Examining the peer-reviewed empirical evidence on outcomes of public involvement in healthcare policy (77)</p>	<p>The outcome of public involvement in healthcare policies remains largely underdeveloped and poorly documented. There is little to no evidence for the longer-term impact demonstrated by public involvement. There is no clear conclusion on the effectiveness of policy development from involvement activities. The review includes no evidence regarding the effectiveness of public involvement with regards to optimizing clinical practice.</p>	2010	4/9 (AMSTAR rating from McMaster Health Forum)	5/19	0/19	0/19

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		<p>There is some evidence for the developmental role of public involvement (e.g. enhancing awareness, understanding and competencies among lay participants), but the unclear definition of success impedes on forming a conclusion about public involvement.</p> <p>There is limited data available to address the primary research questions.</p> <p>The key features of public involvement remain poorly defined, and its objectives are rarely specified in the literature. Indicators used to determine outcomes of this form of intervention remain inconsistent and poorly specified.</p>					
	Examining the effects of involving patients in the planning and development of healthcare (78)	<p>A review of 337 studies involving patients in the planning and development of healthcare found that few studies described the effects of involving patients in the planning and development of healthcare. The review defined patient involvement as “the active participation in the planning, monitoring, and development of health services of patients, patient representatives, and wider public as potential patients.”</p> <p>Case studies reporting on project administrators’ views about the impacts of patient engagement support the view that involving patients has contributed to changes to services. An evidence base does not exist for the effects on use of services, quality of care, satisfaction, or health of patients.</p> <p>The effects of patient involvement on accessibility and acceptability of services or impact on the satisfaction, health or quality of life of patients, has not been examined. The effect of patient contributions to the planning and development of services on the quality and effectiveness of these services across various settings is unknown.</p>	2000	5/9 (AMSTAR rating from McMaster Health Forum)	2/42	0/40	0/40
	Stakeholder involvement in	A review of 41 studies on the involvement of stakeholders	2010	4/9	Not	0/41	0/41

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	program evaluation (73)	<p>in program evaluation consisted of reports of original research on stakeholder involvement, independent of actual evaluations, or reports of actual evaluations or meta-evaluations. There is a small percentage of studies reporting original research. Nearly half of the reviewed studies were set in health or education. The dominance of these disciplines suggests that stakeholder involvement is emphasized to a greater extent within these disciplines.</p> <p>Considerable overlap was found between the component and component features that the studies addressed, reflecting a conceptive commonality among researchers of stakeholder involvement. The component, <i>Affective Aspects of Involvement and Collaboration, Communication, and Interaction</i>, where parties “enter into collaboration with the appropriate degree of willingness to participate ...draw on the strengths of each while respecting the positions and expertise of each other”, reflects the methodological centre of stakeholder involvement.</p> <p>The review found very little research on stakeholder involvement in evaluation. The limited number of studies reviewed should not be taken to imply that stakeholder involvement has received little attention in the broader literature.</p>		(AMSTAR rating from McMaster Health Forum)	reported in detail		
	Public deliberation as a method for increasing public input for health research (76)	<p>Public deliberation is presented in the literature as a specific area of political science, and it encourages members of the public to engage in and be informed about issues that shape their public life. Evidence remains consistent in suggesting that public deliberation is a method of obtaining public input on decisions that are important to society. The goals of public deliberation are to obtain informed public opinion, to obtain input that includes under-represented individuals and groups, to bring insights into social values and ethical principles, and to promote the acceptance of public decisions. In addition, the effects of deliberation on participants improve understanding of the complexity of decisions and enhance civic-mindedness. Identified issues</p>	2010	1/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail

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		<p>that are best suited for public deliberation involve ethical and social dilemmas. It is also important to note that the potential to find common ground is a requirement for issues addressed through public deliberation. Common deliberative tasks in healthcare include the development of policy direction, recommendations and tools, priority setting and resource allocation, and risk assessments.</p> <p>The process of public engagement is facilitated through discussion, and prompts the public to develop solutions to societal problems posed to them. It includes three broad characteristics: a sponsor seeking input from participants (i.e., the public); participants considering the ethical- or values-based dilemma; and an information phase in which participants are given accurate and balanced information about the relative positions involved by way of educational materials, experts, etc.</p>					
	<p>Effectiveness of the agenda of involvement of people affected by cancer in research, policy and planning, and practice (79)</p>	<p>Training of patients and healthcare 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. 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> <p>Some policy and planning, and research organizations have involved people affected by cancer at a strategic level, most notably in the U.K. and the U.S.A., but it is not clear how much power and influence they hold at a strategic level.</p> <p>‘One-off’ involvement exercises to influence local policy and planning have taken place in the U.K. in the acute sector, and at a national level to develop guidelines and services, but no examples were found in social care or primary care. The biggest gap in literature about the involvement agenda is rigorous evidence of its impact on</p>	<p>2004</p>	<p>4/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>Not reported in detail</p>	<p>Not reported in detail</p>	<p>Not reported in detail</p>

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		research, healthcare services, on those involved, and on the agenda itself.					
	Defining the benefits of stakeholder engagement in systematic reviews (74)	This review sought to examine the benefits and challenges of engaging stakeholders in the process of developing and performing systematic reviews. Benefits cited include: identifying and prioritizing topics for research; providing pragmatic feedback on the research protocol; aiding in recruitment of research participants; helping the researchers understand the research subject's perspective; ensuring that findings are interpreted with the end user in mind and that final products are readable and accessible; and facilitating wider dissemination and uptake of research findings. In particular, the topic refinement and research development phase of conducting a systematic review was identified as the point where stakeholder engagement yielded the greatest benefit. Challenges include time and resources, researcher skills for stakeholder engagement, finding the right people, balancing multiple inputs, and understanding the best/most appropriate time in the review process to engage different types of stakeholders. Additionally, it was found that very few studies directly measured the impact of or had quality standards for stakeholder engagement, with most relying heavily on observations and inferences.	2013	5/9 (AMSTAR rating from McMaster Health Forum)	4/24	0/24	0/24
	Strategies in consumer and community engagement in healthcare (80)	This review used the term CCE to encompass the involvement of consumers (patients and their carers) and community members (i.e., non-patient community members and the community more broadly). The authors note that there remains a paucity of evidence related to the effectiveness of CCE strategies, and participation of different groups of consumers in the CCE process. CCE encompasses strategies that have been used to facilitate the improvement of the level of general service delivery and specific services within preventative care, technology, and related healthcare fields. Various tools and activities are utilized by CCE initiatives, including shared decision-making, decision aids, consumer representation, electronic and internet-based facility application, and peer	Not reported	4/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	1/90	0/90

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		<p>support and community-based interventions.</p> <p>The review indicated that literature focusing on CCE strategies targeting children found that children and adolescents want to participate in their decision-making, but that healthcare professionals require guidance to assist in their involvement.</p> <p>When reviewing literature focusing on populations from lower socio-economic backgrounds, the authors noted that lowered costs, increased primary care physician involvement, and modification of communication to better meet individuals' needs were all strategies that facilitated enhanced cancer screening for women in one included study.</p> <p>The authors indicated that a key finding from the review is that CCE initiatives should be rigorously evaluated before their implementation, as they often require immediate resource mobilization and may have hidden costs associated with them (e.g., training healthcare professionals and consumers). Additionally, there are a number of context-related factors that play a role in the success of CCE strategies; the review outlines a model to facilitate assessment of these strategies (i.e., an eight-step process identifying aim, type of activity, participants, preparedness for CCE, engagement methods, measurement, barriers and facilitators).</p>					
	<p>The use of citizens' juries in health policy decision-making (81)</p>	<p>The review describes citizen juries as a method allowing citizens to engage with evidence and deliberate and deliver recommendations surrounding a variety of complex topics. Steering committees and advisory groups involved in the citizens' jury method described in the reviewed studies included key stakeholders (e.g., policymakers), discipline experts, advocacy group representatives, clinical practitioners, deliberative methodologists, patients and caregivers. Studies described the role of the groups in a variety of ways, such as to: prevent bias in expert</p>	<p>2010</p>	<p>5/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>10/37</p>	<p>0/37</p>	<p>0/37</p>

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		<p>presentation; guide question development and evidence presentation; disseminate or implement findings; and engage stakeholder representatives.</p> <p>The authors found that among the study population, a large number of juries were shorter in duration than recommended, and few rulings were considered by decision-making bodies (which limited transfer into policy and practice).</p> <p>The authors indicate that when adapting a citizen jury for a particular aim, development of the jury should involve special attention toward recruitment, independent oversight by a steering committee, duration of the jury, moderation, and respect for volunteer participants.</p>					

Appendix 2: Systematic reviews relevant to Element 2 – Implementing health-system stakeholder-led initiatives to address overuse

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
Foster better communication and shared decision-making between providers and patients based on evidence-based recommendations and best practices	Identification of ways to communicate evidence to improve patient understanding, involvement in decisions and outcomes (136)	<p>There is limited evidence available to guide how physicians can most effectively share clinical evidence with patients facing decisions.</p> <p>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 a partnership; providing evidence, including a balanced discussion of uncertainties; presenting recommendations informed by clinical judgment and patient preferences; and checking for understanding and agreement.</p>	2003	0/10 (AMSTAR rating from McMaster Health Forum)	Not reported	Not reported	0/8
	Effects of patient participation in face-to-face primary care consultations on patient-oriented and/or disease-oriented outcomes (179)	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 McMaster Health Forum)	1/7	0/7	0/7
	Patients’ perceptions of sharing in decisions: A systematic review of interventions to enhance shared decision-making in routine clinical practice (99)	<p>This systematic review evaluated the effectiveness of interventions to improve health professionals’ adoption of shared decision-making in routine clinical practice, as seen by patients.</p> <p>Only three of the 21 included studies found clinically significant effects for shared decision-making interventions that favoured the intervention examined. These three studies were the only ones that involved multifaceted interventions including both health professional education and a patient-mediated intervention (i.e. patient decision aid). This finding suggests that, from the perspective of patients, interventions that target both the health professional responsible for sharing a decision with the patient, and also the patient him or herself, are promising options to enhance shared decision-making in routine clinical practice.</p>	2009	7/11 (AMSTAR rating from McMaster Health Forum)	4/21	0/21	0/21
	Shared decision-making interventions for people with mental health conditions (96)	There is limited research available on the effects of provider-, consumer- or carer-directed shared decision-making interventions for people with mental health conditions. This review only found two studies, both of which involved the use of a patient decision aid combined with health professional education. Neither study reported	2008	10/10 (AMSTAR rating from McMaster Health Forum)	0/2	0/2	0/2

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		<p>significant effects on clinical outcomes or hospital readmission rates. Effects of shared decision-making interventions on patient satisfaction were mixed. Neither study reported any harms related to shared decision-making interventions.</p> <p>While there is no evidence of harm, there is insufficient evidence to support changes to clinical practice.</p>		Forum)			
	Tools to promote shared decision-making in serious illness (100)	<p>Tools identified in this review address advance care planning, palliative care and goals of care communication, feeding options in dementia, lung transplant in cystic fibrosis, and truth telling in terminal cancer. Tools to promote shared decision-making can be used to inform future decisions through advance care planning, or to support immediate treatment decisions.</p> <p>The two advance care planning tools supported by the strongest evidence are a video advance care planning tool to assist in discussions of treatment preference with patients with advanced dementia, and an advanced directive documentation guide designed for patients with low health literacy and available for free on the internet. Both tools had effects on clinical decisions. The evidence identified in this review supports several tools geared toward shared decision-making in immediate clinical choices. The majority of these tools were shown to improve knowledge, and select tools changed actual treatment decisions.</p>	2014	6/10 (AMSTAR rating from McMaster Health Forum)	1/38	0/38	3/38
	Effects of interventions designed to support shared decision-making on health inequalities (95)	<p>Shared decision-making interventions evaluated by included studies include communication skills workshop or education sessions, coaching sessions targeted at patients or health professionals, computerized decision aids, video-based interventions to improve informed decision-making and shared decision-making, counselling sessions, booklet or DVD decision aids, and paper-based hand-outs promoting informed decision-making. Ten of 21 interventions studied were specifically targeted at disadvantaged groups. These interventions focused on issues such as cultural differences and literacy levels.</p> <p>The shared decision-making interventions studied had no significant effect on disadvantaged patients' adherence levels, anxiety health outcomes, and screening/treatment preferences, intentions or uptake. Pooling of study results found moderate positive effects of shared</p>	2012	10/11 (AMSTAR rating from McMaster Health Forum)	0/19	4/19	0/19

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		<p>decision-making interventions on knowledge, participation, decisional conflict and self-efficacy of disadvantaged populations.</p> <p>Seven studies compared the effects of interventions between high and low literacy groups. Results indicated that shared decision-making interventions appeared to benefit disadvantaged groups more than groups with higher literacy, education and socio-economic status. Interventions specifically tailored to the needs of disadvantaged groups appeared to be the most effective.</p>					
	Health professionals' perceptions of the barriers and facilitators to implementing shared decision-making in clinical practice (102)	<p>The majority (89%) of participants in included studies were physicians. The most frequently reported barriers to implementing shared decision-making in clinical practice were time constraints, lack of applicability due to patient characteristics, and lack of applicability based on the clinical situation.</p> <p>The most frequently reported facilitators to implementing shared decision-making in clinical practice were healthcare provider motivation, their perception that putting shared decision-making into practice would lead to improved clinical processes, and their perception that putting shared decision-making into practice would lead to improved patient outcomes.</p>	2006	6/10 (AMSTAR rating from McMaster Health Forum)	6/38	0/38	0/38
	Experience with shared decision-making programs in VA Shared Decision-making® Programs for prostate care (101)	<p>Shared Decision-making® Programs (SDPs) are videos designed to educate patients and involve them in the decision-making process.</p> <p>The evidence on the impacts of SDPs on treatment preferences for prostate care is limited. Patients enrolled in the two included studies demonstrated improved knowledge about prostate cancer after viewing the SDP. In one study, patients reported improved health and physical functioning, improved knowledge about the risks and benefits of different treatment options, and were more satisfied with their decision-making process.</p>	1997	4/9 (AMSTAR rating from McMaster Health Forum)	0/2	0/2	0/2
	Interventions for improving the adoption of shared decision-making by healthcare professionals (97)	<p>Studies that used outcome measures reported by observers to evaluate shared decision-making interventions showed that interventions targeting both patients and providers had a positive effect compared to usual care and compared to interventions targeting patients alone. Studies comparing interventions targeting healthcare professionals with usual care reported that shared decision-making interventions had a</p>	2009	9/10 (AMSTAR rating from McMaster Health Forum)	7/39	0/39	0/39

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		<p>positive effect.</p> <p>The low quality of evidence identified by this review makes it difficult to evaluate whether shared decision-making interventions are effective. However, the findings of this review suggest that any intervention that targets patients, providers, or both, is more effective than no intervention.</p>					
Identify and change the behaviour of providers (e.g., through educational materials, meetings and/or outreach) to address inappropriate use of health services in their practice	Development of a checklist for identifying determinants of practice (131)	<p>The review identified 12 checklists focused on identifying determinants of practice, but none were found to be comprehensive as compared to an aggregated list of determinants and domains.</p> <p>The identified checklists were used to develop a single checklist with 57 potential determinants of practice grouped in seven domains: guideline factors, individual health professional factors, patient factors, professional interactions, incentives and resources, capacity for organizational change, and social, political and legal factors.</p> <p>Five worksheets were also developed to facilitate the application of the checklists.</p>	Not reported	4/9 (AMSTAR rating from McMaster Health Forum)	0/12	0/12	12/12
	Development of a method for characterizing and designing behaviour-change interventions (113)	<p>Nineteen frameworks of behaviour-change interventions were identified and used to develop a new framework called the Behaviour Change Wheel. Of the frameworks identified, none assessed the full spectrum of behaviour-change interventions.</p> <p>At the centre of the Behaviour Change Wheel is the ‘behaviour system’, which consists of three essential conditions: capability, opportunity and motivation. The behaviour change system is encircled by nine interventions that can be used to address deficits in one or more of the elements of the behaviour system, and around these are seven categories of policy that can be used to enable the implementation of these interventions.</p> <p>The Behaviour Change Wheel was successfully used to characterize interventions within the English Department of Health’s 2010 tobacco control strategy, and the National Institute of Health and Clinical Excellence’s guidance on reducing obesity.</p>	Not stated	6/8 (AMSTAR rating from McMaster Health Forum)	Not applicable – the review included frameworks of behaviour change and not single studies (19 papers describing frameworks were included)	0/19	19/19
	Effects of local opinion	Opinion leaders are individuals who are perceived as “likeable,	2009	10/10	6/18	0/18	0/18

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	leaders on professional practice and healthcare outcomes (108)	<p>trustworthy, and influential”, and can aid and persuade healthcare providers to use evidence when treating and managing patients. The review found that 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 randomized controlled trial (RCT) comparisons respectively).</p> <p>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). Moreover, the effectiveness of opinion leaders varies both between and within studies that have different types of interventions, settings and outcomes measured. In most studies included in this review, the role of the opinion leader was poorly defined, making it more difficult to optimize the effectiveness of these leaders.</p> <p>The use of a local opinion leader as the only intervention was evaluated in five studies. In 13 studies, local opinion leaders were supplemented by other interventions such as educational materials, outreach activities, audit and feedback, chart reminders, evidence summaries, seminars and lectures, and discussions. The time span of interventions ranged from one week up to 18 months. In most studies a description of the frequency of opinion leader involved was not provided. In most studies the opinion leader intervention was compared to no other intervention and therefore it is not possible to identify the best way to optimize the effectiveness of opinion leaders.</p>		(AMSTAR rating from McMaster Health Forum)			
	Effects of continuing education meetings and workshops on professional practice and healthcare outcomes (106)	<p>Educational meetings (e.g., courses, conferences, lectures, workshops, seminars and symposia) for physicians and other healthcare professionals, alone or combined with other interventions, improved professional practice and the achievement of treatment goals by patients. Seven of 81 studies targeted interventions for improving the detection of cancer, and these studies did not find any statistically significant impact of educational meetings on professional practice.</p> <p>The effects on professional practice and patient outcomes were small and varied between studies. It appeared that higher attendance at meetings was associated with enhanced effects, that mixed education</p>	2006	10/11 (AMSTAR rating from McMaster Health Forum)	4/81	1/81	0/81

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		(interactive and didactic) was more effective than either alone, and that the effects were lower for more serious outcomes and complex behaviours.					
	Effects of on-screen, point-of-care computer reminders on processes and outcomes of care (110)	Computer reminders lead to a 4.2% median improvement in process adherence for all outcomes, 3.3% for medication ordering, 3.8% for vaccinations and 3.8% for test ordering. Generally, point-of-care computer reminders achieve small improvements in physician behaviour.	2008	9/11 (AMSTAR rating from McMaster Health Forum)	1/28	0/28	28/28
	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 (107)	<p>Educational outreach visits allow trained persons to visit clinicians where they practice and offer them information on how to change their practices to improve how they care for their patients. The information offered might include feedback about their performance, or could be based on how to overcome obstacles in changing behaviours.</p> <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> <p>The authors concluded that educational-outreach visits alone or when combined with other interventions have relatively consistent and small effects on prescribing that are potentially important. The effects on other professional behaviours, however, appeared to be more variable. Additionally, the authors point out that while educational outreach visits may be costly, the savings may outweigh the costs if the intervention is targeted at inappropriate prescribing and its effects are enduring.</p>	2007	8/11 (AMSTAR rating from www.rxforgchange.ca)	1/69	1/69	69/69
	Effects of audit and	The audit and feedback process consists of an individual's professional	2010	8/11	11/140	Not	140/140

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	feedback on professional practice and healthcare outcomes (109)	<p>practice or performance being measured and compared to professional standards or targets (i.e., auditing of professional performance). The results of this comparison are subsequently delivered to the individual in hopes of encouraging the individual to follow professional standards (i.e., providing feedback). The process is often used in combination with other interventions such as reminders or educational meetings, and is often used in healthcare settings. Most of the studies included in the review measured the effects of audit and feedback on physicians, and some measured the effects on nurses or pharmacists.</p> <p>In all comparisons (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 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. However, the authors note that it is uncertain according to the evidence whether audit and feedback is more effective when used in combination with other interventions.</p> <p>Using multivariable meta-regression, the authors indicated that the effectiveness of feedback may increase when baseline performance is low, when feedback is provided more than once, when it includes both explicit targets and an action plan, when the source of feedback is a supervisor or colleague, and when it is delivered both verbally and in a written format.</p>		(AMSTAR rating from www.rxforchange.ca)		reported	
	Effects of printed educational materials on professional practice and healthcare outcomes (105)	Printed educational materials are utilized to improve healthcare professionals' knowledge, attitudes, skills and awareness to improve practice and patient outcomes. Common means of presentation include paper formats (e.g., monographs), publications in peer-reviewed journals, and clinical guidelines. The review focused on passive dissemination of printed educational materials, which involves the distribution of published or printed recommendations for clinical care (including monographs, publications in peer-reviewed journals, and clinical practice guidelines) being delivered personally or through mass mailing. Most of the printed educational materials utilized in the studies	2011	8/11 (AMSTAR rating from www.rxforchange.ca)	12/50	Not reported	50/50

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		<p>were endorsed, did not specify an educational component, were printed in black and white with a few tables and figures, and were longer than two pages.</p> <p>The systematic review included 45 studies (31 of which were interrupted time series analyses and 14 randomized controlled trials), and nearly all included studies (44/45) aimed to compare the effectiveness of printed educational materials to no intervention. When used alone and compared to no intervention, the review found that printed educational materials have a small beneficial effect on professional practice outcomes. However, the review indicated that there is insufficient information to reliably estimate the effect of printed educational materials on patient outcomes.</p> <p>The authors also aimed to identify the influence of various characteristics of printed educational materials in determining the effectiveness of the intervention. It was noted that effectiveness may vary more according to source of information, tailoring, purpose, level of evidence and format, and that effectiveness may not vary much based on the frequency, mode or duration of delivery.</p>					
	Effects of tailored interventions to address barriers to change in health professional performance (111)	<p>Tailored interventions to change professional practice are interventions planned following an investigation into the factors that explain current professional practice and any reasons for resisting new practice. These factors are referred to as barriers to change.</p> <p>It was found that the selection of interventions tailored to prospectively identified barriers is more likely to improve professional practice than no intervention or than dissemination of guidelines or educational materials alone. The overall effectiveness of such interventions, as indicated by the meta-regression, is modest. However, there is wide variation in effectiveness between studies and between the targeted behaviours within single studies, from lack of effect to relatively large effect.</p> <p>There is currently insufficient evidence on the most effective approaches to tailoring, including how barriers should be identified and how interventions should be selected to address the barriers. There is</p>	2009	7/11 (AMSTAR rating from www.rxfchange.ca)	2/26	0/26	26/26

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		<p>also no evidence about the cost-effectiveness of tailored interventions compared to other interventions to change professional practice. As such, authors recommend that it is reasonable to employ low-cost tailored interventions in practice, but that evidence on the cost-effectiveness of the alternative methods of tailoring is needed to justify the use of more costly tailored approaches.</p> <p>In 13 studies, more than one method was used to identify barriers. These methods include interviews with health professionals and occasionally patients (n=11), focus group interviews (n=10), questionnaire surveys (n=6), review of the literature (n=4), review of performance data (n=2), a meeting or workshop (n=2), and other methods including observation and consultation with an expert group (n=4). Some studies employed a variety of methods. The depth of investigation of barriers was categorized as low in six studies, moderate in 13, and high in seven.</p> <p>Studies reported barriers in the following EPOC domains: administrative concerns (n=13), clinical uncertainty (n=9), patient expectations (n=5), information management (n=3), sense of competence (n=2), financial disincentives (n=2), and other (n=15). Barriers in the ‘other’ category included negative staff attitudes, anxiety about changing practice, a perception that the clinical issue was not a priority, and advocacy of certain drugs by pharmaceutical companies.</p> <p>In terms of the influence of prospective identification of barriers on intervention design, six studies reported drawing on behavioural theory to guide the choice of strategies in response to the identified barriers. The other 20 studies made no reference to any theoretical foundation when developing interventions.</p>					
Educate patients/citizens about what health services they need (e.g., through decision aids)	Effects of interventions on healthcare consumers promoting evidence-based prescribing for and medicine use by consumers (122)	The review found that no single strategy improved medicine use outcomes across all tested diseases. The overview sought to assess support for behaviour change, promotion of communication and informed decision-making, risk minimization, skills acquisition and education/information provision. Effective interventions included medicines self-monitoring and self-management, simplified dosing, and interventions directly involving the pharmacist in medicine	2012	No rating tool available for this type of document	Not applicable	Not applicable	Not applicable

Addressing Overuse of Health Services in Canada

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		management. The overview noted that specific research is needed to assess outcomes in those with multiple co-existent conditions. The presence of comorbidity led to the view that interventions must focus on the patient context and healthcare system.					
	Shared decision-making interventions for people with mental health conditions (96)	<p>There is limited research available on the effects of provider-, consumer- or carer-directed shared decision-making interventions for people with mental health conditions. This review only found two studies, both of which involved the use of a patient decision aid combined with health professional education. Neither study reported significant effects on clinical outcomes or hospital readmission rates. Effects of shared decision-making interventions on patient satisfaction were mixed. Neither study reported any harms related to shared decision-making interventions.</p> <p>While there is no evidence of harm, there is insufficient evidence to support changes to clinical practice.</p>	2008	10/10 (AMSTAR rating from McMaster Health Forum)	0/2	0/2	0/2
	Efficacy of different decision aid tools compared to regular care for women facing several options in the specific field of obstetric care (115)	<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> <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>	2010	7/11 (AMSTAR rating from McMaster Health Forum)	2/10	Not Reported	5/10
	Effectiveness of decision	Decision aids increase patient involvement, and improve knowledge and	2009	9/11	Not Reported	Not	?/86 (focus

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	aids for patients' treatment or screening decisions (118)	<p>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> <p>In the four studies that measured this outcome, decision aids positively affect patient-practitioner communication.</p>		(AMSTAR rating from www.rxforchange.ca)	in detail - description states: Australia; Canada; China; Finland; Netherlands; U.K.; U.S.	Reported	of studies not reported)
	Overview of the impact on risk perception accuracy of genetic counselling (121)	<p>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 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>	2007	5/9 (AMSTAR rating from McMaster Health Forum)	Not Reported	Not Reported	2/19
	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 (119)	<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 McMaster Health Forum)	Not Reported	Not Reported	19/35
	Effects of different types	There was little evidence to suggest that personalized risk	2006	10/11	2/22	Not	22/22

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	of personalized risk communication for consumers making decisions about taking screening tests (116)	<p>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 present numerical calculations of risk) may be associated with a smaller increase in uptake of tests.</p>		(AMSTAR rating from McMaster Health Forum)		Reported	
	Effectiveness of interventions that provide patients with cancer risk and cancer screening information tailored to their personal attributes (120)	<p>Tailored information regarding cancer risk and screening led to increased cancer risk perception and knowledge of breast cancer compared to generic information.</p> <p>There is limited evidence to suggest that a website tailored for risk factors would be effective.</p>	Not Reported	7/11 (AMSTAR rating from McMaster Health Forum)	0/40	Not Reported	29/40
	Effectiveness of cancer-related decision aids (117)	<p>Thirty-four randomized controlled trials (RCTs) of decision aids were identified for use in screening or prevention and treatment of cancer.</p> <p>Decision aids were found to significantly improve knowledge about screening as well as preventive/treatment options as compared to usual practice.</p> <p>General anxiety was not increased in most trials and was significantly reduced in a screening context.</p> <p>Decision-related conflict was reduced, but not when screening and preventive/treatment studies were analyzed separately.</p>	2007	4/11 (AMSTAR rating from McMaster Health Forum)	5/34	0/34	0/34
Develop mass-media campaigns to raise awareness about the need to address overuse	Effectiveness of online social network health behaviour interventions (123)	Nine of 10 included studies reported significant improvement with one or more aspects of health behaviour change or outcomes related to behaviour change, with effect sizes small in magnitude, statistically non-significant and ranging widely from \square 0.05 (95% CI 0.45-0.35) to 0.84 (95% CI 0.49-1.19). Significant improvements were reported for weight loss, physical activity and dietary awareness. Among four studies reporting on physical activity behaviour change, effect sizes were	2014	8/10 (AMSTAR rating from McMaster Health Forum)	0/10	0/10	0/10

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		<p>considered negligible in one, medium between groups in two, and large between groups in another. A small effect size was observed in a study measuring eating behaviour change. Effect sizes on weight change as a downstream variable ranged from negligible to large, and negligible to small effects were observed in a study measuring quality of life. Participation attrition varied widely, ranging from 0-84%, with engagement and fidelity being relatively low (5-15% in most studies).</p> <p>Overall, there is only modest evidence suggesting interventions involving online social networks are effective to achieve health behaviour change.</p>					
	Examining the use of social media by healthcare professionals and trainees (129)	<p>Discussion forums were the most commonly studied tools (43/96; 44.8%). Many studies included the social media tool as part of a complex intervention, or utilized a pre-existing tool (e.g., Facebook, YouTube, Twitter). The majority of the tools were based in an educational setting (n=66), or professional setting (n=18). Administration, critical appraisal, research, and public health appeared most often in terms of common specialties. Most tools aimed to facilitate communication (59/96, 61.5%) or improve knowledge (41/96, 42.7%), and measured outcomes related to clinicians' experiences, including satisfaction levels, degree/type of communication, and professional behaviours. The most commonly measured outcome was peer-to-peer communication. The majority of studies were quantitative and cross-sectional in nature.</p> <p>Among 13 quantitative studies evaluating social media tool efficacy, 12 studies involved a positive value associated with the intervention, although only six reported statistically significant findings for the primary outcome. Among qualitative studies evaluating social media tools (n=21), the majority evaluated communication facilitation using discussion forums in nursing education settings.</p> <p>These findings suggest that social media use by healthcare professionals and trainees is widespread, particularly in education settings.</p>	2012	4/9 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail
	Describing recent studies of stand-alone mass-media campaigns to	Three controlled trials, five cohort studies, five cross-sectional studies and three single-group studies were included, with three studies addressing findings from VERB, a longitudinal national mass-media	2011	6/10 (AMSTAR rating from	Not reported in detail	0/16	0/16

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
	increase physical activity (126)	<p>campaign (2002-2006) for “tweens” aged 9-13 years at baseline.</p> <p>A median absolute increase of 3.4% and a median relative increase of 6.7% were observed between 10 studies with participants self-reporting physical activity change in terms of self-reported physical activity levels. Three studies evaluating self-reported time spent in physical activity reported a median relative change of 4.4% (range 3.1%-18.2%). Two studies reported participants were more active following a campaign (relative to before), and one study reported a self-reported physical activity increase with a short-term mass media weight-loss program.</p> <p>Overall, the evidence supporting stand-alone mass-media campaigns for physical activity increases is modest, inconsistent and insufficient to truly determine efficacy.</p>		McMaster Health Forum)			
	Examining effectiveness of online interventions to achieve population-wide change in voluntary lifestyle behaviours (127)	The overall impact of online interventions across all studies was small but statistically significant. The largest impact for online interventions was found when compared with waitlists and placebos, followed by comparison with lower-tech online interventions. No significant difference was found when compared with sophisticated print interventions. However, online interventions offer a small effect with the advantage of lower costs and larger reach. Shorter interventions generally achieved larger impacts and greater adherence.	2009	6/11 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	0/29	0/29
	Examining the effectiveness of mass media on the utilization of health services (125)	<p>Mass-media interventions studied in this review include formal mass-media campaigns (15 of 20 studies) and media coverage of health-related issues (five of 20 studies). Most of the mass-media campaigns studied aimed to promote the use of certain health services (e.g. cancer screening, immunization programs).</p> <p>All of the studies (which were of variable methodological quality) apart from one concluded that planned mass-media campaigns and unplanned mass-media coverage can both positively influence the utilization of health services. While there were differences in magnitude of effects, all effects observed were positive.</p>	1999	8/11 (AMSTAR rating from www.rxforgange.ca)	1/20	0/20	1/20
	Effectiveness of mass-media interventions for HIV prevention (124)	Included studies examined the effectiveness of several types of media interventions, including signage, radio, television, educational literature, newspapers or magazines and promotional materials. 83% of campaigns studied involved a combination of two or more types of media	2013	8/11 (AMSTAR rating from McMaster	0/54	0/54	0/54

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		<p>interventions. Most campaigns focused on condom promotion.</p> <p>Mass-media interventions were associated with significant increases in condom use, HIV-related transmission knowledge and prevention knowledge. Interventions conducted in African nations and in countries with lower Human Development Index scores, longer campaigns, and campaigns where message content was tailored to the target audience and refusal rates were low, resulted in greater increases in condom use. Increases in transmission knowledge were found to be the greatest in Asian countries, in countries with lower Human Development Index scores, and for more recent campaigns.</p>		Health Forum)			
	Implementation interventions to increase cancer screening rates (128)	<p>This systematic review found that client reminders, small media coverage and provider audit and feedback appear to be effective strategies to increase screening uptake for breast, cervical and colorectal cancers. One-on-one education appears to be an effective intervention to increase screening uptake for breast and cervical cancers, and a potential intervention to increase screening uptake for colorectal cancer.</p> <p>While reducing structural barriers (e.g., reducing time or distance between screening location and target group) appears to be an effective strategy to increase screening uptake for breast and colorectal cancers, its effectiveness for cervical cancer screening is not known.</p>	2010	4/10 (AMSTAR rating from McMaster Health Forum)	1/66	5/66	0/66
	Mass-media interventions designed to improve public recognition of stroke symptoms, emergency response and early treatment (130)	<p>Campaigns aimed at the public may raise awareness of symptoms/signs of stroke, but have limited impact on behaviour. Campaigns aimed at both public and professionals may have more impact on professionals than the public. Campaigns aimed only at the public reported significant increase in awareness of symptoms/signs, but little impact on awareness of need for emergency response. One campaign targeted at public and professionals did not reduce time to presentation at hospital to within two hours, but increased and sustained thrombolysis rates suggesting that it had a primary impact on professionals, and improved the way that services for stroke were organized.</p>	2010	3/9	2/10	10/10	0/10
	Evaluating the cost-effectiveness of Tips from Former Smokers (Tips), the first federally funded anti-smoking	<p>The CDC launched the first federally funded national anti-smoking campaign in 2012, which resulted in a 12% relative increase in population-level quit attempts. Cost effectiveness analysis demonstrated that Tips saved about 179,099 quality-adjusted life years (QALYs) and prevented 17,109 premature deaths in the U.S. The campaign cost \$480</p>	2014	No rating tool available for this type of document	0/8	0/8	0/8

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
	<p>campaign launched by the Centers for Disease Control and Prevention (CDC) (139)</p> <p>(Note that this is a cost-effectiveness/costing study and not a systematic review)</p>	<p>per quitter, \$2,819 per premature death averted, \$393 per life year saved, and \$268 per QALY gained, totalling \$48 million spent by the CDC. Overall, Tips was a highly cost-effective mass-media intervention that successfully reduced smoking-attributable morbidity and mortality.</p>					
	<p>Assessing the effectiveness and cost-effectiveness of Stoptober, a national smoking cessation campaign, in promoting quit attempts, and the public health impact in terms of total life years expected to be gained (138)</p> <p>(Note that this is a cost-effectiveness/costing study and not a systematic review)</p>	<p>Data obtained from 31,566 past-year smokers through monthly nationally representative household surveys suggested that more people tried to quit in October in 2012 compared to 2007-2011, with an approximate increase of 50% in October 2012 relative to other 2012 months.</p> <p>Stoptober is estimated to have resulted in 350,000 quit attempts, 8,816.57 smokers permanently stopping, and 10,400 discounted life years saved, at less than 415 £/disability-adjusted life year in the modal age group. The intervention was most cost-effective in the 35-to-44-year age group, and least effective for the <35-year age group.</p> <p>This study demonstrates the efficacy of such campaigns with specific goals and psychological principles to cause substantial behavioural change and public health impact.</p>	2013	No rating tool available for this type of document	Not applicable	Not applicable	Not applicable
	<p>Cost-effectiveness of a smoking cessation media campaign (140)</p>	<p>The American Legacy Foundation's national EX® campaign was designed to promote smoking cessation. Data from eight designated media market areas studied indicate that in a hypothetical nationwide cohort of 2,012,000 adult smokers ages 18-49, EX resulted in 52,979 additional quit attempts and 4,238 additional quits, and saved 4,450 quality-adjusted life-years (QALY). Compared to the status quo, EX ranged from a cost of \$37,355 to \$81,301 per QALY, suggesting that the campaign was cost-effective.</p> <p>National mass-media campaigns for smoking cessation can lower smoking prevalence in a cost-effective manner, among both adults and young adults ages 18-24.</p>	2008	No rating tool available for this type of document	0/1	0/1	0/1

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	Cost-effectiveness of interventions to promote physical activity (141)	<p>Physical inactivity is a key risk factor for chronic disease, but a growing number of people are not achieving the recommended levels of physical activity necessary for good health. This study evaluates the cost-effectiveness of interventions to promote physical activity in Australia.</p> <p>This study models the cost impacts and health outcomes of six physical activity interventions over the lifetime of the Australian population. Currently, the most cost-effective strategies include intervention programs that encourage the use of pedometers, and mass media-based community campaigns. The internet-based intervention program, the general practitioner (GP) physical activity prescription program, and the program to encourage more active transport is less likely to be cost-saving. GP referral to an exercise physiologist is the least cost-effective option.</p>	2007	No rating tool available for this type of document	1/12	0/12	0/12

Appendix 3: Systematic reviews relevant to Element 3 – Implementing government-led initiatives to address overuse

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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
Revise lists of publicly financed products and services	Examining whether various methods used by managed care organizations (MCOs) influence prescribing and dispensing of drugs (145)	Most MCOs have had limited success using formularies, therapeutic interchange, and prior approval to influence prescribing and dispensing decisions. Closed formularies were effective in reducing utilization, but not cost, of prescription drugs. Prior approval programs reduce use and costs of drugs, but only in a small number of drug classes. Voluntary therapeutic interchange programs have been shown to be successful in staff-model health maintenance organizations, but not in independent-practice models. Currently, MCOs exert little control over prescribing and dispensing decisions. MCOs might better control pharmaceutical costs through other methods such as tiered co-payments.	2001	3/11 (AMSTAR rating from www.rxforchange.ca)	/25	9/25	5/25
	Assessing impact of restricted Medicaid formularies and whether other formulary drugs were substituted for restricted drugs and their costs, therapeutic appropriateness, and current practices (146)	Eleven articles from 1972-1985 were analyzed for impact of restricted Medicaid formularies on usage of unrestricted substitute drugs, administrative costs, drug costs and quality of care. The evidence does not support the assumption that restriction of specific drugs results in savings in drug costs. The impact of restricted formularies on administrative costs and therapeutic appropriateness of substituted drugs is unclear. In Michigan, 23.7% of patients received alternate drugs and 30.7% of patients still received prescriptions for the restricted drugs. In Louisiana, there was a 34% increase in the number of hospitalized patients and the state saved \$4.1 million in its drug program, but spent \$15.1 million in non-prescription services. Overall, restricting formularies leads to dynamic changes in the Medicaid program and should be carefully considered before implementing.	1987	2/10 (AMSTAR rating from McMaster Health Forum)	0/11	11/11	4/11
	Macro- and meso-level decision-making and priority-setting processes for including drugs in and/or excluding drugs from reimbursement lists and drug formularies in industrialized countries (148)	The clinical evidence on benefit and the quality of that evidence were the main criteria used in priority setting concerning medicines. The costs of the drug emerged as the second major criteria while formal pharmacoeconomic analyses were given a small role. Other criteria used were: alternative treatments available, decisions in other hospitals/systems, size of population affected, severity of disease and past decisions. External factors mentioned as influencing decision-making were patient demand, pharmaceutical company activities and clinicians' excitement. Clinical benefit as shown in clinical trials was the most important criterion for determining	2007	1/10 (AMSTAR rating from McMaster Health Forum)	3/6	0/6	0/6

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		whether a drug is listed for reimbursement.					
	Analyzing the implementation of Medicaid preferred drug lists (PDLs) in several states, and its impact on quality of care and cost relative to other segments of healthcare (147)	The most common and well-studied concern regarding preferred drug lists was identified to be medical restrictions increasing healthcare service utilization, such as hospital and physician visits. While State Medicaid departments have assured beneficiaries that drug coverage is provided for the best medications in every class accounting for both safety and efficacy, beneficiaries have emphasized concerns about whether their medications will continue to be covered.	Not reported	0/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail	Not reported in detail	Not reported in detail
Modify remuneration for providers or incentivize consumers to prioritize the use of some products and services over others	Implications of reference pricing for U.S. prescription drug spending (151)	Rising pharmaceutical expenditures is a major public health concern. Reference pricing, a policy strategy that sets a standard price or reimbursement level for a group of therapeutically interchangeable drugs, is widely used as a cost-containment instrument in countries outside the U.S. This review analyzed 16 studies describing nine reference-pricing policies from six countries. It found that reference-pricing policies led to decreases in drug prices and increases in utilization of targeted medications. Additionally, these policies did not lead to increased use of medical services, such as physician office visits and hospitalizations. Overall, reference pricing may be an attractive policy strategy for the U.S. healthcare system.	2012	7/10 (AMSTAR rating from McMaster Health Forum)	8/16	0/16	7/16
	Effects of a pharmaceutical policy restricting the reimbursement of selected medications on drug use, healthcare utilization, health outcomes, and costs (150)	This study reviewed 29 interrupted time series analyses of pharmaceutical policies restricting reimbursement for prescribed medications by drug benefit plans. Implementing restrictions to coverage and reimbursement of selected medications can decrease third-party drug spending without increasing the use of other health services.	2008	10/11 (AMSTAR rating from McMaster Health Forum)	9/29	12/29	7/29
	Determining the effect of policies for financial incentives for drug prescribers on drug use,	The proportion of total healthcare expenditures spent on drugs continues to grow. Financial incentives influence prescribers' behaviour through budgetary arrangements, financial rewards for target outcomes, and reduced pharmaceutical reimbursement rate.	2011	10/10 (AMSTAR rating from McMaster	0/18	0/18	2/18

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	healthcare utilization, health outcomes, and costs (149)	Eighteen evaluations of pharmaceutical policies from six high-income countries were analyzed. Pharmaceutical budgets may lead to a modest reduction (2.8%) in drug use. The impact of policies involving financial incentives on drug costs and healthcare utilization are uncertain due to low quality evidence.		Health Forum)			
	Comparing the policy outcomes of tiered formularies and therapeutic reference pricing of prescription drugs (152)	With increasing financial pressures from drug spending, it is possible that reference pricing and tiered formularies will be adopted more frequently by public and private insurers in Canada. This review analyzed 12 studies and found that reference pricing was associated with reduced plan spending, switching to preferred medicines, reduced drug utilization, and increased usage of physician services, and was not associated with adverse health impacts. Tiered formularies were associated with reduced plan expenditures, greater patient cost, and increased rates of non-compliance. Overall, reference pricing appears to have a slight evidentiary advantage, given that patients' health outcomes under tiered formularies have not been well studied, and tiered formularies are associated with increased rates of medicine discontinuation.	2007	10/10 (AMSTAR rating from McMaster Health Forum)	4/12	0/12	5/12
	To review interventions that improved the quality of efficiency of medication use in the U.S. managed care setting in studies published between July 2001 and January 2007 (153)	Managed care organizations use a variety of strategies to reduce cost and improve the quality of medication use. The effectiveness of such policies is not well understood. This study analyzed 164 papers between July 2001 and January 2007 describing interventions targeting drug use conducted in the U.S. managed care setting. There is good evidence for the effectiveness of several strategies in changing drug use in the U.S. managed care setting. Educational, monitoring and feedback, and collaborative care interventions can improve medication use. However, little is known about the cost-effectiveness of these interventions.	2007	4/11 (AMSTAR rating from www.rxforchange.ca)	0/51	4/51	25/51
	Interventions to improve safe and effective medicines use by consumers (154)	Seventy-five reviews were included, and focused on interventions with diverse aims, including behaviour change support, risk minimization and skills acquisition. While no single strategy was found to improve all medicine-use outcomes across all diseases, populations or settings, medicines self-monitoring and self-management programs, simplified dosing regimens and directly involving pharmacists in medicine reviews appeared to be effective	2012	No rating tool available for this type of document	n/a (includes reviews, not single studies)	n/a (includes reviews, not single studies)	75/75 (includes reviews, not single studies)

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		<p>strategies. Delayed antibiotic prescriptions, practical management tools such as reminders and packaging, education or information combined with self-management skills training, counselling or other such strategies, and financial incentives were also associated with some positive effects, although effects were less consistent. Some strategies (e.g., directly observed therapy), providing information or education alone, were found to be relatively ineffective or to have variable effects (e.g., ineffective on medicine adherence but improving knowledge for informed medicines choices).</p> <p>Based on several studies, the authors concluded that there was some evidence supporting the effectiveness of financial incentives in terms of adherence, although with mixed results. Two studies suggested financial incentives targeting physicians were found to increase immunization rates. Three reviews investigated financial incentives targeting patients for immunization uptake, and found mixed results: one reported improved immunization uptake, although a smaller effect than with organizational change interventions; another showed non-significant changes with both financial incentives and with complex health systems interventions including patient financial incentives; and a third showed significant increases compared to no intervention or telephone calls or prompts, but not other interventions. One review also suggested increased medicines adherence or uptake with financial incentives.</p>					
	<p>Effectiveness of cash or voucher financial incentives for simple and complex health behaviour change in high-income countries (155)</p>	<p>The findings of this review generally suggested that a financial incentive was more effective than no financial incentive for health behaviour change. The average effect of the financial incentives relative to no intervention or usual care was greater for short-term (<= 6 months) smoking cessation, long-term (>6 months) smoking cessation, vaccination or screening attendance, and all three complex health behaviors combined.</p> <p>There was no convincing evidence to suggest differential effects between groups based on follow-up time or total incentive value for smoking cessation, although analyses suggested some effect of cash-only financial incentives compared to other formats, and increased incentive values. For vaccination or screening attendance, cash plus</p>	<p>2012</p>	<p>9/11 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/16</p>	<p>0/16</p>	<p>16/16</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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
		<p>other motivational components were found to be more effective than cash or vouchers alone; no effects were found for different incentive values. For physical activity, a difference of 16 additional minutes of daily physical activity was observed between financial incentive and control groups.</p> <p>For all behaviours combined, some evidence suggested a decreased effect with increasing post-intervention follow-up and increasing incentive value.</p> <p>Average effect of cash-only financial incentives was greater than for other formats.</p>					
	Effectiveness of financial incentives to achieve sustained changes in smoking, eating, alcohol consumption and physical activity (157)	<p>Overall, the findings of this review suggested that financial incentives were found to increase attainment of target levels of behaviour change, sustained up to 18 months from baseline. Sustained change in overall behaviour with financial incentives was noted up to 2-3 months after incentive removal, but was not maintained thereafter. Behavioural effects were observed to weaken over time.</p> <p>Financial incentives were found to be effective with smoking cessation rates (effects seen for 12-18 months, sustained for two to three months after incentive removal) and healthier eating targets (for six to 12 months, not sustained after incentive removal), but not for physical activity (at six, 12-18 months and three months after incentive removal). High deprivation increased the effect of financial incentives, but only six to 12 months from baseline. Other variables did not independently have a significant modifying effect at any follow-up time-point.</p> <p>This study indicates personal financial incentives may have an effect on individual health-related behaviours, but may not have a sustained effect on disease burden reduction.</p>	2012	8/11 (AMSTAR rating from Program in Policy Decision-Making)	0/34	0/34	34/34
	Effectiveness of financial incentives and contingency management programs	Incentives included lottery tickets, prize draws, cash payments, item vouchers, grocery vouchers, and money deposits. The odds for sustaining smoking cessation at longest follow-up was 1.42 relative to the control group, and only three studies demonstrated	2014	10/11	0/21	9/21	21/21

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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 the prioritized group	Proportion of studies that focused on addressing overuse of health services
	on long-term smoking cessation rates (158)	<p>significantly higher quit rates in the incentive group compared to the control.</p> <p>In eight of nine trials with data on pregnant smokers, an adjusted odds ratio at longest follow-up (up to 24 weeks post-partum) of 3.60 was reported based on moderate quality studies, favouring incentives. Three trials indicated a clear benefit for contingent rewards; the largest included trial provided intervention quitters up to £400 of vouchers, and found rates of 15.4% versus 4% for the two groups at longest follow-up. Four trials showed that successful quit attempt rewards compared to fixed payments for antenatal appointment attendance resulted in higher quit rates.</p> <p>The results of the review indicated that incentives may boost cessation rates while in place, with sustained success rates seen only where resources were concentrated into substantial cash payments for abstinence. Incentives for pregnant smokers may improve cessation rates, both at end-of-pregnancy and post-partum assessment stages.</p>					
	Effectiveness of financial incentives for encouraging healthy behaviours (156)	<p>Five themes were identified: fair exchange, design and delivery, effectiveness and cost-effectiveness, recipients, and impact on individuals and wider society. Fair exchange is when financial incentives that promote health involve a beneficial exchange between the recipient and incentive provider. There is lack of consensus on whether health-promoting financial incentives (HPFI) are beneficial or fair for the parties involved. There is evidence that the design and delivery of HPFI contributes to perceptions of whether they are acceptable or not. If HPFIs are found to be effective, safe, recipient-focused, and intrusion minimizing, they tend to be more accepted.</p> <p>Concerns raised in reference to appropriate providers of HPFI include that many socio-economically disadvantaged individuals are unwilling to accept federally funded HPFI, and that there is potentially negative impact of HPFI on doctor-patient relationships. Moreover, there is strong consensus that if HPFI is effective and cost-effective, it is more likely to be acceptable. A common criticism</p>	2014	6/10 (AMSTAR rating from McMaster's Health Forum Impact Lab)	0/81	0/81	81/81

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		<p>of HPFI is that it offers only short-term motivation. There is no consensus on the reason for this. There is some evidence to suggest there are concerns with cash incentives as they may be used to fund behaviours they were designed to prevent. The impact of HPFI on individuals and wider society is that there is evidence to suggest that HPFI can encourage individuals to take responsibility for themselves, however there is also evidence that HPFI may be perceived as paternalistic and undermines an individual's autonomy.</p> <p>Financial incentive programs that benefit recipients and wider society are likely to be considered more acceptable.</p>					
	<p>Incentives for improving human resource outcomes in healthcare (159)</p>	<p>Thirty-three reviews summarizing the effectiveness of incentives for improving human resources in healthcare (e.g., job satisfaction, turnover rates, recruitment, retention) were identified, of which 13 reviews meeting quality criteria were finally included. Mixed evidence was found for the use of financial incentives: while there may be a positive influence on job satisfaction and healthcare-provider recruitment, there was a lack of evidence supporting such an influence on retention. Higher wages were found to influence job satisfaction and aid recruitment and initial retention, although the effectiveness on retention was found to decline after five years. Financial compensation was also found to not necessarily be the most effective strategy to retain nurses versus other factors such as a positive work environment. While there is a relative lack of evidence to show that financial incentives are important for medical student and physician retention for rural and remote communities, findings suggest that financial compensation, scholarship schemes, benefits and loan repayments may be linked to healthcare-provider recruitment in these areas.</p> <p>The review found that direct compensation through salaries, indirect payment through benefit packages and financial incentives in general were often the first incentives considered, and higher salaries and indirect compensation remained popular, although their effectiveness for key outcomes remained unclear. Mixed results were reported for the effectiveness of non-financial incentives, and</p>	<p>2012</p>	<p>No rating tool available for this type of document</p>	<p>n/a (includes reviews, not single studies)</p>	<p>n/a (includes reviews, not single studies)</p>	<p>13/13</p>

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		<p>incentives emphasizing work-life balance (e.g., child care), and strategies such as those providing opportunities for collaboration were both found to improve job satisfaction and staff retention. While child care supports, social hours, family supports and workload adjustments were found to be effective, they were not always clearly defined in included reviews.</p> <p>Based on the findings of the review, the authors suggested a strategy combining financial and non-financial incentives (e.g., high-quality working environments, opportunities for professional growth) might be more effective on human resource outcome improvements than financial incentives alone.</p>					
	Examining the impact of financial incentives on healthcare professional behaviour and patient outcomes (160)	<p>Overall, researchers concluded that payment for service, payment for providing care for a patient or specific population, payment for providing a pre-specified level of care or providing change in activity or quality of care, were effective.</p> <p>Mixed results were obtained for mixed or other system interventions, and payment for working for a specified time period was generally ineffective. Financial incentives were found to be effective in improving processes of care, referrals and admissions, and prescribing costs.</p> <p>They showed mixed effects for consultation or visit rates, and they were found to be generally ineffective in promoting compliance with guidelines. However, these results should be treated with caution due to the low to moderate quality of evidence of the studies included in each review.</p>	2010	No rating tool available for this type of document	n/a (includes reviews, not single studies)	n/a (includes reviews, not single studies)	4/4 (includes reviews, not single studies)
	Effectiveness of pay-for-performance schemes targeting individual healthcare providers for improving quality of patient care and patient-relevant outcomes (161)	Uncontrolled studies included in this review indicated that the pay-for-performance scheme improved quality of care, although higher-quality studies did not report similar findings. Interrupted time series studies suggested mixed effects of the scheme, with two not detecting any process of care or clinical outcome improvements, one reporting initially statistically significant improvements in guideline adherence which became minimal over time, and two others reporting statistically significant blood pressure control improvements and hemoglobin A1C control declines.	2012	9/10 (AMSTAR rating from McMaster Health Forum)	1/30	0/30	30/30

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		<p>Specific to preventive care, two randomized controlled trials ranked highly by the authors found significant but small effects on vaccination rates, while two other studies found no effect on mammography, and Pap spears and mammography combined. Other studies found mixed results between significant effects on one outcome and no effect on another.</p> <p>Specific to long-term care and chronic conditions, one highly-ranked randomized controlled trial found no differences between treatment and control arms in assessing proportion of patients smoke-free. Additionally, an interrupted time series study reported no findings suggestive of a faster rate of increase in quality scores for incentivized indicators (asthma, diabetes, hypertension, coronary disease) compared to before pay-for-performance implementation, and no improvements in non-incentivized indicators.</p> <p>While pay-for-performance schemes may be useful in identifying elements of care valued within a given healthcare organization, current evidence targeting individual practitioners is insufficient to support its adoption, and its efficacy on quality of care and patient-relevant outcomes remains uncertain.</p>					
	Effectiveness of behaviour change interventions to encourage generic drug prescriptions in the U.K. National Health Service and similar settings (169)	<p>This rapid evidence synthesis included systematic reviews of interventions reporting outcomes relevant to generic drug utilization and related primary studies. Financial incentives (fund holding, drug budgets) were assessed in a review by Sturm et al. (2005) to determine their effects on prescribing policies, specifically on drug use, healthcare utilization, health outcomes and costs. While the review's included studies had serious limitations and careful consideration was noted as being required in interpreting review results, budgeting funds to a group of individual physicians and providing them financial responsibility for their own budget was found to increase generic drug use.</p> <p>Among intervention studies, a primary study was conducted in the United Kingdom with general practitioners at 10 institutions in the Wirral Health Authority from 1992 to 1993, assessing the impact of</p>	2013	No rating tool available for this type of document	0/23	0/23	23/23

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		<p>a financial incentive combined with standard setting for improvement, interactive education, and established cost-saving and clinical audit performance standards. Compared against no intervention, the proportion of generic prescribing increased by 5% in the intervention group, although a high risk of bias was noted for randomization, allocation concealment and potentially for baseline characteristics, and differences began declining after an additional three months.</p> <p>Overall, findings suggest financial incentives with educational interventions and audit/feedback provision may be most effective in encouraging physician generic prescribing, although evidence is generally weak, and practical and cost-related considerations must be considered.</p>					
	<p>Effects of financial incentives on the quality of healthcare provided by primary-care physicians (162)</p>	<p>This review focused on studies involving monetary transfer (change in amount, level of method of payment) targeting primary-care physicians, primary-care teams, and addressing quality of care related to patients' health and well-being.</p> <p>Modest and variable effects on quality of healthcare provided by primary-care physicians were reported; while six studies reported statistically significant positive effects with financial incentives, the majority of which were across only one of many quality measures used in the study, and involved significant selection bias and poor study designs. One study found no effect of financial incentives on quality of care.</p> <p>The review's findings suggested that the following characteristics influenced financial incentive effectiveness: amount and method of payment (salary, fee-for-service, performance bonus, payment target (individual or team), timing); the importance of the income relative to other motivators (intrinsic motivation or other extrinsic motivators such as autonomy); opportunity costs of changing behaviour (other priorities for physicians); heterogeneity across physicians; and heterogeneity in marginal costs of changing behaviour (e.g., administration costs).</p>	<p>2009</p>	<p>10/10 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/7</p>	<p>0/7</p>	<p>7/7</p>

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		<p>The authors reported evidence was insufficient to either support or oppose financial incentive use to improve primary-care physician service provision quality, and implementation of such incentive schemes and their assessment require careful and rigorous designs.</p>					
	Interventions for supporting nurse retention in rural and remote areas (163)	<p>Five relevant reviews were identified. With regards to financial incentives, one review synthesizing 43 empirical studies targeting nurses and physicians identified five types of programs addressing return of service: service requiring scholarships, educational loans with service requirements, service-option educational loans, loan repayment programs, and direct financial incentives. While the review identified substantial evidence on incentives for return of service as a health policy intervention to attract human health resources to underserved areas, there was limited evidence on rural area retention. Financial incentive programs were found to place substantial numbers of health workers in underserved areas, and participants were more likely to work in underserved areas for long durations relative to non-participants, although they were less likely to remain at their site of original placement.</p> <p>A second systematic review addressing effectiveness of different retention strategies found 14 relevant papers (n=1 on nurse retention, n=6 on medical practitioners, n=5 on healthcare professionals with an emphasis on medical doctors, n=1 on psychiatrists). While financial incentives were the most commonly reported strategy, the review offered limited support for their efficacy, with results indicating they were more effective in improving recruitment and short-term retention than fostering long-term underserved area service retention. Some evidence suggested strategies involving some form of obligation (e.g., visa conditions restricting area of practice or loan repayment) might be effective in longer retention durations. Other evidence indicated non-financial incentives (e.g., providing quality working and housing conditions) might have a greater impact on retention-related decisions.</p> <p>Overall, while financial incentives were the only strategies that had been evaluated properly, evidence supporting their effectiveness on long-term nurse retention was still found to be very limited, with</p>	2012	No rating tool available for this type of document	n/a (includes reviews, not single studies)	n/a (includes reviews, not single studies)	5/5 (includes reviews, not single studies)

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		<p>some evidence suggesting they lacked effectiveness. Evidence on “direct and indirect financial incentives (direct payments, service-requiring scholarships, educational loans with service requirements, loan repayment programs)” was classified as being moderate-strength and indirect. In comparison, effectiveness of education and continuous professional development interventions (e.g., recruitment from and training in rural areas, targeted admission of students from rural backgrounds) was rated as being based on moderate-strength, indirect evidence. Regulatory interventions (e.g., increased opportunities for recruitment to civil service) were rated as having low-strength, indirect evidence, and personal and professional support interventions (e.g., general rural infrastructure improvement, supportive supervision, and measures to reduce healthcare workers’ feelings of isolation) were rated as having a combination of moderate-strength, indirect evidence and strong direct evidence.</p>					
	<p>Leaders’ experiences and perceptions implementing activity-based funding and pay-for-performance hospital funding models (164)</p>	<p>All of the included studies focused on leaders’ experiences with implementing organizational incentives, but none clearly described ‘how’ funding models were implemented.</p> <p>Five themes were identified based on leaders’ experiences: 1) pre-requisites for success; 2) perceived benefits; 3) barriers/challenges; 4) unintended consequences; and 5) leader recommendations.</p> <p>Pre-requisites for success include: full organizational commitment to and support for the chosen funding model; required infrastructure to support the individuals and activities required to accurately measure quality in pay-for-performance models; information technology and decision support systems for producing, tracking and aggregating high-quality, timely, accessible, clinically relevant data; committed leaders who are supportive of the funding model and recognize the benefits that can be achieved; and involving physician leaders to support accurate data collection and to act as ‘champions’.</p> <p>Perceived benefits for activity-based funding included improved productivity and efficiency, ability to reallocate funds, supporting</p>	<p>2013</p>	<p>8/9 (AMSTAR rating from McMaster Health Forum)</p>	<p>0/14</p>	<p>1/14</p>	<p>14/14</p>

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		<p>greater emphasis on evaluation, accountability and discharge planning, improved data accuracy, improved collaboration and communication.</p> <p>Improved quality and enhanced organizational transparency were associated with pay-for-performance models.</p> <p>Barriers/challenges to implementation included lack of resources (e.g., constrained human resources given additional workload for providers), data collection (e.g., difficulty gathering accurate data and lack of experienced staff for data collection), and commitment factors (e.g., leaders' skepticism or suspicion about the funding model).</p> <p>Unintended consequences included opportunistic behaviour, 'cherry picking' patients with less complex conditions and who are less expensive to treat (possibly leading to the exclusion of more vulnerable patients), and inaccurate reporting and evaluation of quality outcomes.</p> <p>Leader recommendations included the need to have support for the funding model change from different leaders within the organization (including administrators, health professionals and staff) from the beginning of the transition to ensure full engagement during the entire implementation process. Recommendations to support quality improvement at the program/unit level included providing educational resources for hospitals and training programs, increasing collaboration and cooperation with other units and project groups/committees, increasing interprofessional communication and interaction, and sharing data collection personnel, protocols and tools.</p>					
	Effectiveness of pay-for-performance on clinical efficacy, access and equity, coordination and continuity, patient-centredness and cost-effectiveness (168)	Congruent with previous evidence on the pay-for-performance scheme in primary or acute care settings, the review suggested that clinical effectiveness results from 47 studies suggested a general improvement of 5% in clinical effectiveness was observed. While positive effects were reported in diabetes, asthma and smoking cessation, the scheme most frequently failed to affect acute care. Effects on non-incentivized quality measures varied greatly. One	2009	7/10 (AMSTAR rating from McMaster Health Forum)	2/128	0/128	128/128

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		<p>study also suggested a potential positive spillover effect as well.</p> <p>Twenty-eight studies supported the notion that the pay-for-performance scheme did not have negative effects on patients belonging to certain age groups, ethnic groups, comorbid statuses or socio-economic statuses. Before-and-after studies without control groups have provided some support for positive effects with coordination of care, although a time-series study suggested no effect and a potential negative spillover effect as well. In terms of patient-centredness, two studies found no effect (potentially due to a ceiling effect), while one found positive effects. Cost-effectiveness of pay-for-performance schemes use was confirmed by four studies, although health gain findings were varied.</p> <p>Findings suggested that purely positive financial rewards generate more positive effects than competition-based incentives with winners and losers. Fixed threshold and continuous scale rewards for target achievements or improvements have both been found to have positive effects in some studies, and no or mixed effects in others. In general, positive effects are clearly larger in initially low performers with significant room for improvement, relative to already high performers. Programs aimed at the individual provider and/or team level(s) generally reported positive results; programs aimed at hospitals generally reported smaller positive effects. While a combination of incentives at different target units was rarely used, two studies reported positive results.</p> <p>As per the findings of this review, future pay-for-performance programs should define targets based on baseline room for improvement, use process and intermediary outcome indicators as target measures, engage stakeholders and communicate information directly, focus on both quality improvement and achievement, and target individuals and teams.</p>					
	Effects of financial incentives on the clinical quality of individual physicians and provider	The review identified the available evidence on financial incentives on the clinical quality at both individual-level and organization-level delivery of health services. There is limited evidence to determine the effectiveness of financial incentives among physicians, hospitals	Not reported in detail	No rating tool available for this	Not reported in detail	Not reported in detail	Not reported in detail

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	<p>organizations in the delivery of personal health services (171)</p>	<p>and other provider organizations. One study reported a significant improvement in quality scores in hospitals participating in a financial incentive program, when compared to non-participating hospitals. Some studies suggested that financial incentives at both organization level and individual level produced statistically significant quality improvement. Four randomized controlled trials that assessed financial incentives at the individual level, generally found increases in guideline adherence and immunization rates, in addition to improved delivery of cognitive services. There are no direct studies on the impact of quality based on the frequency or duration of financial incentives.</p> <p>Only one study was identified that reported on the cost-effectiveness of a pay-for-performance program, and found that the estimated cost per quality-adjusted life years saved from \$13,000 to \$30,000.</p> <p>A study reported that financial incentives had a positive effect on the structure of care. The study found that reputational incentives and external public reporting were associated with significant increased use of organized management practices. No studies were identified that evaluated the effect of external public reporting on clinicians. However, three studies indicated that physicians generally avoided high-risk patients in order to avoid low public ratings.</p> <p>Information technology support may enhance internal capacity to track patient care processes and results.</p> <p>The authors determined that through the available evidence, the structure of incentives that will enable clinical quality would include the following: balance of rewards and penalties; combination of both individual and group-level incentives (with more weighting towards group-level); selective and specific rewards and penalties; comprehensive evidence-based incentives; predominance of absolute performance standards; payoff rules; and long-term and timely payment schedule. Clinically integrated practice may have more added benefit to quality incentives.</p>		<p>type of document</p>			

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Require prior authorization for use of specific health services that are identified on a list of overused services	Effectiveness of existing mechanisms to integrate medical care quality and safety into healthcare pricing and funding arrangements (167)	<p>The literature review identified four healthcare pricing models: best practice pricing, normative pricing, quality structures pricing models and pay-for-performance schemes.</p> <p>For best practice pricing, there are some reported benefits to the approach; however, the studies contained inconsistent methodologies. A study about best practice tariffs found improvements in quality of care (i.e. improved diagnostic assessments and proper medication, decreased lengths of stays). However, the approach has yet to be fully evaluated.</p> <p>For the normative pricing approach, which influences delivery of care, there is limited evidence on its impact on quality and safety of healthcare. Some studies reported improvements in performance among radiologists (i.e. reduced reporting turnaround times) after a financial incentive was added for target performance.</p> <p>For the quality structures pricing approach, which links pricing to structural approaches (i.e. accreditation, clinical quality registries linked to clinical benchmarking, and other safety improvement activities), most of the evidence indicates funding has an impact when clinical services are involved with clinical quality registries linked to clinical benchmarking. The studies reported significant improvements in providers' adherence to evidence-based practices, and reductions in post-surgical complications and mortality. However, there is no evidence to directly link performance and the level of funding. There is limited evidence to support other structural approaches in the improvement of quality and safety in healthcare.</p> <p>For pay-for-performance programs, the literature review reported that there is little evidence on the effect of these programs on patient outcomes, which in most cases was the mortality rate. Hospitals participating in a pay-for-performance program found that mortality remained the same as baseline reports. One study identified adverse effects to pay-for-performance programs, such as increased hospital admissions, cost shifting, cherry picking or misreporting. One study surveyed 66 hospitals and determined that 75% reported making structural and organizational changes (i.e.</p>	Not reported in detail	6/10 (AMSTAR rating from McMaster Health Forum)	Not reported in detail – Description states: Canada, Australia, New Zealand, U.S., U.K.	Not reported in detail	Not reported in detail

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		<p>more involvement and leadership) as a result of an incentive scheme.</p> <p>There is insufficient evidence to conclude which model is the most beneficial. Overall, some conclusions can be made: incentives need to be substantial to generate change in behaviour and practice; incentives need to be provided at a clinical department-level in order to improve quality and safety of clinical care; and further research is needed to expand the literature scope to include outpatients and other departments.</p>					
Engage stakeholders and consumers in decision-making processes	See Appendix 1 for reviews about engaging stakeholders and consumers in decision-making processes						



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